

Focus Group Research on the Implications of Adopting the Unified English Braille Code

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Abstract: Five focus groups explored concerns about adopting the Unified English Braille Code. The consensus was that while the proposed changes to the literary braille code would be minor, those to the mathematics braille code would be much more extensive. The participants emphasized that "any code that reduces the number of individuals who can access braille has failed to meet the goal of reading and should not be adopted, regardless of how elegant the code may be."

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This article is the first of three articles that will present the findings of research supported by the Braille Authority of North America (BANA) on the Unified English Braille Code (UEBC--also known as UEB). This article begins by presenting a list of the relevant research questions that BANA submitted to be addressed by focus groups of braille teachers, transcribers, and teachers of students who are visually impaired. Then, a brief description of the participants and structure of the focus group is presented, followed by a summary of the basic findings. Finally, the implications of these findings are addressed, along with concerns for further research on issues that are related to the adoption of the UEBC.

BANA developed an extensive list of concerns related to the adoption of the UEBC. The ones that are specifically addressed in this article include the following:

1. What are the tangible and intangible costs of implementing the UEBC, including the cost of transitioning to UEBC and the cost-effectiveness of the UEBC in comparison with current codes?
2. What impact will the UEBC have on the professional development of service providers, instructors, and transcribers?
3. What are the perceived advantages and limitations of implementing the UEBC, including the perspectives of current adult braille readers, children and youths who read or are learning braille, parents who want to learn braille, and service providers?

Some of the more specific questions that BANA posed addressed the content analysis of texts. These questions included the following:

1. What will be the effect of the UEBC on production issues, such as writing or computer embossing as far as time, amount of paper, and volumes needed, compared with the current codes?
2. What will be the effect for current transcribers on learning to transcribe the UEBC?
3. What will be the impact of the UEBC on the achievement of children in learning mathematics and science materials?

It was not possible to address all these questions thoroughly within the framework of this study, and as with many research

projects, many more questions arose that needed to be considered. We began the project by consulting with the members of the Research Committee of BANA. Next, we examined the publications *BANA UEBC Sampler 1* (2001a) and *BANA UEBC Sampler 2* (2001b), as well as the web site of the International Council on English Braille (ICEB): <www.iceb.org/ueb.html> for current information on the UEBC and earlier surveys completed by ICEB for the opinions of braille users in diverse countries regarding the UEBC changes to the English braille codes (see *UEBC Evaluation Report-Australia*, 1998; *UEBC Evaluation Report-Canada*, 1999; *UEBC Evaluation Report-Canada and the United States*, 1998; *UEBC Evaluation Report-Consolidated Worldwide*, 1999; *UEBC Evaluation Report-Japan*, 1998; *UEBC Evaluation Report-New Zealand*, 1999; *UEBC Evaluation Report-Nigeria*, 1998; *UEBC Evaluation Report-South Africa*, 1998; *UEBC Evaluation Report-UK*, 2000; and *UEBC Evaluation Report-USA*, 1999); for a review of these reports, see Bogart & Koenig (2005).

Method

Participants

To address the research priorities of BANA, five focus groups were developed. The groups consisted of professionals and adult end users who work with braille on a daily or weekly basis, including braille transcribers and proofreaders, teachers of students with visual impairments in kindergarten through the 12th grade, rehabilitation teachers of adults, and people who use braille as a primary reading medium in their personal and professional work (referred to as end users). Four of these focus groups were held in Minnesota, representing one large suburban school district, one urban cooperative district, one state braille production agency, and one end-user group comprised of local community residents. The fifth group was composed of the staff of a midwestern school for students who are blind. An

unsuccessful attempt was made to locate a sufficient number of braille-reading end users from areas of computer science, business, mathematics, and science for an additional focus group.

Of the 79 individuals who participated in the five focus groups (14 transcribers, 6 proofreaders, 19 end users, 56 teachers, and 5 other professionals who used braille), 22 fit into more than one category (such as a teacher and an end user, a proofreader and an end user, or a teacher and a transcriber); each group intentionally included individuals from more than one category. The participants in these groups were experienced in working together and had a good understanding of their various roles in braille teaching and production. Thus, these groups were "natural" groups that were already established to provide these services. The groups were in no way related to each other; the three school districts operate independently of each other. Two of them are known to use some, but not all, braille services from the same transcribing agency, and the third school district may do so as well. The school districts also hire their own transcribers for some of their braille needs. The transcribing agency operates independently of any school district. The demographic characteristics of the five focus groups are presented in [Table 1](#).

The teachers, transcribers, and proofreaders were seasoned professionals with a range of professional experience ranging from 7.0 years to 27.0 years (both teachers). The average range of experience for these groups was 15.5 to 18.7 years. The average number of years of braille reading for the end-user group was 23.2.

Data collection

The focus groups were structured to address the effects that adopting the UEBC would have on users and producers of braille materials. Each session began by collecting demographic

information from the participants on their professional involvement with braille, the number of years they had worked with braille, and the length of training required for their braille-related activities. The participants were also asked about the number of hours per week they spent reading braille for professional and personal purposes. For some participants, it was more appropriate for them to address how many hours they spent preparing braille for others or teaching braille to others. Survey research on teaching braille (Knowlton & Berger, 1999) found that knowledge of braille codes (including letters, numerals, contractions, and punctuation), rules of braille codes, and knowledge of newly adopted changes in braille codes are high-priority competencies for teachers of braille. The participants who taught braille were also asked whether their students were at a beginning, intermediate, or advanced level of braille reading and whether the subject matter of the instruction they provided was at a novice or introductory level, an intermediate level that assumes some prior braille knowledge, or an advanced level involving course work at the high school or postsecondary level.

After the demographic information was collected, the participants were presented with an overview of the UEBC containing 21 examples of braille text that were presented in the UEBC, the English Braille American Edition (EBAE), and the Nemeth code, as appropriate. The examples addressed changes in word spacing, whole- and part-word contractions that would no longer be used in the UEBC, period and decimal configurations, basic enclosure symbols, common typeface indicators, numeric symbols, basic signs of operation and of comparison, and computation formats. The examples were developed with consideration of the teaching of basic reading and mathematical skills and the primary needs of most braille students (Knowlton & Berger, 1999). The participants were also presented with the *Current UEB Symbol Lists* (2005) found on the web site of the International Council on

English Braille <www.iceb.org/uebsymb.html>. All the information that was presented to the participants was available in embossed braille, simulated braille, and large print, depending on the participants' preferences.

The previous evaluations of the UEBC (listed earlier) have explored individual evaluations of proposed changes to the codes and individual opinions about these changes. However, the impact of these changes on the production and use of materials in the UEBC, the implications for teaching the UEBC, and the relative advantages or disadvantages of the UEBC for end users have not been explored. The protocol presented to the participants emphasized that the participants were to "proceed with an assumption that the UEBC is approved." Thus, the participants were to consider what impact the proposed changes would have on current professionals who have been trained to work with braille codes; what level of retraining, if any, the professionals would need to continue their work; and who would provide such training. They were also asked to consider who would develop the curriculum to teach both school-aged and adult braille users, who would be competent to teach the curriculum, what level of competence these teachers would need to have, and how competence in the UEBC would be determined. In addition, the participants were asked to explore what training needs exist for adult professionals who regularly use braille. The focus group discussion protocol can be found in [Box 1](#). Each participant completed a written questionnaire containing the same questions as in the protocol presented in Box 1. The written survey forms were coded, and the responses were grouped for a more quantitative analysis of the concerns of the teachers, transcribers, and end users.

The protocol for the focus groups explored the participants' opinions as to whether a change in the UEBC should be made all at once or whether multiple codes should be available at the same

time during a transitional period, and how long a conversion period to full use of the UEBC might be. They were also asked to address the possible implications of adopting the UEBC on who may be taught braille, the way in which the code would be taught, the impact of the UEBC on students, and the potential curriculum for students. Did the participants expect these changes to have a greater impact on novice or advanced students? How long did they think it would take them, as teachers, to learn the UEBC, and how long did they think it would take a novice braille reader to learn it? As part of the inquiry, the participants were also asked to consider issues related to the conversion process.

The answers to these questions have important implications for how change is perceived by the professional community, the rate at which change can reasonably take place, and the success of any changeover. All the participants were asked to apply their professional expertise and knowledge to suggest a timetable for restructuring the production of braille and the teaching of the UEBC should it be approved.

Results

The findings of these focus groups revealed that the common element among the groups was that they were willing to go through the process of changing the braille code if the change would make the code better for end users. The general consensus of the focus groups was that the proposed changes to the literary braille code are minor and will result in only a slight increase in the length of passages. However, the changes to the mathematics braille code will be of a much greater magnitude and will result in much longer passages that will result in "greater formatting problems, longer translations, more volumes for each book to be translated, and a greater cost for production." Although the concept of writing the code was discussed only peripherally, it was raised as an issue, for this code "would not only be more

difficult to read, it would also be more cumbersome to write." The specific issues that were raised by the transcribers are listed in [Table 2](#), and those raised by the teachers are listed in [Table 3](#).

The comments of the braille-reading end users (more than half of whom were also teachers or transcribers) mirrored many of the comments of the teachers and transcribers. The end users were reasonably confident that, as a group, they could master the proposed changes to the literary code within six months. They were also confident that mastering the changes to the mathematics code would take about one year, if they "bothered" to learn them. Some of these participants were in high school when the Nemeth code was introduced and chose not to learn it. Since they had been able to pursue professional lives without traditional mathematical instruction, they doubted that they would need to learn the new mathematical code. They raised the question of whether high school students would ever become fluent in the new mathematics or computer code unless they used it daily for an extended period of time.

All the end users were emphatic about one final point: They did not need to know everything that appears on a print page--the font style or the font size, the color of the type, or the color of the paper. EBAE provides one symbol (dots 4, 6) to indicate bold, italic, or underlined text. The UEBC provides unique symbols to indicate italics, boldface, and underline, as well as other type forms. They stated that bold-face type, italics, and underlining are important only when they add emphasis and, as a result, specific information about the content of the material. In many instances, the participants thought that less information was better. The end result was that they thought it is not a good use of space on the braille page to have additional indicators that are superfluous.

These comments from the professional users of braille suggest that any change of the magnitude of the UEBC will have a major

impact on the learning and teaching of braille that will last far into the century. The participants clearly stated that any changes to the code that would make braille more difficult to read would not be in the best interest of the current population, many of whom could be greatly hampered by learning a code that these professionals considered to be more complex. The teachers reported that today's population of braille readers have significantly higher levels of learning disabilities, cognitive impairments, and physical disabilities and include a greater number of English-language learners. The consensus of the group was, "It doesn't matter how elegant the code is, if it ultimately reduces the access to braille materials by reducing the number of individuals who can access it, then it has failed to meet the goal of reading and should not be adopted."

Limitations of the study

The findings of the focus group study, while informative, have several limitations. Geographic representation among the groups was limited, since only two midwestern states were included. Attempts were made to include other groups on the East and West Coasts of the United States, as well as in Canada. However, time constraints and available resources did not permit the authors to expand the study to these areas. Service providers in urban and suburban areas are represented, as are those in more rural areas. However, different states have different models for providing braille and teaching students with visual impairments. Additional studies that include different models of service may provide further clarification.

Furthermore, the study lacked input from professional braille users in the fields of mathematics and computer science. Such individuals might have provided a unique and different perspective on the implications of the adoption of the UEBC. However, they are a limited group of all braille readers, and it was

difficult to locate a group large enough to participate in a focus group. Although finding such a group of end users would be a challenge, the group could provide valuable information.

Collecting data from focus groups for the UEBC was time dependent. The UEBC project has been under development for over 13 years. During that time, changes have been made in the proposed code, the most recent of which were made in spring 2004. It is difficult to conduct definitive research on a target that keeps moving. Although most of the participants in these focus groups had some prior knowledge of the UEBC, the amount of prior knowledge was variable and was not controlled in this study. Some responses could have been influenced by prior knowledge. It is not known what version of the UEBC a participant might have known before he or she received the overview presented at the beginning of each focus group.

Implications for further research

The professional opinions of the teachers, transcribers, and end users who participated in the focus groups indicate that changes to the braille code of this magnitude will take at least 20 years to be implemented if they are made. Such changes need to be made with wisdom and forethought that considers the diversity of the users and the available resources for producing and teaching braille to avoid an acrimonious struggle, such as the one faced during the first half of the 20th century regarding the changes to the currently used English Braille Code (Irwin, 1955). Although the findings of this study provide valuable information on the opinions of a randomly selected group of teachers, transcribers, and end users of braille, they were limited. They represent the best judgments of the participants on the issues that were addressed. Such information, while useful, needs to be supported by data from additional research.

Directions for further inquiry include studies of braille reading and writing that examine reading and comprehension rates for mathematical material, including basic calculation and algebra--subjects that students with visual impairments frequently study and ones that are required for high school graduation. There is also a need to examine the fluency of writing and computation in braille. How useful and efficient is the code for the end user? In the realm of braille production, research is needed to address the anticipated changes in the cost of braille books caused by an increase in the number of braille pages; the relationship, if any, of a greater length of text to the length of braille transcription, depending on the content, subject matter, or grade level; and the implications of the UEBC for producing charts, diagrams, and maps if they are part of a book. Finally, information on the ease of learning braille for novice and experienced braille readers would be useful. Comparisons of the length of UEBC and EBAE texts are addressed in the second article of this three-article series, and some questions related to mathematics and literary braille reading rates for the UEBC are explored in the third article.

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