JVIB

August 2006 • Volume 100 • Number 8

Literacy & Controversy: Focus-Group Data from Canada on Proposed Changes to the Braille Code

Elaine Gerber and Brooke C. Smith

Abstract: Focus-group research conducted on Unified English Braille highlights the diversity of views about the desirability of the new code and its proposed changes. Many features seen by students as positive were the same features deemed undesirable by other students. In general, teachers were more amenable to the changes than were students. Nearly all participants expressed serious concern about the effect of the new code on current students and on adult braille readers. Issues were raised about the feasibility of instituting the new code as well, and about how closely braille needs to be wedded to print. With many constituents opposed to altering the braille code, this research explores questions associated with the controversy over instituting the proposed changes.

The Policy Research and Program Evaluation Department at the American Foundation for the Blind (AFB), acting as consultants for the Canadian Braille Authority (CBA), conducted 13 focus groups throughout Canada to assess the perceived advantages and disadvantages of Unified English Braille (UEB) for teachers and students. UEB (which was known as UEBC--Unified English Braille Code--at the time of the research) brings together literary, mathematic, and computer notations into one braille code. In the United States, Canada, and New Zealand, UEB would include the rules and symbols of English Braille, American Edition 1994 (EBAE), the Nemeth Code for Braille Mathematics, and the Computer Braille Code. Because there is opposition to instituting a new code, as well as differences over the form it should take, the research presented in this article explored both the barriers to and benefits of UEB as seen by

groups of teachers and students in Canada. The focus groups sought to elicit the views of participants on how best to overcome obstacles if UEB is to be successfully implemented in Canada, and to gain a sense of the issues, explore the depth of feelings about the change, generate lists of problem areas that might arise with the introduction of a new code, and identify strategies for best accomplishing the transition.

Proponents of UEB believe it will facilitate braille literacy, because it is "simplified": Students are required to learn only one code, rather than three, and each braille symbol represents only one expression. Anecdotal evidence suggests that the need to learn separate codes has deterred students who are blind from pursuing math, science, and computing careers. By not demanding that students learn separate codes for math and computing, proponents hope that "academic" students (those learning contracted braille and keeping pace with the curriculum of their sighted classmates, as distinct from students who have functional literacy, or read uncontracted braille exclusively) and adults will be able to integrate more math, science, and computing discourse into their reading and writing, and therefore become more fluent in these areas, whether or not they specialize in them for their careers. Another suggested benefit of unifying the codes would be to support international exchange: the seven English-speaking countries--Australia, Canada, New Zealand, Nigeria, South Africa, the United Kingdom, and the United States--that are considering the adoption of UEB currently do not use the same sets of codes for math, science, and computing.

By contrast, detractors argue that simplifying the code will actually decrease literacy. Because each braille symbol refers exclusively to one object being referenced (what linguists term the "signified," in contrast to the "signifier," that is, the symbol or coding for a particular object) with no repetition of symbols, writing in the code would become longer and, therefore, reading speeds may decrease. While both proponents and detractors

raise legitimate concerns about the effect on readers making the transition from the current codes to UEB, detractors fear that introducing changes would deter young adults from learning braille entirely or from pursuing math, science, and computer careers because they would need to a new code to do so.

Since these data were collected, the CBA has agreed to take the leadership role with respect to UEB in Canada and has initiated a national implementation plan. However, the issues presented here maintain their saliency for other countries considering adoption. Many consumers, administrators, teachers, transcribers, and braille users in the United States and other countries are interested in the perspectives of consumers and are eager to see the impact of the new code before considering it for adoption. The controversy surrounding UEB propels Canada to the status of a "living laboratory"; there are lessons to be learned for other countries, particularly regarding implementation and consumer acceptance.

Methodology

Since the goal of this research was to understand the breadth and scope of the issues surrounding the proposed changes to the braille code rather than measuring the frequency of particular opinions on the subject, qualitative methods were selected (Denzin & Lincoln, 1998; Strauss & Corbin, 1998). Further, qualitative methods have been found to be successful in collecting an emic or "insider's view" from the group being studied (Patton, 1990; Pelto & Pelto, 1978; Spradley, 1980) and thus have strong validity. Qualitative methods are also well suited to probing for information about sensitive issues (Scrimshaw, 1990). These last two considerations--of validity and of sensitivity to code changes--made the use of focus groups the method of choice for this study. Furthermore, qualitative methods are appropriate when there are few respondents, when cost constraints prohibit gathering data in other ways, and when one is seeking viewpoints of targeted populations.

AFB's Policy Research and Program Evaluation department was hired by CBA to conduct telephone training of teachers in Canada; these teachers then served as moderators of the focus groups in their home provinces. While this method had its drawbacks (as noted in the following paragraph), it enabled the research to be conducted quickly, with minimal cost, and across a geographically dispersed region in Canada. Participants were recruited by administrative coordinators identified by the CBA. In addition to Braille Authority of North America (BANA) samplers, participants were provided a document prepared by CBA that outlined UEB. (The first of two BANA samplers includes 11 short braille samples, mostly ordinary text with some technical symbols, the final sample is basic algebra. Sampler 2 contains six samples emphasizing advanced technical areas, including spatially arranged computation, algebra, calculus, teaching materials, computer notation, and chemistry. Readers may download the samplers from: <www.iceb.org/ubcbhdr.html>.) There were a total of 13 focus groups, involving 85 participants (49 teachers and 36 students). Two focus groups (one of teachers, one of students) were conducted in each of the following provinces: British Columbia, Alberta, the combined Nova Scotia and New Brunswick region, Manitoba, and Saskatchewan; in addition, one teacher and two student groups were formed in Ontario. The Saskatchewan groups operated by phone; all others were done in person. Each focus group lasted two hours, and all were audiotaped and transcribed. The transcripts were analyzed using standard qualitative coding methods, with two researchers reading and rereading the transcripts, and then comparing notes to ensure reliability of the analysis.

In addition to the limitations common to focus-group research, the design of this project raised other considerations. There were concerns the data might be skewed toward being favorable toward UEB: a) because there may have been selection bias--since the student participants were recruited by their teachers,

they may have been seen as being "favorable" toward UEB, or at least "neutral"; b) because the teachers of student participants conducted the groups, some students may have been hesitant to voice dissenting opinions; c) because teacher-participants may have felt pressured to appear to be pro-UEB, since they knew members of CBA. (As reported in this article, pro-UEB bias was not revealed in the data.) In addition, the groups were led by teachers, not professional moderators. Although classroom management skills have much in common with the skills necessary to lead focus groups, it is possible the lack of professional facilitators affected the quality and reliability of the data. Moreover, groups in each province were conducted by a different moderator; in effect, then the moderator became a variable (rather than a constant). Finally, AFB researchers were not present during the groups, nor were they provided with the audiotapes; thus, they could not consider factors such as tone of voice.

Findings

STUDENT PERSPECTIVES

Negative features

Students expressed both positive and negative opinions about UEB. Much of their negativity can be read as general resistance to change--considering how much they had already invested in learning the different codes and how much was at stake (that is, graduating, going to college). Students stated they did not want to have to relearn their "whole world" and found many individual aspects of the code unfavorable. Their responses, rooted in technical dislikes, were impassioned and extremely emotional. For example, they "didn't like math in the upper case," and generally disliked UEB math notation, which they said was confusing. One student said, "Math is already hard enough on blind people. So to add this on top of that would make it so stressful! . . . We shouldn't have the symbols be barriers." These students did not consider the current system to

be confusing, hence they did not find it in need of change. By contrast, other students for whom the Nemeth code was difficult and who, therefore, had never learned it fully or at all, viewed the changes in the code positively.

Students expressed great apprehension when contemplating the process of "transition" in which they, as current readers of EBAE, would have to begin using the new code. They noted that it was harder for older students and adults to learn new things than it was for children. These misgivings were present even for participants who saw positive aspects in the new code. They anticipated difficulties in having to relearn a code and being required to read both the old and new codes during a transition phase. One student said, "It would make me sick. It would make me so dizzy! The words would just swim in front of my face and eyes and I wouldn't be able to read it and I would be so dizzy, I would throw the book across the room and give up on reading altogether!" Other students also felt they would get "mixed up" when switching back and forth between EBAE and UEB.

Students believed learning a new code would be a deterrent to further study, especially when it came to advanced math. As one student put it, "With the new math code, God willing, I will never do math again!" Nearly all students hoped they would be finished with their math studies before the new code was adopted. But if it were to be adopted, they expressed their preference for all materials to be in UEB because it would be too confusing to have to remember both codes. One student said, "I could see it freaking me out! You want me to go to university and learn this whole new code after learning like 13 years of this old code and you want me to switch? I'd want to burn some books!"

The students' responses were emotional, but nuanced, and reflected an insider's knowledge of braille. For example, they were aware that UEB would take up more space than existing

codes. Larger, longer books, they noted, would take more time to read (as well as being more expensive to produce and purchase, weighing more than other braille books, and requiring more storage space). They compared the resulting increased reading time to the differences between reading uncontracted and contracted braille. Students also felt that writing in UEB would be harder and take longer. Moreover, they asserted that "braille is braille," "its own language," and doesn't need to look like print. As a result, they preferred just one type of bracket (as compared to square, curly, and curved brackets that appear in print and would be used in UEB). Students considered many changes in UEB to be "little extra steps, unnecessary steps," and stated that there was no need to "indicate all these little things." Even self-identified "good" braille readers were confused by certain aspects of the new code (for example, expressions of fractions, and the multiplication sign), although these opinions may have reflected their lack of experience with the signs. One student from British Columbia said, "Some of the math symbols are more than one cell and it's really confusing. I know there are some in Nemeth [code] now, but it's not as frequent."

Positive features

Because UEB is more like print, some students felt they could transfer their knowledge of written language from computers or audiotapes or spoken language (for example, computers read ellipses as "dot dot dot"). The correlation between certain features of UEB and standard print usage--for example, the italics sign, directional brackets, and one symbol having just one meaning--were viewed favorably by students. They suggested that UEB could be easier for new readers to learn and for sighted people to teach, and it could better facilitate interaction among students in integrated environments. Students appreciated that the symbols were not dependent on context. Some felt the learning process would "move a little faster" since there were fewer rules to written expression in UEB. They also felt that less redundancy would make computers less confusing,

because currently, "a character can mean three different things." A number of technical details were seen as positive: capitalization; the separation of the symbols for *and, for, of, the, with,* and *a;* ellipses, bold, bullets, and brackets; the possibility that UEB would help with spelling; and the manner in which web sites are interpreted by electronic braille devices.

Many students mentioned that they had easier access to computer notation with UEB. One student who had not learned computer braille could read most of an excerpt represented in UEB. This is a noteworthy finding, since Computer Braille Code is one of the least taught codes, yet its content is becoming increasingly important to daily life. Students who anticipated being able to read computer code with UEB explained that they already knew the lettering, so they would just need to learn the new symbols.

The students felt that UEB might increase access to math, science, and computing by not requiring students to learn separate codes. Some explicitly stated their appreciation for not having to learn Nemeth code if UEB was instituted: "Some blind people that read braille find math hard anyway because there's so much to do. So this is just going to lessen the hassle of what you have to learn . . . without having to learn Nemeth [code], then, yeah, this is easier."

Finally, from an international perspective, the fact that braille would be unified throughout the world was frequently mentioned with appreciation. These students were excited to know they could study abroad or read materials from different countries with UEB.

In sum, many of the desirable aspects of UEB mentioned by students were exactly the same features that seemed undesirable to others. This divergence suggests their opinions are based on a number of factors that affect their overall outlook, such as an individual's general open-mindedness, comfort level with all codes prior to reviewing the samplers, and personal familiarity

with the rationale underlying the proposed changes.

TEACHER PERSPECTIVES

The teachers' views echoed much of what was expressed by the students. Teachers' opinions also seemed to reflect their attitudes toward change, their prior knowledge of or exposure to the rationale behind the proposed changes, and their level of experience with Nemeth code and computer braille. Even teachers who did not like UEB felt it would ultimately be easier to teach, as there would be less to remember (for example, new numbers, separate codes). Those who did not look favorably on UEB nonetheless said they would learn it and teach it, so long as it was shown to benefit students. One professional explained, "We're here to teach reading, not a code, so whatever it is, we'll teach it and they'll learn it." Teachers cautioned that teacher training and other resources would be necessary since, even now, many teachers and transcribers are not as knowledgeable as they should be of existing braille codes. Most of the teachers' comments, both for and against, reflected their impressions of how UEB would affect students.

Teachers also believed that changes in the literary code would not "really make that much of a difference." They felt that individuals who had been reading braille for 10 years would be able to adjust and learn this new code, even without instruction (much the way adult EBAE readers can read BAUK [a code used by the Braille Authority of the United Kingdom] and understand differences based on the context), and that learning a different code would not be an issue for new readers. Most of the teachers' criticism was reserved for changes in the math code and multiple-cell symbols.

Negative features

Teachers maintained that their students like anything that makes reading faster (for example, contractions)--proficient braille readers prefer to use as few cells as possible. Embedded

contractions were not regarded as problematic. Some teachers who favored the concept of a unified code had questions about the need for it to be wedded to print rather than functioning as its "own language." They felt that specifying differences in highlighting (for example, italics or bold) and brackets merely added bulk to braille and did not offer readers much benefit. Teachers were very concerned that longer code would be equated with larger books, slower reading times, and more expensive reproduction. As one teacher described her experience:

> Being in a class with students that can see, braille readers were always the slowest readers in the class. And when you're sitting with your peers, you want to be as fluid as possible. . . . So if it takes that extra split second to get from the "for" to the "a" with that space in the middle, and you're reading that space, you've lost a little bit of speed.

Although eliminating the "clustering" of these small words was generally seen as favorable, this comment illustrates the trade-off between matching print and reading speed.

Teachers felt strongly that switching from single-cell to double-cell symbols (for example, plus and minus signs) was likely to be a problem. It would be too bulky, and would make math more difficult for elementary students. The teachers from Manitoba were keenly against the new code; they were ardent Nemeth code users and felt the changes favored literary code users. In making the literary changes, "you are taking things out," removing confusion, "but in math, you are adding them and therefore making it harder," said one teacher. One specific critique of the changes to mathematical code involved the elimination of spatial layout (that is, keeping the 10s and 1s columns in line). These teachers saw the changes as reflecting print more than a "functioning and understanding of math." This group, in particular, felt the new changes would obstruct mathematical operations, and feared they would have a negative effect on students' ability to learn, particularly in higher math. They also were concerned that students doing research would need to use the old code.

Overwhelmingly and universally, the greatest concerns of all teachers involved students making the transition from existing codes to UEB. Although UEB might be easier for new readers to learn, they argued, it would be much harder on those making the transition, on students with multiple disabilities, and on older adults. Teachers were especially concerned about the transition of students currently taking math and science in junior high and high school, and they preferred a long transition for these students. Changes in the literary code, they felt, would have little effect on students. One teacher explained, "The older kids, they're going to be really difficult. And it has nothing to do with if it's good or not good, just the opinion I got from them, the ones that I overheard were loud and clear. They were not too happy about it." Some teachers cautioned that UEB would be perceived as "too hard," giving teachers an excuse not to teach braille, and fortifying students' resistance to learning it.

Teachers felt that mastering a new code while keeping up with academic subjects would be a lot to expect of students, and that having to do so might deter students from pursuing these subjects. Teachers recommended ample transition time for students currently using Nemeth code to ease the introduction of the new code. Although they acknowledged that students with learning disabilities could benefit most from the changes, teachers expected the transition to be hardest on this population. Furthermore, many teachers noted that this group (that is, students with learning disabilities who use contracted braille) is extremely small: most of their students with learning disabilities read and write uncontracted braille exclusively, so the changes would not dramatically affect them.

Although teachers were universally concerned about the transition, opinions differed about the solution. For example, some teachers said they did not want a gradual transition. They wanted to make sure "the environment is rich with the code [the students] will be using for the rest of their lives." These teachers

favored a process of "total immersion," and they were concerned that there would not be adequate materials available in UEB to facilitate this step. They noted that, in the current system, books often come out years behind curriculum changes, and some schools have to wait several years or longer for the new braille books because their districts cannot afford them. In addition, they pointed out that teachers transcribe a lot of materials themselves for young readers; braille transcription is still really a "cottage industry."

Teachers also feared that professionals close to retirement might resist learning UEB. Similarly, they were concerned about an already existing shortage of teachers and transcribers (specifically, younger ones).

Positive features

The international benefit of being able to share books and technology and the opportunity for cross-cultural study was considered a positive aspect of UEB by all teachers. They felt that a unified code would open doors for additional upper-level scientific and mathematical research on an international level.

The teachers were pleased with the idea that UEB symbols would do away with duplication, in which a braille symbol has more than one meaning depending on the context in which it was used. For example, they agreed that using the same bracket symbol for both literary and mathematical codes would facilitate learning. There are other features of the code that all teachers found appealing: "upper numbers," fractions, capitalized passages, spacing between single-cell and whole-word signs (for example, *and*, *for*, *of*, *the*, and *with*), and symbols (such as the "at" sign in e-mail addresses, the dollar sign, periods, dots, and ellipses). There was consensus even among teachers who were not generally in favor of code changes that these were positive qualities. Teachers felt these changes would help younger readers, readers struggling to learn braille, beginning computer users, adventitiously blinded students, students with multiple

disabilities, and sighted parents and teachers.

There were many teachers who felt the changes in math symbols might make reading simpler and benefit those having trouble with braille. As one teacher explained, "It eliminates one system of braille that they wouldn't have to worry about trying to master on top of everything else." The way in which UEB could make math easier at an earlier age was highlighted by another teacher as follows: "If they come in and learn their numbers with you, then they can come to their math class and apply those numbers, instead of learning their numbers in a literary context and then coming to another class, and being told, 'No, you have to drop all of those in the cell. . . .' "

In general, these teachers liked the concept of a unified code. They felt the adjustment to the new code could be difficult, but saw it as manageable in that there would be very little relearning involved for most students. The teachers also thought that, because UEB might be easier to transcribe, more materials might eventually be available. Finally, they requested that, prior to adoption of the code, additional research be undertaken to determine its measurable impact on students over a period of time, and the extent to which it would be more beneficial than the current system.

Split issue: Like print

Although teachers liked the idea of a unified code, many questioned whether it needed to be wedded to print, suggesting that there might greater utility for people who are blind if braille were considered to be a language of its own. This issue was mentioned explicitly regarding italics, bold, underlining, and different types of brackets. One teacher echoed student sentiment about these features: ". . . Braille users don't care about [visual presentation on the page]. It's not [important] to discriminate between all the different types of brackets. . . . A bracket [is] a bracket."

On the other hand, teachers saw potential benefits in the code being matched more closely with print. UEB would, for example, better enable braille readers to format bibliographies, résumés, and similar documents, and might help to improve students' spelling. Moreover, teachers saw this as an equality issue; they stressed the importance of their students not "missing anything" to which sighted students had access. On a practical level, those who liked the inclusion of italics, bold, underlining, and brackets or parenthesis in UEB also felt the new code reflected computer discourse and was closer to "e-text."

Feasibility

The specific feasibility concerns that participants identified are not elaborated here. (Readers interested in a full list of those concerns and suggestions should contact the Policy Research and Program Evaluation Department at AFB.) In general, concerns revolved around the following topics: access to and cost of equipment (including the need to update expensive hardware and software); production costs (that is, new books in both codes, longer books); costs of teacher and transcriber training; availability and timeliness of texts, materials, and resources (including resources for teaching UEB, samplers, etc.); pre-implementation needs; transition issues; stakeholder input; adoption/uptake strategies; and instructional strategies.

DIVERGENT OPINIONS

The two Saskatchewan groups diverged from the other groups of teachers in that both were unanimously positive about UEB. The Saskatchewan teachers were, by far, the most positive of all the teacher groups. It is difficult to know whether there are reasons specific to the locale that make Saskatchewan unique, or whether this just happened to be a collection of individuals whose views were uniquely in harmony.

Factors that may account for this phenomenon substantiate a

more general interpretation suggested by the current research analysis. That is, if research determined that prior knowledge, for example, is a predictor for the acceptance or rejection of UEB, then increasing public awareness about the benefits of UEB and disseminating more educational materials about it could be made part of the implementation plan.

Discussion

In preparing for implementation of UEB, a clearer rationale, more information about the importance of the code change, more time to adjust to the change, and more "positive messaging" would be useful. One means of conveying this positive message might be to focus on the international benefits of UEB. However, to use this argument as a main selling point could be misleading. UEB has been accepted for international use, but that does not guarantee that individual countries' Braille Authorities will adopt it. Although CBA has established an implementation committee, as of April 2004, there was still resistance to the process by consumers. In addition, as of April 2006, the Braille Authorities of four countries were still in the process of implementing UEB: Australia, New Zealand, Nigeria, and South Africa. Other countries--the United States, the United Kingdom, and Canada--are in various stages of consideration. In the United States, the two major consumer groups (the American Council of the Blind and the National Federation of the Blind) are opposed to UEB, making it unclear whether the United States will ever adopt it. In addition, many technology companies are based in the United States, and without their participation, the new code might not have as broad an effect internationally as expected. It is ironic that one of the most appreciated aspects of the new code could be one that is least realized in practice.

Equally as important are issues raised by the findings with respect to logistical concerns. Much resistance was shaped by feelings that transition to a new code would be excessively

costly and require a misdirection of limited funds, given other priorities. Therefore, full and successful implementation would be unlikely. Canada's success in managing the transition could sway perceptions about UEB, both at home and abroad. Specifically, the ability to transcribe materials in a timely manner is central, and is a concern worth analyzing closely if the adoption is to be effective.

One way to evaluate the advantages and disadvantages of implementing UEB is to ask whether the perceived benefits for the majority outweigh the predicted costs to the minority. Many braille users (for example, those using braille for activities of daily living, older people who have recently lost their vision, and students who are learning disabled or have multiple disabilities) use only uncontracted braille. This group would remain largely unaffected by the adoption of UEB. There are also a great many braille readers who primarily use the literary code. These people would not be affected negatively by changes to the code, and they represent the population with the greatest potential to benefit from changes (since they could access math and science braille with the code they already know). The population that would be most affected, and perhaps negatively so, are professionals in math, science, and computing fields, as well as students preparing to enter those fields. Overall, this is a fairly small, but intensive, group of users.

Finally, attention must be paid to the issue raised by consumers' general perception of the new code as undesirable. Following the trend in blindness services, away from a charity model toward one of civil rights or civic engagement, it seems that consumers' decisions about what is best for themselves should carry weight in such a momentous decision. Administrators (including many who are blind themselves) are now in the difficult position of wanting to do what they feel is best for the majority of their constituents, while also seeking to respect consumers' opinions in policy decisions. In the authors' opinion, what is at stake here is really an issue of cultural fluency.

Language always changes to keep up with the times, and as math, science, and computer discourses become increasingly part of our everyday lives, braille readers need access to this information.

Directions for future research

Although some of this work has been done or is currently underway, given the importance of the impact of the change to UEB, the following proposals for additional research are offered: *Measure actual reading rates for the different codes.* Future research could certainly help determine if the new code, by virtue of its double-cell bulk, actually slows reading for different types of users, and by how much (see Steinman, Kimbrough, Johnson, & LeJeune, 2004). *Examine whether students will learn UEB as easily as EBAE, whether it takes less time to learn (and how much), as well as whether the double cells pose barriers to learning (and, if so, how much).* Literacy research has not yet determined whether the double cells will be read as "one cell" once familiarity with the symbol has been mastered. *Investigate differences in space count. Ascertain whether people could learn the code without instruction* (for example, by giving them passages and seeing if they can figure out unknown symbols from the context). *Estimate the sizes of different populations of braille users* (the number of high-level mathematicians, the number of exclusively literary braille readers, etc.). Scant data exist on the number of braille readers, particularly in the United States, with the exception of children. *Explore additional changes to the code, particularly ones that could mitigate some of the problems with UEB. Research the true feasibility of instituting the new code, with attention to the current infrastructure for braille:* teachers' knowledge and training; availability of transcribers and their training needs; costs of equipment, materials, and technology; lack of or delayed materials; costs to update equipment. *Measure the "uptake" of UEB (that is, ease of learning, reading rates, desirability) in actual settings, creating a true comparison*

between similar groups of non-braille users (that is, people without prior knowledge of EBAE). Compare evidence from other major structural, systemic changes using precedents from "transitional generations" or dual systems maintained throughout a lifetime; for example, the previous transitions in braille code in the 1930s and 1940s, the adoption of the metric system, and the transition in currency to the Euro in European countries.

Conclusion

The research presented here explored the perceptions of students and teachers of the benefits and possible challenges in the transition from EBAE to UEB. Overall, results indicate that users will adapt to the changes if the code is shown to have true benefits for braille readers. While a committee has begun planning for the implementation of UEB in Canada, the transition period there could serve as a living laboratory for other countries considering adoption (as could data from the experience in Australia). Close attention should be paid to transcription issues, to learning curves and reading rates, and to consumer response. This information will be useful for other braille authorities. It may also validate one of the strongest findings of the present research: that both teachers and students would be willing to make the change if there were tangible benefits in terms of reading speed, better access to literacy, and greater inclusion for people who are blind or visually impaired.

References

Denzin, K., & Lincoln, Y. S. (1998). *Collecting and interpreting qualitative materials*. Thousand Oaks, CA: Sage.

Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: Sage.

Pelto, P., & Pelto, G. (1978). *Anthropological research: The structure of inquiry*. New York: Cambridge University Press.

Scrimshaw, S. (1990). Combining quantitative and qualitative methods in the study of intra-household resource allocation. In B. L. Rogers & N. P. Schlossman (Eds.), *Intra-household resource allocation: Issues and methods for development policy and planning*. Tokyo: United Nations Press.

Spradley, J. P. (1980). *Participant observation*. New York: Holt, Rinehart & Winston.

Strauss, A. L., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Newbury Park, CA: Sage.

Steinman, B. A., Kimbrough, B. T., Johnson, F., & LeJeune, B. J. (2004). Transferring standard English braille skills to the Unified English Braille Code: A pilot study. *RE:view, 36*(3), 103-111.

Elaine Gerber, Ph.D., *assistant professor, Department of Anthropology, Montclair State University, Normal Avenue, Montclair, NJ 07043; e-mail: <gerbere@mail.montclair.edu>.*
Brooke C. Smith, M.Ed., *senior research assistant, Policy Research and Program Evaluation Department, American Foundation for the Blind, 11 Penn Plaza, Suite 300, New York, NY 10001; e-mail: <bsmith@afb.net>.*

Previous Article | Next Article | Table of Contents

If you would like to give us feedback, please contact us at jvib@afb.net.

Please direct your comments and suggestions to afbinfo@afb.net