**UNIFIED
ENGLISH
BRAILLE**
IMPLEMENTATION
GUIDE

CCSSO

Council of Chief State School Officers

THE COUNCIL OF CHIEF STATE SCHOOL OFFICERS

The Council of Chief State School Officers is a nonpartisan, nationwide, nonprofit organization of public officials who head departments of elementary and secondary education in the states, the District of Columbia, the Department of Defense Education Activity, and five U.S. extra-state jurisdictions. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. The Council seeks member consensus on major educational issues and expresses their views to civic and professional organizations, federal agencies, Congress, and the public.

Unified English Braille Implementation Guide

Frances Mary D'Andrea, Ph.D., Braille Authority of North America

Table of Contents

Executive Summary

Unified English Braille (UEB), the revised code adopted in the United States, is due to be implemented January 2016. This means that braille forms administered in upcoming years will need to transition to UEB. State departments of education and other state agencies are in varying stages of readiness for the transition to UEB. The Council of Chief State School Officers (CCSSO) and the Braille Authority of North America (BANA) have been working on a joint project to gather information from states about their readiness to transition to the use of Unified English Braille, and produce an implementation guide to assist states as they transition to UEB.

BANA created a survey regarding UEB readiness, which was distributed by CCSSO to assessment directors in all 50 states. The survey had four brief sections to collect information related to:

1. basic demographic information (e.g., how many students use braille in the state);

2. preparation of instructional materials;

3. test preparation; and

4. training of personnel in UEB

This implementation guide was developed based on the results of the survey and other information BANA has gathered from its 18 member organizations, and from representatives of other braille-related organizations.

> **The adoption of UEB is an opportunity for a renewed focus on the importance of braille literacy.**

The first section of this guide presents background information about UEB and why the United States is transitioning to this code. The second section describes the major implementation issues that were identified by survey respondents, and the third section responds with suggestions and solutions to those identified issues. The fourth and final section presents several appendices that provide detailed information about state plans and resources.

This guide identifies five components that are essential to the implementation of UEB in the United States:

1. Developing a robust and inclusive UEB implementation team;

2. Creating a statewide plan that considers each state's capacity and resources for the transition;

3. Training educators and braille transcribers in UEB;

4. Addressing infrastructure issues such as ensuring that procurement and ordering of materials in the codes that will be needed for specific students (both educational materials and assessments); and

5. Communicating clearly with parents, students, administrators, vendors and all others who are involved in the education of students who use braille.

The adoption of UEB is an opportunity for a renewed focus on the importance of braille literacy. UEB will also bring much needed attention to the development of new materials and teaching methods, and promote a national discussion on the role of braille in reading, math, and science instruction for students enrolled in K-12 educational programs.

Glossary of Terms

APH: American Printing House for the Blind, in Louisville, Kentucky. Since 1879, when the Congress of the United States passed the Act to Promote the Education of the Blind, APH has been designated as the official supplier of educational materials to all students in the U.S. who meet the definition of blindness and are working at less than college level. APH administers the federal quota fund accounts for registered students.

BANA: The Braille Authority of North America. BANA's mission is to assure literacy for tactile readers through the standardization of braille and/or tactile graphics. BANA promotes and facilitates the uses, teaching, and production of braille. While there has been a "braille authority" for many years in the United States under different names, BANA was chartered as an international body 1976 and is a 501c3 organization.

.brf: An electronic file format known as a "braille ready file," it can be used to create embossed braille on paper with an electronic embosser, and can be read with a refreshable braille display (although other file formats can be used as well).

EBAE: *English Braille American Edition*, the current code in the United States for literary materials.

Nemeth: the *Nemeth Code for Mathematics & Science Notation.* This code will remain an official code in the United States after January 2016 along with Unified English Braille.

Refreshable braille: An electronic device that displays text in braille by means of movable "pins" that form braille letters and words. The display may contain anywhere between 12 and 80 braille cells that will be read tactually, then the next line of braille will appear.

UEB: Unified English Braille, an international standard for transcription of braille in the English language. It was adopted as an official code in the United States in 2012 with an implementation date of 2016. It is currently an official code in seven other English-speaking countries.

Section 1: Background Information

Importance of Braille Literacy

Braille is a system of raised dots, based on a "cell" of six dots arranged in a grid of that is three dots high and two dots wide. In the braille system, cells represent letters, words, and parts of words, which allows for text to be read tactually by people who are blind or visually impaired. Originally designed by Louis Braille in the mid-1800s, the braille code has a fascinating history; it is just as significant now in the lives of blind people as it was when it was first invented. New technologies have improved access to information but cannot replace braille as a reading and writing system. Braille allows for independent and automatic access to reading material. People who are blind or visually impaired depend on braille reading and writing in the same way that sighted people use print.

The *Individuals with Disabilities Education Act, 1997* reinforces the fact that braille is an essential tool for literacy for students who are blind. It is important that all instructional and assessment materials be made available in the child's primary learning medium; therefore, instructional assessment materials must be made available in braille as appropriate. Students in schools learn to read and write braille using braille textbooks and mechanical braille writers, but also learn to use technology such as computers with refreshable braille displays or audio output, and use a variety of portable electronic braille devices. Given the trend toward delivering statewide and other assessments electronically, states must consider how students will access the information in a manner that allows them to focus on the content of the test. Whether on paper or on a braille display, materials in braille must be accurate and well-formatted.

The Braille Authority of North America

People are often surprised to learn that braille continues to change; as written language conventions adapt over time, the braille code requires new symbols and rules to more accurately reflect the English language. The Braille Authority of North America (BANA) is the organization responsible for setting the rules for braille codes and guidelines used in the United States and Canada. BANA currently consists of 18 member organizations representing braille readers, educators, transcribers, and producers. The mission of BANA is, as stated on their website, "to assure literacy for tactile readers through standardization of braille and/or tactile graphics."

BANA's Board and its many technical and ad hoc committees work to create rules to use the various codes in North America, respond to questions from constituents, and make changes to the codes and guidelines as needed.

As of this writing, there are several tactile codes used in the United States. *English Braille, American Edition 1994* (EBAE) is often referred to as "literary braille." For technical materials, the *Nemeth Code for Mathematics and Science Notation, 1972* is used. The *Computer Braille Code* is used to allow for symbol by symbol transcription of computer programs and other electronic information such as URLs and email

addresses. The *Music Braille Code* is an international code used around the globe for music transcriptions. In addition to these codes, the book *Braille Formats: Principles of Print-to-Braille Transcription, 2011* provides transcribers with guidelines for creating textbooks and other materials, and *Guidelines for Tactile Graphics, 2010* is an extensive research-based resource for creating quality graphics that can be read and understood with the fingers.

Unified English Braille

Concern about the number of braille codes and symbols used in the United States has been expressed since the late 1980s. In 1991, Dr. Abraham Nemeth and Dr. Tim Cranmer presented a paper to the BANA Board discussing the urgency to unify the various braille codes used in North America. The desire to create a unified code was partially in response to the complexity of having multiple symbols for the same meaning. For example, there were three different braille dollar signs depending on whether it was used in a literary context, in a math context, or in a computer program. Another important factor in considering a revision of the braille codes was the increasing use of computers, both for translation of print files into braille and for access to information using portable braille devices. Accurate and unambiguous translation of material into braille and "backtranslation" from braille back into print were major goals of developing a unified code. Advances in technology allow options for braille access that were not available in the past.

In 1992, BANA initiated a project to act on the recommendations in the Nemeth/Cranmer memorandum; the project became international in 1993 when BANA invited the International Council on English Braille (ICEB) to participate. The international community developed Unified Braille Code (UBC), which became known as UEB (Unified English Braille). The principles and rules for UEB were developed primarily by braille readers in seven English-speaking countries through an online, open process. Unified English Braille was considered sufficiently complete by 2004, and ready for countries to consider its adoption. For the past decade, BANA has monitored the adoption and implementation of UEB in other ICEB countries: Australia, Canada, Ireland, New Zealand, Nigeria, South Africa, and the United Kingdom.

In 2012, the U.S. members of BANA voted to adopt UEB and to add it as an official code along with the Nemeth Code, Music Braille, and the International Phonetic Alphabet (IPA). UED is slated for implementation on January 4, 2016.

Characteristics of UEB

UEB is based on current literary braille, which is the most widely used code internationally. It extends the current "literary" code to include symbols for mathematics and science. Thus, UEB is similar to EBAE, but UEB was designed to be more "computable" (i.e., easier to translate electronically), less ambiguous (i.e., with fewer exceptions and rules), and to include symbols for technical materials.

Because UEB is based on the familiar literary code with the same alphabet, and most of the same contractions and punctuation, general reading material in UEB is easily readable for people who are

familiar with EBAE. Nine of the 189 contractions in EBAE have been eliminated to decrease ambiguity and reduce conflicts and exceptions in the braille code. Additional key differences include:

- New rules for some contractions result in certain symbols being used more frequently than in EBAE.

- While the old code has one symbol that represents emphasis in text regardless of the type of emphasis, UEB contains provisions for indicating type forms such as italics, bold, and underline. This is important because readers are increasingly required to interpret font graphics in text. For example, italics may indicate a speaker's voice while bold words may indicate a vocabulary word.

- UEB uses the same braille symbol to render print symbols regardless of the meaning of the symbol. For example, just as in print, the same symbol is used for the "dot" regardless of whether it means a period, decimal point, or dot in an electronic address.

- In EBAE, electronic addresses must be preceded and followed by a symbol indicating computer braille; UEB can show electronic addresses without having to switch into a different code because the symbols are embedded in the code.

- Unlike EBAE, technical materials can be written in UEB but are quite different from current codes (i.e. Nemeth and Computer Braille Code).

An overview of the changes from EBAE to UEB can be found on the BANA web site: http://www.brailleauthority.org/ueb/overview_changes_ebae_ueb.html.

Implementation Efforts in the United States to Date

BANA recognized that implementing the updated code would take a coordinated and concentrated effort by its member organizations and others in the braille community. To that end, a BANA UEB Task Force was established in November 2012, which identified immediate, intermediate, and long-term objectives to work toward implementation. Work began promptly to expand the UEB page on the BANA web site. Resources for training materials and professional development workshops were added, as were links to the *UEB Rulebook*, factsheets about the code, a calendar of training events, and a link for users to submit questions to BANA. Documents transcribed in UEB were added that could be downloaded as braille files or as print files with simulated braille so that readers could see examples of UEB for a variety of materials such as recipes, menus, and essays. The BANA website continues to be a key source of information and resources.

BANA also organized and facilitated a UEB Transition Forum which included chosen representatives from national organizations that are not members of BANA such as the Association of Instructional Resource Centers, the Prison Braille Network, VisionServe Alliance, the National Association of State Directors of Special Education, State Outreach, state departments of education (specifically consultants for visual impairments), BookShare.org, the Council for Exceptional Children's Division on Visual Impairments and Deafblindness, the National Agenda, the National Blindness Professionals Certification Board, and technology companies

such as Duxbury Systems, Computer Applications Specialties, HumanWare, and HIMS. The UEB Transition Forum has met twice in conjunction with the American Printing House for the Blind's Annual Meeting, and has an email list for sharing documents and information among the participating organizations. BANA has encouraged these national entities to share information with their state affiliates/chapters and other state-wide organizations with which the national organizations collaborate.

As BANA gathered feedback from a number of constituents, it became clear that states have varied needs based on the systems in place for procurement of educational and assessment materials, and are at different levels of readiness to make the transition to UEB. For example, approximately 20 states are "textbook adoption states," meaning they have a defined list of approved textbooks that schools in the state can use. Other states do not have statewide textbook adoption policies; local districts or individual schools have autonomy to choose their textbooks. This presents a significant challenge for states that are not "textbook adoption states" because of the number of educational materials that must be available in alternate formats, including braille. Similarly, some states have a centralized instructional materials center or agency that is in charge of providing educational materials in braille and other special formats; other states do not have such a centralized materials center, and therefore schools must rely on braille and electronic materials produced by the American Printing House for the Blind (APH) or other out-of-state companies. Because of these varied needs, BANA has encouraged states to develop individual transition plans that align with the national roll out of UEB while addressing the unique needs of their own state. With BANA and its member organizations providing national guidance and resources, states can plan smooth transitions.

> **General reading materials in UEB are easily readable for people who are familiar with EBAE**

The most frequent questions that BANA has received from state departments of education were related to statewide standardized tests. The use of braille is an approved accommodation for state assessments, and is noted on each student's Individualized Education Program (IEP), but braille assessment materials are produced in different ways. Some states produce assessment materials through their instructional materials centers, or acquire them through an approved center that is part of the National Prison Braille Network or other agency. Some procure assessments from APH or other companies outside the state. Some states use all of these methods.

Many states adopted assessments tied to the college- and career-readiness standards, while other states recently developed their own statewide assessments. Questions arose as to when states should start producing the braille version of their assessments in UEB, whether they should produce some grade level assessments in both codes, and whether assessments of math and science should be produced in Nemeth code or UEB.

The Council of Chief State School Officers (CCSSO) also received many questions from the PARCC (Partnership for Assessment of Readiness for College and Careers) and SBAC (Smarter Balanced Assessment Consortium) assessment consortia and others involved with test preparation. CCSSO contacted BANA in the fall of 2014 and proposed a joint project to gather information and produce an

implementation guide to assist states in their UEB transition efforts.

BANA created a survey regarding UEB readiness, which was distributed by CCSSO to assessment directors in all 50 states. The survey had four brief sections to collect information in the following categories:

1. Basic demographic information (e.g., how many students use braille in the state)

2. Preparation of instructional materials

3. Test preparation

4. raining of personnel in UEB

In addition, states and agencies were encouraged to share any UEB implementation plans they had developed.

Thirty-two states completed the survey. Section Two of this implementation guide will focus on issues identified in the survey that pertain to the transition to UEB. Section Three will share suggestions and ideas gleaned from the survey and from UEB Transition Forum participants about how UEB can be implemented nationwide. Appendix A provides detailed results of this survey; Appendix B provides resources for states as they transition to UEB; Appendix C includes additional information from the BANA web site that will be helpful to states and agencies; and Appendix D includes some sample state plans that were submitted to BANA.

Section II: Issues Identified for the Transition to UEB

This section focuses on issues identified by survey participants that pertain to the transition from EBAE to UEB, namely questions about the code itself, assessment procedures and practices, production of instructional materials in UEB, training of transcribers and teachers in the new code, and financial considerations.

Code Issues

It is clear from survey results and discussions during the Transition Forum meetings that a primary concern of professionals in all states relates to code issues, specifically regarding the use of UEB for mathematics materials. States and individual teachers are making instructional decisions and need supporting educational materials.

As stated in Section 1 of this document, UEB is based on the EBAE "literary" code, but is extended to include symbols that are not included in current codes. While UEB contains some new symbols and rules, it is similar to current literary braille. Other countries that adopted UEB reported that their students who had been using EBAE or Standard English Braille (SEB) made the transition to UEB fairly easily for nontechnical materials, and young children who only knew UEB were able to read books in the older codes after some instruction.

Unlike other countries that have adopted UEB, the United States also maintained its current code for mathematics. UEB was designed to be a complete and general purpose code that includes symbols and rules for any type of material, including math and science, and for all grades including college courses. Other English-speaking countries are now using UEB for all subject areas except for music and no longer use their previous braille codes for math and science. This includes Canada and New Zealand which previously used Nemeth code; New Zealand has completed its transition and is now using only UEB while Canada is in the midst of its UEB implementation.

In the United States the two consumer advocacy groups, the American Council of the Blind and the National Federation of the Blind, passed resolutions in 2012 that established their support for the adoption of UEB only if the Nemeth Code was retained. The organizations cited concerns over the effects of the fundamental differences between the way the two codes render mathematics and indicated their support for Nemeth Code because it is widely-used and well-known code in the United States with features that are specifically suited to the efficient reading and working of mathematics. The BANA motion regarding the adoption of UEB was drafted with the provision that both UEB and Nemeth would be considered official codes in the U.S., along with Music Braille and the International Phonetic Alphabet (IPA). This motion, which was voted on and passed by the U.S. members of BANA in November 2012, can be read here: http://www.brailleauthority.org/ueb/UEBpassed.html

The plan to adopt UEB while maintaining Nemeth code puts the U.S. in a unique global position. It has also led to some understandable confusion. As stated earlier, UEB is one complete code; the United States did not only adopt the "literary" part of UEB but adopted UEB in its entirety. UEB contains symbols

and rules for mathematics, yet the U.S. is also maintaining Nemeth code. While the transcription of "literary materials" in UEB creates braille that is quite readable because of its similarity to EBAE, that is not the case with math materials. The Nemeth code, used in the United States since the late 1950s, places numbers in the lower part of the braille cell and has a unique set of symbols and rules. UEB uses numbers in the upper part of the cell and has newly created math symbols since none existed in the current "literary" braille codes such as EBAE upon which UEB is based.

Therefore, educators and producers of braille materials are questioning whether students should learn Nemeth code only, both Nemeth and UEB, or UEB only, and which codes should be used in assessments and instructional materials. Since UEB for math is relatively unknown in the United States, some stakeholders have expressed concern about its effectiveness for math and science transcription.

BANA has stated its commitment to keeping Nemeth as a viable code that will continue to be supported and updated as it has been for many years. In order to keep Nemeth current, and recognizing that the nontechnical sections of math and science materials follow EBAE rules, a provisional guidance piece has been approved by the BANA Board showing how to switch between Nemeth code and UEB so that explanatory material in mathematics textbooks can follow UEB rules while displaying mathematics problems in Nemeth code. The document, "Provisional Guidance for Transcription Using the Nemeth Code within UEB Contexts," can be found in Appendix C of this document and is also posted on the BANA website.

While Nemeth will continue to be an official code in the United States, a number of educators have stated an interest in using UEB for all subjects including math. The benefits of having only one code to learn might be particularly useful for students who have additional disabilities, and for those who are struggling to learn Nemeth. Since UEB uses the same symbols in all contexts—for example, the symbol for a dollar sign is the same no matter where it is used—students who use UEB learn only one set of numbers and one set of symbols.

The CCSSO-BANA survey asked states about their plans for producing math and science educational materials. Ten states responded that they plan to provide materials in both codes, at least for now (with one of those states considering a plan to gradually move to UEB only). Six states plan to provide only Nemeth instructional materials or Nemeth with UEB text, and two states plan to continue with Nemeth for now and revisit the issue later. Thirteen states responded that they have not yet determined what they plan to do and are still discussing their options (with three of those states reporting local control of curricula so the state does not mandate which materials can be used). One state did not respond to this question.

It is important to note that the adoption of UEB has an impact not only on the previous literary and math codes, but on other BANA documents as well. Since other BANA guidelines were based on EBAE, they are being revised to ensure their compatibility with UEB. The *Braille Formats: Principles for Print-to-Braille Transcription* guidelines are used extensively by braille transcribers to create textbooks and other materials. These guidelines, last updated in 2011, are based on EBAE; there are sections that need to be revised to align with the *UEB Rulebook* which does not include extensive rules for formatting braille materials. Similarly, the *Guidelines and Standards for Tactile Graphics*,

published in 2010 and used internationally, outlines best practices for creating effective graphics that can be read tactually. The sections that pertain to EBAE need revision, as well as sections that refer to graphics within technical materials. BANA committees started in 2013 to revise these documents so they conform to UEB rules. Transcribers and braille producers are awaiting these revisions so they can more accurately produce instructional materials and assessments using UEB.

Testing Issues

Many states reported that they are in the midst of changing their assessments to align with the college- and career- readiness standards or with other state standards and curricula. They are also moving from administering statewide assessments on paper to computer-based tests. Survey participants mentioned that changing the braille code has added another level of complexity to the provision of accurate assessments.

A number of states plan to introduce UEB to the youngest children—students in Kindergarten through 2nd grade. The No Child Left Behind Act (NCLB) does not mandate assessments for students at this level, though many states and school districts require children to participate in benchmark assessments in these early grades. For students in grade three and up, the transition to UEB requires states to answer this question: which test when and in what format? Survey results indicated that states have different answers. Section Three of this document will include a detailed look at the various state responses.

It takes time to create test items, assess them for bias, and then produce them in alternate formats. Assessment coordinators and teams responsible for writing appropriate assessments are thinking ahead to the 2016 school year and beyond as they consider what codes to use and which formats to make available.

Assessments that are part of a consortia such as PARCC (Partnership for Assessment of Readiness for College and Careers) and SBAC (Smarter Balanced Assessment Consortium) are requiring the move from paper-based tests to electronic dissemination, or electronic with site-produced braille on paper for math and tactile graphics. Therefore, it is important to consider up front whether technology used for the purpose of assessment is UEB compatible. However, the issue of braille and technology is complicated. Refreshable braille displays are generally driven by screen readers, such as JAWS, Window-Eyes, NVDA, VoiceOver, and others—and by whatever translation software is included in that screen reader. Likewise, in note-taker devices, the refreshable braille display is usually driven by a proprietary operating system and whatever translation software is part of that system. While refreshable braille devices that work with the Apple iOS are by extension capable of displaying UEB, a great deal depends on how and with what device the reader is accessing material as to whether UEB can be displayed with accuracy. BANA has posted a document on the web site called "Tips and Resources for Learning More about UEB" that gives factual information on which screen readers include the most accurate UEB. Find this resource here: http://www.brailleauthority.org/ueb/tips-resources.html.

These are important and complex issues, but there are much larger issues for testing coordinators to consider. A major concern is how well the screen readers and the testing platforms work together. If a screen reader allows for accurate UEB on the braille display, but some of the content doesn't show up on the display when the student reads through the test (or some of the content isn't rendered correctly in speech either) because the test platform is not compatible, this will put the student at a great disadvantage. One of the most accurate screen readers for UEB has proven to be the most problematic with web browsing. In addition, some assessment platforms work better in specific browsers, and browsers can have varying levels of usability with any screen reader. Some of the stand-alone portable braille devices, such as the BrailleNote (available from HumanWare), or Braille Sense (from HIMS), have their own "screen reader" and their own web browser built in. If the devices include accurate UEB translation but their browsers don't support the features of the online test platform, this will result in inaccurate braille for the student. The testing platforms need to be designed according to standards, not geared for specific products. At a minimum, online test developers should design their platforms to meet the Web Content Accessibility Guidelines (WCAG) 2.0, priority AA, found at this website: http://www.w3.org/TR/WCAG20/. These minimum standards will address many of the accessibility issues regarding online testing. It should be stressed that accessibility needs to be built in from the beginning; it is much more difficult to "retrofit" accessibility features later in the test development process.

Test developers should note that the accessibility of online math remains problematic. Even when the material is expressed correctly using speech software, the math often does not display at all in braille on a refreshable braille device. Another restriction is that a one-line braille display does not generally allow for easy use for spatial math (that is, math problems shown vertically with numbers that line up in columns), nor for graphical material such as geometry, charts, and maps.

The use of accommodations such as braille and electronic devices, and special assessment procedures, such as a test in a special format, need to be addressed in educational team meetings and on Individualized Education Program (IEP) forms. Students must be prepared and have sufficient practice using the equipment for test delivery so that the format of the assessment will not be unfamiliar, and so students will have the opportunity to practice prior to the administration of the test. States reported that they are giving careful consideration to these issues as they plan which assessments will be provided in UEB for different age groups, and so that all equipment will be both familiar and usable to students who are blind.

One final issue reported by 17 of the 32 states responding to the survey is that assessment material must be done by transcribers certified by the Library of Congress through the National Library Service for the Blind and Physically Handicapped (NLS). The NLS has started the process for adding a UEB credential for currently certified transcribers, and released most of the updated course material for new transcribers in March, 2015. Test developers must understand that well-designed and accessible tests cannot be automatically generated; it takes time and skill to transcribe an assessment into braille.

Instructional Materials

Many of the issues listed above regarding assessments also pertain to the provision of instructional materials. School systems and statewide material centers reported that they are considering various timelines to ensure that new textbooks are available in UEB. In states that require districts to use textbooks from prescribed lists, subject matter textbooks are often updated on a rotation schedule; for example, each year a different subject matter textbook is adopted, so that every five years new books are selected for any given subject. Personnel who work at statewide instructional materials centers have an important role in keeping up with the changes in educational materials in textbook adoption states. In other states, local districts or even individual schools are responsible for creating their own braille educational materials. Those districts and/or schools often hire certified transcribers to prepare their braille books and materials, but there is a documented shortage of transcribers. As a result, instructional materials are often purchased from the American Printing House for the Blind (APH) and other sources, or are produced by braillists who are school-trained and may not be NLS certified.

Currently, much of the work in transcribing textbooks into braille is done by transcribers using electronic files and computer software translation programs. Transcribers use electronic files from scanned materials or from approved sources such as APH's Louis Database. Files are also available for authorized entities from the National Instructional Materials Access Center (NIMAC), a federally-funded file repository. The NIMAC, created as part of the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004, receives educational material from textbook publishers that are in a file format known as the National Instructional Materials Accessibility Standard (NIMAS). While NIMAS files are not "braille ready," transcribers can use these files to create

> **Technology used for the purpose of assessment must be UEB compatible**

content in a variety of formats including braille. Translation software can convert the print text into files that are then embossed on electronic braille printers. The Duxbury Braille Translation software program is fully capable of creating braille files in UEB; another widely used software program, Braille2000, has released a beta version of its UEB translation software.

A great deal of work goes into the production of high quality braille materials, both paper or, as is increasingly popular, electronic. Often, the agency or materials center that is creating instructional material for students with print disabilities including blindness, must prepare electronic files for multiple formats including large print, embossed braille, accessible files to be used on a portable braille device or a tablet, or files designed to be read using a refreshable braille display. Any important graphics—maps, diagrams, simple pictures—are specially prepared by computer or by hand and reproduced on separate sheets that may be bound into braille books. Survey participants noted the time it takes to create well-formatted, accurate, and complete textbooks, particularly for subject matter that includes many graphical elements and specialized formats.

Training

Issues regarding training teachers and transcribers in UEB also figured prominently in the survey results. Teachers who currently work with children who are blind or visually impaired will require professional development to become proficient in UEB. A number of states reported that they are arranging statewide training workshops on UEB for their teachers and paraprofessionals who know braille. This requires local districts and schools to provide sufficient release time for those professionals. Several survey respondents pointed out that teachers also need to develop teaching strategies and materials for students who are changing from EBAE to UEB. In some cases, teachers have not had students who read braille for several years and will need a refresher course in braille as well as the UEB update. University programs that prepare new teachers who will work with students who are blind or visually impaired are starting to incorporate UEB into their coursework, recognizing that new teachers will need to learn UEB and Nemeth codes, as well as have a basic understanding of EBAE during the transition period. Some states require braille competency assessments for teachers of students with visual impairments, and those tests will need to be updated.

> **Testing platforms need to be designed according to standards, not geared for specific products**

Transcribers also need professional development in UEB. Transcribers in states that mandate braille certification for assessment producers will need to obtain NLS certification in UEB using the updated process mentioned earlier. Nemeth transcribers will require some instruction and training to incorporate UEB text into math and science textbooks as outlined in the BANA preliminary guidance document. Currently, the NLS course covers only the most basic UEB math symbols and does not include higher level math.

Financial Issues

While states did not specifically list financial concerns as their biggest issue, several respondents identified tasks that would require additional expenditure. Funding was an issue that was discussed at the BANA UEB Transition Forum meetings. Of particular concern in several states was that recent textbook adoptions and transcriptions had been done in EBAE. To re-do those transcriptions into UEB would mean added effort and financial outlay for which states had not budgeted; thus some states reported that only new transcriptions would be done in UEB for the next year or two. Other budgetary concerns were switching braille translation software to a program that is more UEB compatible and the concomitant training that would be needed for staff to use it; creating multiple formats of materials particularly for math; and costs associated with personnel training.

Section Three of this document will provide guidance and suggestions from survey participants and other sources designed to resolve the issues outlined here.

Section III: Implications of National Survey Results: Creating State Plans for Transition

The 32 states that responded to the national survey revealed that a number of positive steps are being taken toward preparing teachers, transcribers, and assessment personnel for the transition to UEB. The following components are based on feedback from the survey and also from constituents who reported their progress at the most recent UEB Transition Forum held in Louisville, Kentucky, in October 2014. These steps outline some guidelines and strategies that have been successful. BANA encourages widespread collaboration and sharing of expertise, resources, and training.

Component 1: Create a UEB Implementation Committee

Twenty-one states responded that they had developed advisory and working committees to plan and implement the move to UEB. The implementation committees as described by survey respondents are designed to be inclusive in order to represent the wide range of interest in providing high-quality braille assessments, educational materials, and instruction to students. Sixteen states reported that their committees are working on draft plans to address the transition to UEB, and several states have completed their plans.

States that have created transition and implementation committees include representatives from various constituents such as:

- representatives from state departments of education, such as statewide coordinators of programs for visual impairments;

- statewide testing coordinators;

- certified braille transcribers;

- teachers of students with visual impairments;

- specialized schools for the blind;

- State Outreach programs from specialized schools;

- administrators from local education agencies and specialized schools;

- instructional materials centers;

- rehabilitation teachers;

- university personnel preparation faculty;

- special education consultants;

- staff who work at state or private agencies for people who are blind;

- coordinators of prison braille programs;

- district level specialists;

- representatives from consumer advocacy groups such as the National Federation of the Blind and American Council of the Blind; and

- parents of children who are blind or visually impaired.

These committees ensure that there is input from many stakeholders who are involved in the education of students who are blind, and a deep understanding of the many details that need attention as implementation progresses. The survey revealed that planning committees meet in person, by phone, via teleconference, and share ideas and resources online.

The plans being developed by implementation committees address the concerns that were outlined in Section 2 of this document: code issues, production of educational materials and assessments, and training of personnel. States are posting their implementation plans on their department websites, and on the websites for state-wide specialized schools and materials centers. BANA is collecting those plans and will post them in aggregate on its website; Appendix D contains some examples of state plans that can be used as models for states that have not yet completed their plans.

Component 2: Create a Timeline for Implementation Considering Instructional Materials and Assessments

The states that responded to the survey are aware of the general timeline for implementation of UEB, and the target date of January 2016. Only one respondent of the 32 states reported being unfamiliar with UEB. The implementation date was discussed at length during the first UEB Transition Forum in October 2013, and then voted on and approved by the BANA Board at their fall meeting in November 2013. The expectation is that all new transcriptions will be produced in UEB and that educators will teach the code in 2016; if not at the beginning of the 2015-16 school year, then at least by the start of the 2016-17 school year.

BANA recognizes that in order to make an effective transition to UEB, states and organizations will need to develop customized implementation plans. In response to the survey question that asked when states plan to start providing textbooks in UEB for nontechnical subjects, 13 states responded that they will begin before or by the start of school in fall 2015, seven states plan to start by January 2016, six states plan to start by fall of 2016, and five states were unsure. In response to the survey question about how states roll out of UEB in schools, some states responded with a timeline that was gradual (that is, just a few grades at a time over a period of several years), others will use a more rapid pace to complete the transition in a year or two, and still others plan to transition to UEB by following their textbook adoption cycle. (See Table 1 below for a summary of responses.)

For example, North Carolina will start producing UEB nontechnical materials for children in Kindergarten through 3rd grade at the beginning of the 2015-16 school year, whereas Indiana will provide UEB textbooks

for students in grades K-5 that same year. Florida plans to have UEB materials for grades K-3 beginning in 2016. Missouri will start UEB implementation for K-grade 2 students in 2015 but will require materials in UEB for those grades by 2016, and expect nontechnical materials to be available by 2017 for all grades. Some states report that they will have all materials in UEB for all grades in 2016; some report that they will produce only materials for new adoptions in UEB by 2016 no matter what grade level. Most states had not yet determined the specific roll out. In short, states are including a timeline for the transition that matches that state's unique strengths and needs and its capacity for production and delivery of braille to students as part of their implementation plans.

Table 1: How does your state plan to provide textbooks in UEB for "non-technical" materials (that is, all subjects except for math and science)?

Grade levels & year	number reporting
Pre-k –2 in fall 2015	1
K-3 in fall 2015	1
K-5 in fall 2015	2
K-6 in fall 2015	1
K-3 in fall 2016	1
all grades by 2016	4
all new books by 2016	5
to be determined	13
did not respond	4

Regarding the question of implementing UEB for technical materials such as math and science texts, there is still a good deal of discussion around the country. Many states reported that they are holding stakeholder meetings to assess the pros and cons of providing technical materials in one or both codes. The release of the new provisional guidance document about using UEB text with Nemeth math symbols provides state materials centers and departments of education another resource to use for the transition. Table 2 below summarizes responses to the survey question about technical materials.

Table 2: How does your state plan to provide braille textbooks for mathematics and science?

Both UEB and Nemeth	10
Nemeth only or Nemeth with UEB text only	6
Nemeth for now & revisit	2
Don't know or To be determined	10
Local decision	3
No response	1

The question of which code or codes to use for math and science materials has implications for transcription of materials and assessments, but also has broad ramifications for instructional services for students.

Education teams need to weigh individual factors regarding student progress in mathematics. UEB for math in this country is a completely new code. If there are clear benefits to using a single code for both nontechnical and technical materials, particularly for students who are struggling in math or who have additional disabilities, then collecting data on student achievement will provide that evidence. The U.S. will need to conduct sound research that explores the outcomes for students who use UEB. Knowing this, the decision is less of a "code issue" and more of an educational issue.

As stated earlier, BANA will continue to support Nemeth code. At the same time, all the symbols that are part of UEB are available for use. Some states have expressed interest in providing materials in both UEB and in Nemeth code (with the recommendations from the provisional guidance document); this may be the prudent path from an educational standpoint although it would lead to some duplication of effort and lack of uniformity from state to state. This is a national conversation that will need to take place over the next few years. With additional research into student outcomes, and information from our Canadian neighbors who are implementing UEB, states can have honest discussions about the costs and benefits and confidently make the best educational decisions for all students.

Materials Production

Since the timelines vary from state to state for the roll out of instructional materials, some states have developed tools to help them make decisions about when to produce a particular textbook. One such planning tool is included in the resources in Appendix B.

The American Printing House for the Blind (APH), a major producer of educational materials, has published its own timeline for implementation. APH has announced that they will do new transcriptions for the 2015-16 school year in UEB for "literary" subjects such as reading, English, and social studies, while textbooks for more technical subjects such as math and science will be done in UEB or in Nemeth with UEB text. A link to the full press release on the APH site can be found here: http://www.aph.org/pr/20140724Policies-Regarding-UEB-Transition-at-APH.html.

Braille Assessments

As mentioned in Section 2 of this document, states are preparing for new tests, new test administration procedures, and a new code. Each state will need to determine which assessments will be provided in EBAE, which in UEB, which in Nemeth, which in Nemeth with UEB text (that is, according to the provisional guidance document), and which assessments will be provided in multiple codes. The survey asked specifically about expected test formats for 2016, the year of the UEB implementation. States can anticipate that most students participating in testing that first year will be using current codes, particularly older students with more established literacy and numeracy skills. Over time as more students learn UEB, the assessments will need to reflect that change. State testing coordinators and other state leaders will need to work closely together to determine that students receive assessments in the same codes they are using for instruction.

Anecdotal evidence from other countries that have adopted UEB suggest that the transition took less time than expected; it is possible that reading tests and other "nontechnical" topics will need to be

produced in multiple codes for only a few years. After that time we can expect the assessments will be available in UEB for students in the early grades and then with increasing availability for older students. States that plan to provide only Nemeth code instructional materials and assessments will need to use the provisional guidelines for using UEB in Nemeth contexts and ensure that students are familiar with this format. States that are providing assessments in both UEB and Nemeth will need to determine grades and subjects for which each code will be used. Professionals who grade the tests will also need to understand that students may be using UEB and Nemeth in the same document and to concentrate of the students' demonstration of content knowledge.

An important part of the implementation plan outlined by the American Printing House for the Blind mentioned in the previous section, includes the following information regarding braille assessments:

> APH will transcribe assessment materials in the codes requested by customers who contract with APH to make assessments accessible in hardcopy and/or refreshable braille. APH recognizes that assessment materials must be available in the code that is used most efficiently by each test taker (as indicated on his/her Individual Education Plan or 504 Plan). APH is committed to providing multiple formats for these high stakes assessments.

States that responded to the survey listed a number of strategies they are using to address the transition to UEB for their statewide assessments. Some strategies include:

- <u>The option of offering assessments in more than one code</u>. During the transition time, there will be students using EBAE while others are learning UEB. Depending on a state's implementation plan, statewide assessments may need to be offered in two codes for a limited time—perhaps a few years. This is an additional expense that states will need to consider in their budgets. Educators and administrators must work closely together through the transition to ensure that IEPs reflect the codes students are using for instruction, and that grade level tests are ordered early in the year so that assessments can be prepared in the proper codes.

- <u>Offering assessments in several formats</u>. Some states are offering their 2016 assessments on paper rather than online while they continue to address and explore accessibility issues. While the ultimate goal may be to have all assessments online, it is often more feasible to continue to have tests available as paper-only for subjects like mathematics. This will allow for test items that include maps, charts, graphs, and other material that is difficult for students with visual impairments to access on a single line refreshable display or with computerized speech output.

- <u>Potential for sharing of resources with other states</u>. The implementation of UEB creates the opportunity for close communication with other states so that materials can be shared. A number of states indicated that they are exploring the options available from APH as well as other vendors so that there is as little duplication of effort as possible.

- <u>Surveying districts and schools to ascertain readiness for testing requirements</u>. For states that are part of testing consortia or have specific technology requirements, administrators should start now collecting information from districts and individual teachers about the technology students are using. Students and staff will need to learn to use the technology prior to the assessment period so that they are truly being assessed on content knowledge and not on their ability to use specific devices. Information can be gathered by survey. An example survey (from the state of Michigan) is included in the resources section in Appendix B.

Component 3: Training of Educators and Transcribers

Training efforts are well underway for personnel who are making the transition from EBAE to UEB. BANA consists of 18 different national organizations, many of which are developing training materials and providing workshops in UEB. Over the past two years, many UEB sessions have been presented in conjunction with national conferences sponsored by BANA organizations.

<u>Face-to-face training opportunities:</u> Numerous professional development workshops for educators in UEB are being offered at the conferences for state chapters of AER, and at specialized schools for blind children (the Council of Schools and Services for the Blind, COSSB, is also a member of BANA). Statewide trainings for teachers and transcribers who work in educational settings are being sponsored by state departments of education. National outreach for training in UEB is also offered by organizations outside of BANA. "Getting in Touch with Literacy," a grassroots effort sponsored by many blindness organizations, held its biennial national conference in 2013 in Providence, Rhode Island. The conference focused on UEB training and information sharing at the, and will include UEB in its offerings at the upcoming 2015 conference in Albuquerque, New Mexico, in November. A list of training materials and a preliminary calendar of UEB workshops and conference presentations for 2015 are provided in Appendix B.

<u>Distance Learning Opportunities:</u> Another BANA member, the Hadley School for the Blind, has created a new course for professionals who know current code and wish to transition to UEB. Fees for this course are waived during 2015. Hadley has made the course available to family members who know braille, such as parents of children who are blind. Hadley offers courses free of charge to people who are blind around the globe. UEB courses for adult braille readers and high school students are being prepared and will be available in summer of 2015. Hadley also hosted two webinars about UEB that were recorded and are available for access from their website, http://hadley.edu/SeminarListing.asp?tid=2

The Council for Exceptional Children (CEC) presented a national webinar in December of 2014 sponsored by CEC's Division on Visual Impairment and Deafblindness. The American Foundation for the Blind hosted a webinar that is available for free through their eLearning program. Webinars about the transition to UEB were presented by CCSSO in October and December of 2014; another webinar is scheduled for early spring.

CNIB, a member of BANA, has developed a course for transcribers and educators who already know EBAE and wish to learn UEB. Self-study materials developed in Australia and New Zealand are available for free download from the BANA web site. Links to these materials are listed on the Resource list presented in Appendix B.

A free web-based course called "UEB Online" was developed by the Renwick Centre in Australia and has had tremendous success world-wide. The course can be found at <u>uebonline.org</u>.

The United States Department of Education has shown its support for UEB training in several ways. The Rehabilitation Services Administration (RSA) has funded two projects that are building online professional development opportunities. Northern Illinois University is developing a Massive Online Open Course (MOOC) called "UEBot" (Unified English Braille Online Training) that will include seven modules designed for those who already know braille and want to learn UEB. Portland State University received a grant for an online UEB course called UEB PREP that, in addition to offering interactive lessons, will also use crowd-sourcing techniques to create and share training materials internationally. Both of these programs will be available later in 2015.

Preservice Training for University Programs: University programs that prepare teachers of students with visual impairments (TVIs) have been working together during this transition period primarily through AER's Division on Personnel Preparation. A widely used textbook for pre-service teachers has been updated and published by SCALARS as *Ashcroft's Programmed Instruction: Unified English Braille*. The textbook can be found here: <u>http://www.scalarspublishing.com</u>.

The U.S. Department of Education has added language about UEB in its most recent requests for proposals in the Federal Register, and invited the Chair of BANA to address the university programs that received personnel preparation grants from the Office of Special Education Programs (OSEP) to ensure that the university programs had up to date information about the transition.

Several teleconferences have been held for the faculty at university preparation programs in the United States to discuss issues related to teacher training such as how to address UEB math, how to incorporate the provisional guidance document into Nemeth code courses, strategies for older students who are making the transition to UEB, and how to ensure that university students are somewhat familiar with EBAE because teachers will see materials in both codes during the transition.

Teacher certification Issues: Also at issue are teacher certification requirements. Some states mandate that their TVIs take a braille proficiency exam as part of their certification or licensure; these tests will need to be revised and university programs must decide which tests are offered in which codes so new teachers will be prepared. Educational Testing Service (ETS), which provides the Praxis exams, has a committee in place to adjust the braille Praxis exam. BANA has also been in touch with Pearson, the other company that produces state certification tests. The National Blindness Professional Certification Board which administers the National Literary Braille Competency Test has updated the assessment and now provides their test in UEB.

Certification for Braille Transcribers: One of the biggest concerns of survey respondents and participants in the BANA Transition Forum meetings has been the certification of new transcribers, and a "recertification" process for existing transcribers. As described in Section 2 of this document, NLS certification of braille transcribers is a requirement in many states, and is good practice overall to ensure consistent and high quality production of braille materials. The transcriber training course for UEB is near completion, and most of the manual is now online. Currently certified transcribers will be able to add UEB proficiency by passing an assessment later this year. Information about the transcribing course and certification can be found at the following web site: <u>https://nfb.org/braille-transcribing</u>.

Component 4: Addressing Infrastructure Issues

As with any major change in infrastructure, strategies must be in place for managing the many details that change will require. At the BANA Transition Forum in 2013, a working group of producers listed a number of infrastructure issues that should be addressed in each state. This list includes the following directives:

- Provide a UEB format for online and paper request forms for materials for specific students. During the transition, students may be using different codes for different subjects, and multiple formats may need to be available.

- Update databases such as NIMAC and Louis to include UEB in the list of options for file formats.

- Develop instructional resource center policies and procedures for teacher request for materials to determine format.

- Identify external vendors who can produce materials in UEB, and develop standards and specifications for production.

- Update central internal databases to include student identifications related to code use.

- Update IEP forms to include UEB as a format option for assessments

- Ensure that UEB-compatible equipment is available at schools and instructional materials centers.

Component 5: Communication

For any transition to be successful in a country as large and varied as the United States, clear and frequent communication is essential. BANA relies on its 18 member organizations to share information about UEB through their own publications and websites. Articles about UEB have been published in many of these vehicles such as *The Braille Monitor*, *The Braille Forum*, the *CTEVBI Journal*, *AER Report*, the *DOTS Newsletter*, and the *APH News*. Articles have also been published in international research journals such as *The Journal of Visual Impairment & Blindness*, and an entire chapter was devoted to UEB research in last year's *International Review of Research in Developmental Disabilities, Vol. 46: Current Issues in the Education of Students with Visual Impairment*.

There is more work needed to reach stakeholders in every state. In particular, parents need to be aware of the changes to braille and the impact it will have on their children who are learning to read and write braille. We need to continue reaching out to organizations such as the National Association of Parents of Children with Visual Impairments (NAPVI) and the National Organization of Parents of Blind Children (a division of NFB). State departments of education have a duty to inform families of children who are blind about UEB implementation plans.

Students themselves need to know about the changes to their braille code. One way to encourage older students to make the transition to UEB is through technology. Since many of the standalone braille devices and portable braille displays that work with Apple's iOS can be set to display braille in

UEB, students can become more familiar with the revised code in this low-stress manner. Since several states are planning to introduce UEB in earlier grades, it may be a few years before older students are exposed to it. Students who are in high school must be reassured that their high-stakes assessments will be available in the code that they know best — which means that more than one assessment format of will need to be available. This applies not only statewide grade level and graduation tests but also to national tests such as the SAT and ACT.

Administrators and special education supervisors will also need to understand the changes. Teachers of students with visual impairments will need release time to attend UEB trainings, and sufficient time to learn the revised code. The National Association of State Directors of Special Education (NASDSE) is represented on the BANA Transition Forum and each state must continue to include state leadership in the decisions made during the implementation. Classroom teachers and other school personnel who are part of a student's educational team should be informed as well so that adequate instructional time for students learning to read braille using UEB and those who are switching from EBAE to UEB is allotted.

Summary

The implementation of Unified English Braille in the United States has been and will continue to be a tremendous undertaking. Of all the countries that have adopted UEB, the U.S. is by far the largest and has the most braille readers. The U.S. education system is characterized by state guidelines and local control. Results of the survey and meetings of BANA's UEB Transition Forum indicate that many states are meeting together to discuss the critical issues of preparing educational materials and assessments in UEB, and at least half of the states have plans or are currently working to develop a plan. State plans include a calendar for implementation over the next few years taking into consideration that state's capacity for producing educational materials and statewide assessments.

BANA's express aim for UEB implementation has always been that the transition should take place with the least amount of disruption to braille readers. It has been extremely heartening to see the country moving toward the same goal albeit with slightly different schedules. While the next few years may be somewhat intense, the adoption of UEB will also bring much needed attention to the importance of braille literacy, the development of new materials and teaching methods, and a national discussion on the role of braille in reading, math, and science instruction for students enrolled in K-12 educational programs. The adoption and implementation of UEB is both an opportunity for additional research and a catalyst for the celebration of braille as a modern and essential tool for students who are blind or visually impaired. ◼

Appendix A: CCSSO-BANA joint survey and results

Council of Chief State School Officers

The Council of Chief State School Officers (CCSSO) is working with the Braille Authority of North America (BANA) to gather information from every state about transition plans for instruction and assessment in Unified English Braille. UEB is the revised code adopted in the United States, due to be implemented January 2016. This means that braille forms administered in upcoming years will need to transition to Unified English Braille.

State departments of education and other state agencies are in varying stages of readiness for the transition to UEB. BANA and CCSSO will compile information about state plans regarding assessment, instruction, training, and other aspects of UEB implementation. The first step in this process is distribution of this national survey to gather information from each state as to its current plans for implementation and the progress being made toward that goal. This information will lead to the development of an implementation guide by February 2015. The guide will support states in their efforts to communicate the UEB to districts and schools for the successful implementation of UEB.

Since state-wide assessments should reflect the instruction that has been provided to students, this survey will capture information regarding plans for the transition to UEB for both instructional practices AND assessment. It will also capture details about provisions for the appropriate accommodations for students who are taking the tests in braille, whether electronically or paper-based.

Therefore, this survey may best be completed by BOTH the state testing coordinator(s) and the relevant state agency or agencies that provide guidelines and technical assistance to the production of braille instructional materials and to the education of students who use braille. This may include any or all of the following people:

• state assessment staff

• state consultant in visual impairments

• director of a statewide instructional resource center or materials center

• statewide consortium or advisory board including educators, parents, and consumers

• other advisory or technical assistance programs that support educators in your state

• university personnel preparation program that trains teachers of students with visual impairments.

Thank you for taking the time to fill out this survey by November 5, 2014. Please submit your responses through the online survey. The information will be useful in drafting the *Implementation Guide* document but more than that, it will be helpful information for all states as we plan the transition to Unified English Braille in 2016.

Sincerely,

--Frances Mary D'Andrea, Chair, Braille Authority of North America

literacy2@mindspring.com

Section 1: Demographic and General Information

* 1. Name of person(s) filling out form

* 2. Title(s) of person filling out form

* 3. email address

* 4. business address

* 5. Reporting for which State?

1. Alaska	17. Michigan
2. Arizona	18. Missouri
3. Arkansas	19. North Carolina
4. California	20. Nebraska
5. Colorado	21. Ohio
6. Connecticut	22. Oregon
7. Delaware	23. Pennsylvania
8. Florida	24. North Dakota
9. Hawaii	25. South Carolina
10. Idaho	26. South Dakota
11. Indiana	27. Utah
12. Kansas	28. Virginia
13. Kentucky	29. Washington
14. Louisiana	30. Wisconsin
15. Maine	31. West Virginia
16. Massachusetts	32. Wyoming

Minnesota did not respond to the survey but did send a copy of their state plan.

6. Does your state have a UEB Implementation Team in place which has worked on, or is currently working on, the UEB implementation or transition plan?

Yes = 22
No = 10

7. If yes, please briefly describe the general make up of this committee and how they work.

varied responses

8. The Braille Authority of North America is collecting state implementation plans so they can be shared with other states. If you'd like your plan to be shared on the BANA web site, please send a copy to Frances Mary D'Andrea, Chair, BANA, at literacy2@mindspring.com.

Is your state working on a plan that hasn›t yet been completed or approved? Please explain briefly.

Yes, have a plan, working on one, or holding informal discussions: 22

No, do not have a plan and not working on one: 7

No response: 3

9. Optional: Is your state familiar with UEB?

Yes: 28

No: 1

Minimal familiarity: 1

No response: 1

If so, how did you receive information about UEB?

varied responses

Section 2: Instructional Materials Preparation

10. Approximately how many students use braille in your state?

Responses from 26 states; 6 states did not answer, or were unsure.

Total braille readers: 3,234

Range: 8-900

Mean: 124 (124.38)

The responses include all braille readers reported from each state: students for whom braille is a primary medium, students who use dual media of print and braille, and students who use braille as a secondary medium.

11. How are braille textbooks provided to students in your state? Check all that apply:

a. through our statewide materials center = 27

b. order through the American Printing House for the Blind = 26

c. through the Louis database = 23

d. privately contracted braille transcribers = 18

e. prison braille program = 21

f. NIMAC files = 26

g. other (please describe)

Bookshare = 4

districts each buy own books (no statewide adoption) = 2

district braillists

textbook publisher's plan

electronic materials & braille displays

state contractors

borrow from other states

12. When does your state plan to <u>start</u> providing textbooks in UEB?

> spring or fall of 2015 = 13
> January 2016 = 7
> Fall 2016 = 6
> no response or not yet determined = 6

13. How does your state plan to provide textbooks in UEB for "non-technical" materials (that is, all subjects except for math and science)? Choose one of the following and add any needed details:

> a. starting with kindergarten through 3rd grade in fall 2015 = 2
> b. starting with kindergarten through 6th grade in fall 2015 = 2
> b. starting with K through _____ grade in (year) _____ (please explain) =
> c. all grades by _____ year (please state which year)
> d. other (please explain) = 18

14. How does your state plan to provide textbooks for mathematics and science?

> a. we plan to continue using Nemeth code only = 4
> b. we plan to provide math and science textbooks in UEB for grades 1-3 = 0
> c. we plan to provide math & science textbooks in both UEB & Nemeth for all grades = 1
> d. we plan to provide math and science textbooks in both UEB and Nemeth for the near future. = 4
> e. Other, describe = 19
> f. No response = 4

The vast majority of respondents wrote comments under "other." A summary of responses is given here:

<u>Both UEB and Nemeth at least for now:</u>

1. CO: We plan to provide math and science textbooks in both UEB and Nemeth for the near future, & revisit the issue later
2. DE: We plan to provide math and science textbooks in both UEB and Nemeth for the near future, & revisit the issue later
3. FL: Florida's plan will be determined based on the actions of BANA and guidance from the Vision Leadership Committee.
4. KY: We plan to provide UEB and/or UEB/Nemeth Code for math/science as they become available from APH.
5. LA: We plan to provide math and science textbooks in both UEB and Nemeth for the near future, & revisit the issue late
6. NC: During the transition years 2015-2019, the state will offer the option of UEB math and Nemeth. During the 2019/2020 year and going forward, the state will only offer the option of UEB math for state adopted textbooks for mathematics and science.
7. OH: Ohio will provide math and science textbooks in both UEB and Nemeth. We recommend that BANA implement a policy for math and science textbooks to ensure consistency across states and in textbook production.
8. OR: We will provide math and science textbooks in both UEB and Nemeth in the near

future. However, we currently have a sizeable inventory of math and science braille materials that have either been produced by our OTMC braillists or purchased from outside vendors. Therefore, it is unwise to scrap all of this work until future textbook adoptions by districts make them obsolete. That said, since we still see districts using 15+ year old textbooks, it is likely that these Nemeth-only materials will be around for quite some time.

9. PA: We plan to provide math and science textbooks in both UEB and Nemeth for the near future, & revisit the issue later
10. SD: We plan to provide math and science textbooks in both UEB and Nemeth for all grades

<u>Nemeth only:</u>

1. CA: Nemeth for problems/equations, but using UEB for text explanation
2. MI: We plan to continue using Nemeth code only
3. MO: We plan to continue using Nemeth code only
4. SC: We plan to continue using Nemeth code only
5. WA: We plan to continue using Nemeth code only
6. WI: We will follow BANA's decision regarding how to handle such materials. We believe that the current proposal is to follow UEB for narrative text and use Nemeth indicators for actual mathematics.

<u>Probably Nemeth, or Nemeth for now:</u>

1. NE: We plan to continue to use Nemeth code for now, but will revisit in the future once UEB is implemented more in math and science
2. WV: At this point in time the no final decision has been made. At this point it is still Nemeth but we will follow the national recommendations. Students must have a consistent code for mathematics and science across the country. Teachers are aware of the national discussions.

<u>Don't know:</u>

1. AK: no answer
2. AR: unsure at this point...depends on the training of the transcribers
3. CT: to be determined
4. HI: not fully outlined at this time
5. ID: Don't know
6. IN: We are currently in discussions regarding how our state will provide textbooks for mathematics and science. There has been a great deal of discussion and interest in providing math and science textbooks in UEB/Nemeth for all grades, beginning in Kindergarten. We are currently waiting for BANA to update the field from its November 2014 fall meeting regarding the use of UEB/Nemeth braille code. Our state committee will make a recommendation to the IDOE for approval regarding math and science and update our state plan accordingly.
7. KS local control
8. MA: At this time we do not know
9. ME: The plan is not yet developed.

10. ND: local control
11. VA: Consideration being given, yet to be determined
12. UT: Will be determined
13. WY: local control

15. How was the decision made regarding your plans for providing UEB instructional materials?
     Varied responses.

Section 3: Test Preparation

16. Approximately how many students who use braille participate in the general statewide testing?
    ○ Total in 26 states reporting = 1,946 (about 60% of total braille readers reported from 26 states in earlier question)

17. Approximately how many students who use braille participate in the alternate assessment for students with the most significant cognitive disabilities?
    ○ 18 states responded with alternate assessment numbers: N = 236

18. Approximately how many students who use braille participate in the statewide English language proficiency assessment?
    ○ 17 states responded about ELL assessment numbers: N = 141

19. Are you part of a testing consortium?
     SBAC = 13 (plus 2 on hold)
     PARCC = 5
     ASSETS = 9
     NCSC = 10
     DLM = 6
     ELPA21 = 5
     Others mentioned (1 each): WIDA, NSCS-Tier 2, AIR Collaborative
     None = 5
     Don't know = 1

20. Is your state planning to provide required achievement tests in paper braille or electronically in spring 2016? Please describe your plans briefly.

21. If paper braille tests are going to be provided in spring 2016, who will produce them? Please explain briefly.

22. If your state is planning to provide standardized tests electronically to braille readers in spring 2016, what equipment is required?
     varied responses

23. Have you started to work with districts to collect computer and embossing equipment for test production at each school?

    yes =13
    no = 15
    no embossing done at schools = 1
    No response = 3

24. Does your state have an advisory committee that provides input and analysis for braille versions of required tests? If so, please describe.

Section 4: Personnel Training

25. Has your state already started to train teachers in UEB?

    yes = 19
    no = 11
    If not, when does it plan to do so? = 7 plan for spring 2015
    Don't know = 1

26. Does your state require teachers of students with visual impairments to take a braille competency test?

    yes = 9
    no = 19
    to be determined = 1
    no response = 3

If so, which test?
    Pearson state licensure
    NLS certification
    State-developed test
    Praxis braille proficiency
    Braille Literacy Usage examination

27. Does your state require teachers of students with visual impairments to take a certification test that includes questions about braille code knowledge?

    yes = 18
    no = 10
    to be determined = 1
    no response = 3

If so, which test?
    Praxis = 7
    state-developed = 5
    Pearson = 1
    not specified by state = 1

28. Does your state require teachers of students with visual impairments to demonstrate competency in Nemeth Code?

    yes = 9
    no = 18
    not sure = 2
    no response = 3

    If yes, describe briefly:
    Praxis
    Nemeth course required

29. Does your state require braille transcribers who produce assessments to be certified through the Library of Congress?

    yes = 17
    no = 8
    not required but general practice = 2
    don't know = 2
    no response = 3

30. Has your state already started to train transcribers in UEB?

    yes = 10
    no = 19
    plan to start = 1
    done by outside vendor = 1
    not sure = 1

    If so, please briefly describe how this has been done
    National Braille Association
    university preparation faculty
    outside contractor
    CNIB course

31. If your state has not yet begun training braille transcribers in UEB, when does it plan to do so?
    varied responses: most plan to this school year

32. What information would be most useful in the implementation guide for teachers and educators?
    information from this question incorporated into section 3

33. Please feel free to make any additional comments or add any details you'd like to share about your state's UEB implementation plan.
    information from this question incorporated into section 3

Appendix B: Resources

- Resources for Learning UEB

- Calendar of training

- Worksheet for Students Transitioning to UEB

- Worksheet for Planning Document Transcription

- Michigan Technology Survey

Appendix B: Resources for Learning UEB

Basic tools

1. *The UEB Rulebook, 2013*

The *UEB Rulebook*, the official list of rules for Unified English Braille, can be downloaded at no charge from the web site of the International Council on English Braille (ICEB) or from the BANA web site. The direct URL is: http://www.iceb.org/ueb. This link will take you to three different versions of the Rulebook. A simple pdf version is suitable for printing. The "linked pdf" is ideal for downloading to a computer or a tablet because the live links in the document can help the user navigate electronically. Lastly, a "braille-ready" version (brf) is available and consists of six volumes.

2. *Guidelines for Technical Material, 2014*

This resource provides additional rules and examples for using UEB in technical materials such as mathematics and chemistry. It can also be found at http://www.iceb.org/ueb and is available in pdf, doc, or brf versions.

3. Provisional Guidance for Using Nemeth within UEB Contexts: See Appendix C

For adults who know braille in the current code (EBAE) but wish to learn UEB

1. *The ABC's of UEB*

Although this is not a complete instruction manual, this resource provides examples and practice exercises which allow people who already know EBAE to quickly build on their knowledge of braille to understand UEB. This document is available free on the BANA web site. This link will take you to the html version, but pdf and brf versions are also available.
http://www.brailleauthority.org/ueb/abcs/abcs-ueb.html

2. Hadley School for the Blind courses in UEB

The Hadley School for the Blind is offering a course called "Transitioning to Unified English Braille" for people who already know EBAE. During 2015, fees for professionals are waived.

Information can be found here:
http://hadley.edu/PR_detail.asp?t=20150119-Transitions-to-UEB-Braille-Course-Availability

3. CNIB Transcriber's course

These materials from Canada can be downloaded and printed or used electronically. The course gives some practice materials and answer keys. It assumes that people know braille already. The materials are available as electronic files for print or braille that can be downloaded free of charge.
http://www.cnib.ca/en/living/braille/Pages/Transcribers-UEB-Course.aspx

4. The Australian Training Manual course

Available as a free download in pdf format, this course is for people who knew Australian Braille and are switching to UEB.
http://brailleaustralia.org/unified-english-braille/unified-english-braille-australian-training-manual-2013/

5. New Zealand training manual

New Zealand previously followed BANA codes, but is now using UEB. Their training manual is similar to the one used in Australia and is available as a free pdf download.
http://www.brailleauthority.org/ueb/NZ%20UEB%20Manual%202011.pdf

Targeted for print-reading adults who wish to learn UEB and do not know braille:

1. *Ashcroft Programmed Instruction: Unified English Braille*

The textbook was designed for university programs that prepare teachers of students with visual impairments. Because it was designed for pre-service teachers, its 13 chapters can be completed in a semester (approximately 15 weeks). The book is available in paperback and includes exercises and answer keys so the students can practice on their own and get check their answers. Available from: http://www.scalarspublishing.com

2. *UEB Online*

This is a free course for sighted people who wish to learn braille from the beginning. Because it is from Australia, there are some spelling differences from United States usage. It provides participants with immediate feedback and people can do lessons on their own and in their own time. http://uebonline.org

Mathematics Resources

1. ICEB's *Guidelines for Technical Materials*

This document was mentioned earlier; it is available in several electronic file formats from ICEB: http://www.iceb.org/ueb.html

2. New Zealand resource: *The Hitchhiker's Guide to UEB Maths*

When New Zealand adopted UEB, it ceased using Nemeth code. Two teachers of students with visual impairments designed this resource,which can be downloaded in print from the web site of the Braille Authority of New Zealand Aotearoa Trust (BANZAT). Called "The Hitchhiker's Guide to UEB Maths," it can be found at:
http://www.banzat.org.nz/documents/HHGMaths.pdf

3. Canadian resource guide

Canada is currently making the transition from Nemeth to UEB. Heather Harland and Cheryl Roberts, teachers in British Columbia, designed a resource called "Unified English Braille for Math for Sighted Learners." It can be downloaded in print at:
https://www.prcvi.org/files/braille/UEB_Braille_for_Math_2014.pdf

One-page resource lists

1. Duxbury has a one-page chart that lists the contractions and short forms in alphabetical order:
http://duxburysystems.com/images/ueb_black.pdf

2. Aroga Technologies presents the UEB contractions and symbols by category:
http://www.aroga.com/unified-english-braille-chart-tabloid-11-x-17-pdf-format/

Appendix B: Calendar of training

2015 Calendar of UEB Training Opportunities

The following is a preliminary list of upcoming training workshops and presentations in 2015 as they relate to the implementation of Unified English Braille (UEB) in the United States. BANA's efforts are dynamic and rapidly expanding, so please check often to learn what is happening where and when and how you can be involved. Please check with your state agencies to learn what may be scheduled in your own local area.

1st Quarter of 2015 (January – March)

1. *Experience UEB,* Second Sense, January 16, Chicago, Illinois

2. Four-day UEB technical workshop, Colorado Department of Education, January 21 - 24, Denver, Colorado

3. UEB presentation to the Blind Advisory Committee of the California Department of Rehabilitation, February 10, Sacramento, California

4. UEB presentation on TechTalk, February 23, 7:00 P.M. Central Time, www.accessibleworld.com

5. Full-day UEB training at the Pacific Northwest AER 2015 Conference, February 26, Vancouver Washington

6. Two-day UEB training workshop, February 24 – 25, at the Utah Parent Center, sponsored jointly by the Utah State Office of Education, the Utah Schools for the Deaf and the Blind, the University of Utah, and the Utah Professional Development Network, Salt Lake City, Utah

7. Two-day UEB training workshop, February 26 – 27, at the Utah3 Parent Center, sponsored jointly by the Utah State Office of Education, the Utah Schools for the Deaf and the Blind, the University of Utah, and the Utah Professional Development Network, Salt Lake City, Utah

8. UEB training workshop, March 3, North San Diego County, California

9. Full-day UEB training at Idaho School for the Blind, March 6, Gooding, Idaho

10. UEB sessions at the conference the California Transcribers and Educators of the Blind and Visually Impaired (CTEVBI), March 19 – 22, San Francisco, California

11. UEB workshop at Nebraska Center for the Education of Children Who Are Blind or Visually Impaired, March 19 – 20, Nebraska City, Nebraska

12. Two UEB presentations and a facilitated planning work group at the Virginia AER Chapter Conference, March 19, Fairfax, Virginia

2nd Quarter of 2015 (April – June)

1. Facilitated planning day: *Making the Move: Identifying Strategies and Resources for a Smooth Transition to Unified English Braille,* New Hampshire Department of Education; April 8, Concord, New Hampshire

2. Full-day UEB workshop, Iowa Department for the Blind, April 17, Des Moines, Iowa

3. UEB workshop and dialogue at NBA Conference, April 23 – 25, Austin, Texas

4. UEB Presentation and dialogue at AER Pennsylvania-Delaware AER Conference, April 23, Harrisburg, Pennsylvania

5. UEB presentations at "Charting the C's" conference, April 26, Alexandria, Minnesota

6. Full-day UEB workshop, State Educational Resource Center, April 30, Middletown, Connecticut

7. Full-day UEB workshop, Department of Rehabilitation Services, May 1, Windsor, Connecticut

8. Full-day UEB workshop, Michigan Department of Education, May 13, Lansing, Michigan

9. Full-day UEB workshop, Michigan Department of Education, May 14, Detroit, Michigan

10. UEB workshop, VAVF (Visual Aids Volunteers of Florida), May 18 – 20, Orlando, Florida

11. Full-day UEB workshop, Maryland Department of Education, May 22, Baltimore, Maryland

12. UEB workshop, May, Minnesota—Details to be announced

13. UEB workshop, June 22 – 24, ATPC—Details to be announced

14. UEB workshop, June 29 – July 1, Wisconsin—Details to be announced

3rd Quarter of 2015 (July–September)

1. American Council of the Blind convention, July 3 – 11, Dallas, Texas

2. National Federation of the Blind convention, July 5 – 10, Orlando, Florida

3. UEB workshop and planning event, Gateways to Independence Summer Institute, Kentucky School for the Blind, July 15 – 16, Louisville, Kentucky

4. UEB workshops and planning, Summer Institute, July 27 – 29, Raleigh, North Carolina

5. UEB presentations and planning, September 21, Indiana State Department of Education, Indianapolis, Indiana

4th Quarter of 2015 (October–December)

1. UEB presentation, California Council of the Blind, October 1 – 4, Woodland Hills Hilton Hotel near Los Angeles, CA

2. Getting in Touch with Literacy conference, November 18 – 21, Albuquerque, New Mexico

For additional information, visit the BANA website at www.brailleauthority.org.

Appendix B: Transition Worksheet used with permission from PRCVI, Vancouver, BC

Student Transition Worksheet

(for students with established skills in EBAE and Nemeth)

Student's Name: _____   Grade: _____

Literary Transition

Student's literacy level in EBAE (based on the results of an Informal Reading Inventory)

    Literacy level (grade): _____

    Reading speed (with comprehension) _____

    Miscue Analysis of reading passage in content text (please attach)

    Writing miscue analysis (please attach)

Student's literacy level in UEB (based on the results of an Informal Reading Inventory)

    Literacy level (grade): _____

    Reading speed (with comprehension) _____

    Miscue Analysis of reading passage in content text (please attach)

    Writing miscue analysis (please attach)

Recommended code to use in assessment: _____

Mathematics Transition

Student's mathematics level in Nemeth Code (based on classroom and informal assessments)

    Mathematics level (grade): _____

    Knowledge of mathematics symbols (please attach checklist)

Student's mathematics level in UEB (based on classroom and informal assessments)

    Mathematics level (grade): _____

    Knowledge of mathematics symbols (please attach checklist)

Recommended code to use in assessment: _____

Appendix B: Worksheet used with permission from PRCVI, Vancouver, BC

Financial Impact Worksheet

Title of Document: _____

Has the title been transcribed in the past?

      ☐ Yes   ☐ No

If yes, what code?

        ☐ EBAE

        ☐ Nemeth

        ☐ UEB

Are electronic files available for text?

      ☐ Yes   ☐ No

Has the document been analyzed for necessary content modifications (e.g., assessment items, reference to pictures or graphics within text)?

      ☐ Yes   ☐ No

For mathematics texts:

Is the document needed by a student who uses Nemeth Code for learning mathematics?

      ☐ Yes   ☐ No

Is the document needed by a student who has used Nemeth in the past and is transitioning to use of UEB?

      ☐ Yes   ☐ No

Is the document needed by a student who has learned mathematics exclusively using UEB (no prior knowledge of Nemeth Code)?

Cost of Transcription

Cost of initial transcription using both UEB and Nemeth Code (includes both transcription and text analysis)   _____

Cost of transcribing text in UEB if it has already been transcribed (transcription only, text analysis not necessary)   _____

Michigan VI Survey on Technology

Name of teacher completing survey

       District

       School

Do you currently serve a student(s) whose primary reading media is Braille?

       Yes/no

If yes, how many of your students use Braille as their **primary** reading media?

If no, how many of your students use Braille as their **secondary** reading media?

Within the next 2 years, how many of your emerging Braille readers do you anticipate will use Braille as their **primary** reading media?

Do you currently serve students whose are dual readers of both Braille and print?

      Yes/No

If yes, how many of your students are considered dual readers of Braille and print?

How many of your students take the Braille version of:

MEAP _____   MME _____   MI-Access Functional Independence _____

How many of your students take the enlarged print version of:

MEAP _____   MME _____   MI-Access Functional Independence _____

How many of your students use a Screen Reader?

Please list the Screen Readers (including the version) used by each of your students.

What version(s) of Windows/MAC do you use with these screen readers?

How many of your students use a refreshable Braille device?

What Braille devices are currently used?

18 cells _____   40 cells _____   greater than 40 cells _____

How many of your students use both refreshable Braille and Screen Readers concurrently?

Do you currently serve a student(s) that uses an Embosser?

      Yes/No

If yes, please list the brand(s) and version(s) of all Embossers used.

If yes, how many of your students use an Embosser?

       And

How many of your students use an Embosser independently (without aid of Teacher)?

Where are the Embossers located?

    In the student's classroom

    At the student's school but not in the student's classroom

    At a district building, other than the student's school

    At the ISD

Do you currently use a Braille Translator?

    Yes/No

If yes, please list the Translator(s) used, including the version(s) used.

Do you currently serve a student that uses magnification devices?

    Yes/No

If yes, how many of your students use magnification devices?

Please list the magnification devices and software used.

Is there any additional information that you feel BAA should know regarding the technology use of your students?

Appendix C: Nemeth-UEB Provisional Guidance Document

Provisional Guidance for Transcription Using the Nemeth Code within UEB Contexts

pdf, brf, and brf for downloading

This method of switching between the Nemeth Code and Unified English Braille has been developed to ensure the continued viability of the use of the Nemeth Code for mathematics. The necessity for this adaptation, which is similar to the current use of switching to computer braille code for email addresses and the like, stems from two basic issues:

1) In current Nemeth code transcriptions, the nonmathematical text that surrounds the mathematics is based on English Braille, American Edition (EBAE), which is being replaced by Unified English Braille (UEB). If the surrounding text were to continue to be in EBAE, then, in order to use Nemeth Code, braille users and producers would need to be familiar with two sets of rules for contractions, capitalization, emphasis, punctuation, spacing, and so on. Such a requirement would be especially burdensome in the long term to future braille users and producers who learn braille according to UEB symbols and rules and would then need to learn old rules that have been replaced.

2) As the use of electronic means to read and write in both print and braille proliferates, the need for accurate translation both from print to braille and from braille to print becomes an increasingly critical consideration. An unambiguous switching method eliminates code conflicts and makes it possible for accurate translation in either direction to occur, so that mathematics can be communicated between print users and braille users using Nemeth Code.

Testing is ongoing to determine whether additional items should be addressed in this guidance. BANA also welcomes feedback about what else should be added from anyone using these methods.

Appendix D: Sample State Plans

1. Michigan

2. North Carolina

3. Indiana

Michigan Department of Education- Low Incidence Outreach

Unified English Braille (UEB) Implementation Plan

Historical Perspective:

On November 2, 2012, the Braille Authority of North America voted to adopt the Unified English Braille (UEB) as the official Braille Code for North America. The formal motion is as follows "Therefore it is moved that the Braille Authority of North America (BANA) adopts the Unified English Braille to replace the current English Braille American Edition in the United States while maintaining the Nemeth Code for Mathematics and Science Notation, 1972 Revision; the Music Braille Code 1997; and the IPA Braille Code, 2008. The official braille codes for the United States will be Unified English Braille, Nemeth Code for Mathematics and Science Notation, 1972 Revision and published updates; Music Braille Code, 1997; and The IPA Braille Code, 2008."

The mission of the Braille Authority of North America is to assure literacy for tactile readers through the standardization of braille and/or tactile graphics.

The purpose of BANA is to promote and to facilitate the uses, teaching, and production of braille. Pursuant to this purpose, BANA will promulgate rules, make interpretations, and render opinions pertaining to braille codes and guidelines for the provisions of literary and technical materials and related forms and formats of embossed materials now in existence or to be developed in the future for the use of blind persons in North America. When appropriate, BANA shall accomplish these activities in international collaboration with countries using English braille. In exercising its function and authority, BANA shall consider the effects of its decisions on other existing braille codes and guidelines, forms and formats; ease of production by various methods; and acceptability to readers. (Braille Authority of North America (2014). About BANA Mission and Purpose. Retrieved from http://www.brailleauthority.org/about-bana.html.)

In response to the Braille Authority of North America's (BANA) adoption of the Unified English Braille Code the Michigan Department of Education- Low Incidence Outreach (MDE- LIO), with input from stakeholders statewide, will proceed as follows:

Fall 2014:

• MDE-LIO Braille Team will offer regionally based Braille workshops to prepare for the transition to the UEB. Workshops will increase participant's knowledge of the English Braille American Edition (EBAE) contractions that will remain constant along with practical ideas for creating Braille rich environments. MDE-LIO stakeholders believed that these are valuable areas for additional training and instruction.

Spring 2015:

• Frances Mary D'Andrea, Chair of Braille Authority of North America will present a full day workshop focusing on the UEB. This workshop will be available to all VI professionals including but not limited to: Teachers for the Visually Impaired (TVIs), paraprofessionals, transcribers and consumers. Workshops will be held on May 13 and 14th 2015 in the Detroit Metro and Lansing areas.

Summer 2015:

As a result of extensive research surrounding best practice for Braille production and to remain consistent with other producers of Braille materials, MDE-LIO Instructional Materials Center will adopt the American Printing House for the Blind's implementation plan for textbook and Braille on demand production. APH's implementation plan as it relates to MDE- LIO's Braille production services are as follows:

- Orders for textbooks in subjects using literary braille (i.e., social studies and language arts), not previously transcribed, will be produced in UEB for the 2015-16 school year.

- Orders for textbooks in technical subjects (i.e., science and mathematics), not previously transcribed, will be produced in UEB and/or UEB with Nemeth Code for the 2015-16 school year.

- Textbooks previously transcribed will be available in their original codes, following APH's policy of not duplicating previously transcribed textbooks and supplementary materials.

Fall 2015:

- Continued state wide regional trainings to be offered in the UEB. Trainings will focus on both UEB rules and Braille instructional strategies for transitioning students.

- Michigan TVIs will be encouraged to begin teaching the UEB to new Braille users. This includes the preschool to second grade students as well as newly diagnosed individuals.

- Michigan TVIs with older students can begin to offer instruction in the UEB with materials in both codes

- Students who currently are proficient Braille readers can slowly transition into the UEB

- All new materials produced by MDE-LIO will be in UEB format

January 14, 2016

- Full implementation of the UEB across Michigan

- Continued offerings of regional workshops centered on both the UEB and instructional strategies for implementation

NC Timeline for Transition to the Unified English Braille Code (UEB)

Year	Commencement Date	Action	Production	State Testing (Prison Braille Program)
Pre-T	November 10, 2014	Unified English Braille (UEB) Vision Institute		
	December 5, 2014	Stakeholder meeting to discuss implementation plan		
	Before the 2015 March Institute	Submit completed implementation plan		
	June 2015	Decision analysis with Stakeholder feedback regarding continued instruction in UEB or Nemeth with embedded UEB text		
	July 2015	EC Division Summer Institutes: UEB training		
1	2015-2016 school year	Pre K-1st grade begin UEB & UEB math instruction, with access to materials from American Printing House for the Blind (APH) 2nd-12th grades transition from EBAE & Nemeth to UEB & UEB Math, through introduced instruction Professional Development: DPI Regional UEB Trainings North Carolina Central University Visual Impairment Training Program (NCCU VITP): Braille Course in UEB	APH and the Textbook Warehouse will produce new state adopted textbooks in UEB for all grades Technical, science, & mathematics books produced in Nemeth with embedded UEB text by request Textbooks previously transcribed in EBAE, will be available upon request	Testing materials will not be impacted during this first transition year

Year	Commencement Date	Action	Production	State Testing (Prison Braille Program)
2	2016-2017 school year	K-12th grades UEB Instruction, including UEB Math 3rd -12th grades will have option of accessing EBAE & Nemeth materials during the transition until 2019-2020 school year. DPI Regional UEB Trainings NCCU VITP: Braille Course in UEB	All new state adopted textbooks produced in UEB and UEB math. Technical, science, & mathematics books produced in Nemeth with embedded UEB text by request Textbooks previously transcribed in EBAE, will be available upon request	3rd-12th grades, State test will be available in UEB. Teachers must make special request for EBAE or Nemeth with embedded UEB text.
3	2017-2018 school year	K-12th grades.UEB Instruction, including UEB Math DPI Regional UEB Trainings NCCU VITP: Braille Course in UEB	All new state adopted textbooks produced in UEB and UEB math. Technical, science, & mathematics books produced in Nemeth with embedded UEB text by request Textbooks previously transcribed in EBAE, will be available upon request Tentative last year to obtain Nemeth format	3rd graders will be tested using UEB & UEB Math 4th-12th grades, State test will be available in UEB. Teachers must make special request for EBAE or Nemeth with embedded UEB text.

Year	Commencement Date	Action	Production	State Testing (Prison Braille Program)
4	2018-2019 school year	K-12th grades.UEB Instruction, including UEB Math	All new state adopted textbooks in UEB and UEB math	4th -12th grades, State test will be available in UEB
		NCCU VITP: Braille Course in UEB	*Production of Nemeth with embedded UEB based on June 2015 Decision Analysis*	Teachers must make special request for EBAE or Nemeth with embedded UEB text
			Last year for teachers to obtain previously produced textbooks in EBAE format.	Last year for EBAE, tentative last year for Nemeth as an option for state testing
5	2019/2020	Transition Complete	*Production of Nemeth with embedded UEB based on June 2015 Decision Analysis*	First full year for all testing in UEB literary and UEB math for all grades.
				Nemeth option may be available based on June 2015 Decision Analysis

The Unified English Braille Code

In November 2012, the Braille Authority of North America (BANA) voted to adopt the Unified English Braille (UEB) as an official code for the United States. UEB is a revision and extension of the English Braille American Edition (EBAE). In November 2013, BANA, following the UEB Transition Forum consisting of delegates from 31 national organizations, affirmed that January 4, 2016 would be the implementation of the general use of UEB in the United States, replacing the current EBAE code.

The transition plan to implement the UEB in Indiana is as follows.

Indiana Statewide UEB Transition

Preparation for UEB

The Indiana Educational Resource Center (IERC) has been working on the transition from the current EBAE to UEB since BANA adopted the UEB in 2012. Training has been ongoing for our state transcribers since that time, utilizing training materials from Australia, New Zealand and Canada. The Miami Accessible Media Program (MAMP), the statewide prison program, and the IERC onsite braille production project, added the UEB compliant Duxbury Braille Translation software to their transcription software platform. A three-day training in the use of Duxbury was conducted in September 2014 for all transcription staff. In addition, the transcription staff is currently working through the CNIB Self-Directed UEB Course, "The ABC's of UEB" by Constance Risjord, and the Ashcroft Programmed Instruction: Unified English Braille (API-UEB) by M. Cay Holbrook and Frances Mary D'Andrea. It is anticipated that a UEB certification program will be available for braille transcribers in the United States by early 2015. The IERC transcription staff will enroll in this program once available to complete their UEB certification.

UEB Implementation Committee

On August 21, 2014, the statewide UEB Implementation Committee met for its first meeting. The committee consisted of representatives from the Statewide Resource Center, State AT Project, University Training Programs, Adult Services, Residential School and Outreach Staff, TBLV's from around the state, Prison Braille Program, and Braille Transcribers.

Goals of the UEB Initial Implementation committee included:

1. 1) Discussion and completion of a proposed timeline to present to the Indiana Department of Education (IDOE) for approval that included: transcriber training and transcription rollout; teacher training; student instruction; and state assessments.

2. 2) Discussion and identification of other potential issues pertaining to UEB implementation. The IDOE reviewed and approved the proposed UEB timeline on September 29, 2014.

Timeline

The transition to UEB from EBAE in Indiana will be a six year plan, based on a school year calendar. It began with the 2013-2014 SY and will run through the 2018-2019 SY. Full implementation of the UEB is targeted for the Fall of 2018 and state assessments for the Spring of 2019.

Each local education agency (LEA), based on the approved state timeline, will be responsible for developing a plan for implementation of the UEB at the local level. The Indiana Educational Resource Center (IERC) will work closely with LEA's to best meet the educational braille needs of individual students.

Implementation of this timeline involves the collaboration of state and national partners and may change as state and national information changes or becomes available.

2013-2014 SY

- Transcriber training.

2014-2015 SY

- Transcriber training and certification.

- Statewide professional development for BLV Teachers and paraprofessional staff.

- January 2015
  IERC begins transcription of requests in UEB and/or UEB with Nemeth for the 2015-2016 school year for grades K-5.

- Spring 2015
  IDOE provides state assessments in EBAE/Nemeth.

2015-2016 SY

- September 2015
  Teachers begin UEB instruction for students in grades K-5.

- January 2016
  IERC begins transcription of requests in UEB and/or UEB with Nemeth for the 2016-2017 school year for grades 6 and up. IERC will continue providing EBAE/Nemeth for students in upper secondary grades not transitioning to UEB.

- Spring 2016
  IDOE provides state assessments in UEB and/or UEB with Nemeth as well as EBAE/Nemeth.

2016-2017 SY

- September 2016
  Teachers begin UEB instruction for students in grades 6 and up.

- January 2017
  IERC continues transcription of requests in UEB and/or UEB with Nemeth for all grades. IERC will continue providing EBAE/Nemeth for students in upper secondary grades not transitioning to UEB.

- Spring 2017
  IDOE provides state assessments in UEB and/or UEB with Nemeth and EBAE/Nemeth.

2017-2018 SY

- September 2017
  Continue UEB instruction as needed for remaining students, move in and transfer students.

- Spring 2018
  IDOE provides state assessments in UEB and/or UEB with Nemeth and EBAE/Nemeth.

2018-2019 SY

- September 2018 Complete UEB transition.

- Spring 2019
  IDOE provides state assessments in UEB and/or UEB with Nemeth.

UEB Training

Training will be provided by the PASS (Promoting Achievement for Students With Sensory Loss) Project, Blumberg Center, Indiana State University in collaboration with the Indiana Educational Resource Center (IERC) through 2015. Additional trainings after 2015 will be provided as needed.

• *UEB Ready? Introduction to Unified English Braille* (Fall 2014)

UEB Ready? Introduction to Unified English Braille will provide a comparison of English Braille American Edition (EBAE) and UEB. Teachers and staff will participate in a variety of exercises specific to UEB. This introduction is intended to educate and prepare teachers and staff in order to facilitate a smooth transition.

These trainings will take place in November at each of the five PATINS regional sites and at the Indiana School for the Blind and Visually Impaired (ISBVI). Teachers will earn five Professional Growth Points (PGP) for license renewal reflected on a Certificate of Attendance. Other staff, including paraprofessionals, will also receive a Certificate of Attendance.

• *UEB Ready? Introduction to Unified English Braille Webinar* (Fall 2014)

A webinar will be developed as a resource and for those unable to attend the regional trainings. This webinar will provide a general overview of UEB and the time frame for implementation. Webinar

participants will be given the opportunity to practice UEB exercises and will be provided information on additional training opportunities and resources.

• *UEB Ready?* **ListServ (Fall 2014)**

An e-mail discussion listserv has been created to provide a communication tool for teachers and staff to ask questions, share resources and strategies, and discuss important issues specific to the implementation of Unified English Braille (UEB). Transcribers, teachers, paraprofessionals, and other professionals working with students who utilize braille as their literacy mode are encouraged to participate.

• *UEB Ready? A Supported Independent Study* **(Spring 2015 - Summer 2015)**

The PASS Project in conjunction with Indiana State University is offering a 13-week training program via distance education utilizing Blackboard. Participants in the program will use Ashcroft's Programmed Instruction: Unified English Braille (API-UEB) as a guide to learning UEB. Participants who successfully complete the program will earn a Certificate of Proficiency reflecting 30 Professional Growth Points (PGP).

• *UEB Ready? Teaching the Transition* **(2015)**

This training is intended to provide strategies and resources to assist Indiana teachers and paraprofessionals working with students who are blind or have low vision, to teach the transition from EBAE to UEB. Certificate of Attendance reflecting PGPs will be awarded.

• *UEB Ready? Teaching the Technology* **(2015)**

Vendors will be invited to share information about technology that supports Unified English Braille (UEB). Participants will learn the capabilities of various devices and how to utilize these devices with students. Teachers will have the ability to make informed recommendations on the device(s) that will best meet the needs of students. This training is intended for Indiana teachers and paraprofessionals working with students who are blind or have low vision. Students and their parents will also be encouraged to attend.

• *UEB Ready? Teaching the Software* **(2015)**

In this training, participants will learn how to utilize the Duxbury Braille Translation software to become more efficient in their ability to transcribe and produce needed braille instructional materials in UEB. It is intended for Indiana teachers and paraprofessionals working with students who are blind or have low vision.