Gaining Access to Textbooks for Postsecondary Students with Visual Impairments

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Abstract

This article reports the results from a national survey of experiences in postsecondary education of students with visual impairments in gaining access to textbooks. Participants were members of listserves sponsored by the student affiliates of the American Council of the Blind and the National Federation of the Blind. While the majority of students were successful in gaining access to their textbooks in formats they could use, a greater number reported delays in procuring textbooks. National accessible textbook providers such as Recording for the Blind & Dyslexic, http://www.bookshare.org, and the National Library Service for the Blind and Physically Handicapped influenced the ways in which respondents gained access to textbooks. Respondents called for quicker access to textbooks, differing formats for electronic versions, changes in how electronic texts are structured, and improvements in service delivery related to textbook conversion for offices serving students with disabilities and publishers.

Although hailed as landmark legislation for people with disabilities, the Americans with Disabilities Act (ADA, 1990) does not require book publishers to provide accessible formats of books for individuals with print reading disabilities. Internationally, the DAISY Consortium's (http://www.daisy.org) members work to promote global access to printed books produced by libraries, publishers, and governments. The most recent reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) mandates that publishers provide electronic copies of textbooks to K-12 students. The National Instructional Materials Access Standard (NIMAS) (http://www.ed.gov/policy/speced/guide/idea/idea2004.html) has been published in the *Federal Register* to provide guidance on the production of accessible instructional materials for K-12 students, but no such federal bill currently exists for students in postsecondary education.

Several states have recently passed textbook legislation for postsecondary institutions (S. Noble, personal communication, September 29, 2003), including Kentucky and New York. In these states, postsecondary students with print disabilities are provided electronic versions of their textbooks for college courses. The U.S. Office for Civil Rights has found that universities struggle to provide timely access to textbooks for students with print disabilities (http://www.ed.gov/ocr/), and many of its findings are mirrored by the results of the current study. The American Association of Publishers recently announced the formation of the Alternative Formats Solutions Initiative to address the needs of print-disabled postsecondary students in accessing course materials (http://www.publishers.org/press/releases.cfm?PressReleaseArticleID=321; Kessler, 2006).

Despite these promising developments, since postsecondary education publishers are currently not mandated to make textbooks accessible on a national level, the responsibility for providing alternate formats of textbooks falls on the shoulders of offices for students with disabilities (OSDs) at the university or college level. OSDs or the students requiring the accommodation can request book titles from publishers. The practice of alternative formats is not yet widespread, and many publishers provide electronic files in formats

not useable by people with vision loss (Lingane & Fahnestock, 2003).

Lewis and Farris (1999) reported that approximately 55% of postsecondary institutions enrolling students with disabilities in 1996-1998 provided books on tape. Increasingly, they are steering away from providing students with print disabilities live readers or audiocassette versions of textbooks (B. McMurray, personal communication, October 15, 2003). Instead, OSDs employing optical character recognition software (Higgins & Raskind, 1997) to recognize images of pages from textbooks scanned in by optical scanners (Edwards & Lewis, 1998; Raskind & Higgins, 1998). Previously edited electronic versions of textbooks are given to students to read in various ways including via the World Wide Web, diskette, or CD-ROM (Homey & Anderson-Inman, 1999). In a survey of OSDs, Michaels, Pollock, Morabito, and Jackson (2002) found that 83% of the respondents possessed scanners for text conversion.

OSDs wishing to scan textbooks instead of recording them onto cassette must invest in a considerable amount of equipment and must designate staff to scan books and edit the subsequent files before students can retrieve them. Since implementing such a program can strain already tight budgets, scanning textbooks can be a daunting task, especially for many smaller colleges (Michaels et al., 2002). However, the Office for Civil Rights has continuously upheld colleges and universities' responsibilities for accommodating students with print disabilities (Senge & Dote-Kwan, 1998).

Surveying college students with visual impairments at 18 postsecondary institutions in California, Senge and Dote-Kwan (1995) found that the majority of OSDs required two to six days to produce alternate formats of requested documents. When students requested braille, the delay in document production was longer than seven days. Eleven out of the 18 universities surveyed reported that electronic texts were not available at all. Although this study cannot be generalized to the nation, it illustrates that a clear gap exists between student needs and what OSDs are able to provide.

Because reading assigned materials for courses in college is an important part of class participation and contributes significantly to comprehension of course content, students with visual impairments who fail to gain appropriate access to their textbooks may suffer academically. McBroom (1994) conducted telephone surveys with 102 college juniors and seniors with visual impairments. McBroom noted that gaining access to textbooks and other printed materials such as diagrams was one of the students' biggest challenges. A majority (59%) of McBroom's respondents used sighted readers to gain access to classroom materials. Over one third (38%) used magnification devices to enlarge regular print materials. Brailled and large printed materials were used by an equal number of students (17%, respectively). Finally, 75% of the students surveyed by McBroom used taped textbooks.

The few existing studies indicate that there is little current literature about the methods that college students with visual impairments use to gain access to textbooks. For example, McBroom's (1994) study that was broad in scope, but it was conducted over ten years ago. Other studies either had extremely small samples (Frank, 2000) or sampled students in smaller geographic regions such as a few states (Lancaster, Mellard, & Hoffman, 2001; West et al., 1993) or in only one college (Jorgensen et al., 2003). Additionally, with the exception of the Homey and Anderson-Inman (1999) study, earlier research did not acknowledge e-mail, world wide web-based retrieval, http://www.Bookshare.org, http://www.Audible.com, or Recording for the Blind & Dyslexic (RFB&D, http://www.RFBD.org) books on CD as a means by which access to textbooks could be arranged. These resources could not be reported due to the lack of their existence – with the exception of RFB&D - at the time these studies were carried out (Homey & Anderson-Inman; Lewis & Farris, 1999; McBroom, 1994; Morrow, 1999; Senge & Dote-Kwan, 1995).

It is important to document how textbooks are accessed in this rapidly changing information age in which Internet access and widespread usage of personal data devices are shaping students' lives. Student-reported barriers and solutions to gaining access to textbooks must be understood in order to improve services for such students at the university and national levels. Hence, the purpose of this study was to learn how college students with visual impairments gain access to their textbooks, barriers to gaining access to textbooks, strategies for overcoming barriers, and recommendations for improving text conversion.

Methodology

Participants

The participants were 119 primarily full-time college students with visual impairments who were members of one of two national listserves during April and May of 2004. The listserves were sponsored by (a) the National Alliance of Blind Students, which is an affiliate chapter of the American Council of the Blind; and (b) the National Association of Blind Students, an

affiliate of the National Federation of the Blind. Students joining the listserves of these two groups do not have to be members of either the American Council of the Blind or the National Federation of the Blind. Furthermore, students may be members of both listserves.

Of the members subscribed to the National Association of Blind Students, the listserve moderator estimated that approximately 200 were students (D. Andrews, personal communication, December 17, 2005). The listserve moderator for the National Alliance of Blind Students (R. Lynch, personal communication, January 17, 2004) estimated that around 100 students subscribed to the listserve. Based on the number of individuals estimated to be subscribing to each of the two listserves (i.e., 300, with some duplication between both listserves), a conservative approximation of the percentage of listserve subscribers who participated in the study is 40%. This estimate does not take into account the number of participants who learned about the survey from other sources than the two listserves. Demographic data for the participants are presented in Table 1.

Instrumentation

The instrument used in this study was a 35-item online survey constructed by the primary researcher after conducting a thorough review of the literature on access to coursework by college students with visual impairments. Four experts reviewed electronic versions of the survey. The expert reviewers had extensive experience in vocational rehabilitation and working with college students with disabilities. They recommended few changes to the survey.

The survey was put online on April 7 and taken off line May 25, 2004. The survey consisted of three major sections. The first section posed questions to students utilizing services from OSD offices regarding their text conversion experiences. The second section posed questions to all participants (i.e., students utilizing OSD services and those not using such services) regarding their text conversion experiences. A demographics section completed the survey.

Seven college graduates with visual impairments piloted the survey. Three used screen magnification software to see the screen; four used screen reader software that produces synthetic speech, affording them auditory access to the screen. This specialized piloting was done to ensure participants would experience minimal barriers when attempting to fill out the online survey. Those piloting the survey were asked to report the length of time it took to complete the survey and any difficulties they had encountered with completing the survey. The survey took around 20 minutes to complete, and no difficulty was reported by any of the pilot participants.

Procedures

Permission was obtained from the moderators of the listserves to post e-mails to each listserve asking college students with visual impairments to participate in an accessible, online survey. The link for the survey was embedded in the e-mail, enabling students to go directly to the consent letter. Students electing to fill out the online survey for this study were directed to point their browsers to the web link. Participants read the consent letter and were either directed to click on a "continue" link to access the web-based survey or an "I don't want to participate" link that brought them to a short nonrespondent survey. To demonstrate that those electing not to participate in the survey did not differ significantly from those choosing to participate, the nonrespondent survey requested demographic information and asked the nonrespondents why they did not participate in the survey. When reviewing the results received after data collection was halted, it was found that no one elected to fill out the nonrespondent portion of the survey.

With the hope of increasing the response rate for the survey, an advertisement for study participation was also posted on http://www.eyes2eyes.com – a website hosting blindness-related articles. The primary researcher received four inquiries regarding the survey from that page. Since no contact information from participants was gathered via the survey, it was not possible to track whether any of the survey respondents heard of the survey through the http://www.eyes2eyes.com webpage. Due to the nature of e-mail communication, various individuals subscribed to the listserves mentioned previously forwarded the survey. One OSD provider forwarded the survey link to her students who were blind or visually impaired. The American Foundation for the Blind (AFB, http://www.afb.org) posted the link on its forum page.

Since some students have joined the listserves of both the American Council of the Blind and the National Federation of the Blind, students were asked to participate only once to prevent duplication of results. The researcher did not require medical documentation of a student's visual impairment before participation in the survey. The nature of the questions in the survey applied only to students who could not utilize traditional printed college textbooks. Since participants were gathered from blindness-specific listserves and web pages, it is likely that only students with visual impairments participated.

Table 1

Demographics of Respondents (N=119)

Demographics	Frequency	Percent
Enrollment Status		
Part-time	10	8.4
Full-time	104	87.4
No response	5	4.2
Level of Study		
Graduate	13	10.9
Undergraduate	60	50.4
No response	46	38.7
Geographic Location of Students*		
Northeast	14	11.8
Midwest	16	13.5
South	23	19.3
West	17	14.3
No response	49	41.2
Age		
18-21	30	25.2
22-25	22	18.5
26-30	8	6.7
31-40	9	7.6
41 and above	8	6.7
No response	42	35.3
Gender		
Male	37	31.1
Female	40	33.6
No response	42	35.3
Ethnicity (*N*=73)		
African-American	3	2.5
Caucasian	60	50.4
Hispanic	4	3.4
Other	6	5.0
No response	46	38.7
Extent of Vision		
No vision	30	25.2
Light perception	14	11.8
Ability to see objects from several feet away	10	8.4
Ability to see steps on stairs	2	1.7
Ability to read standard-sized print	5	4.2
Ability to read enlarged print	5	4.2
Other	5	4.2
No response	47	39.5

*Geographic location groupings are based on the U.S. Census Bureau Regions.

Data Analysis

The data were imported into Statistical Package for the Social Sciences (SPSS). The demographic and categorical variables from the survey were analyzed to determine frequency counts and percentages. The open-ended questions were analyzed qualitatively by means of content analysis (Lincoln & Guba, 1985). Data were sorted into categories that gave rise to themes. Through dialogue with a colleague, consensus was reached on the themes. Where appropriate, a frequency count was also used to describe the amount of response within each category. Within the quantitative results, some questions allowed respondents to choose more than one answer, and in the qualitative results, some answers were sorted into more than one category. Thus, some percentages of responses total more than 100.

Results

The survey results are organized as follows: services used to gain textbook access, barriers to gaining access to textbooks, strategies for overcoming barriers, and recommendations for gaining access to textbooks. Not all participants opted to answer all questions; thus the number of respondents for each response is reported.

Services Used to Gain Access to Textbooks

Participants utilized services offered by many different entities when gaining access to their textbooks. A total of 76 respondents reported the providers from which they received textbooks. The most frequent venue for obtaining accessible textbooks was RFB&D (75%). Although 91% of the respondents affirmed the presence of an OSD office on their campus, only 57% used the OSD to obtain accessible textbooks. A small percentage of students scanned their own textbooks exclusive of the OSD office (22%) or used internet sources (9%) (e.g., Bookshare.org, available from http://www.bookshare.org; the Gutenberg Project, available from http://www.gutenberg.org).

Seventy-one individuals (60%) responded to a question about preferred medium in which to receive textbooks. The most common media in which to receive textbooks were four-track tapes from RFB&D (62%), standard print (42%), and electronic versions from publishers or OSD offices (39%). Perhaps the relatively large figure of 42% of students requesting standard print was because such students intended to scan those texts themselves.

A total of 71 respondents (59.6%) rated their level of success in gaining access to textbooks through the use of a Likert scale with five points: very successful, somewhat successful, average success, not so successful, and very unsuccessful. These terms were not defined in the survey. Very successful access to textbooks was reported by 27% of respondents, and 44% of the students rated their access as somewhat successful. Average success was selected by 20% of students, while only 8% of respondents reported that their attempts to gain access to textbooks were not so successful. A mere 1% rated their access to textbooks as very unsuccessful.

Barriers to Gaining Access to Textbooks

Numerous barriers to textbook access were identified by respondents. When asked whether they had ever experienced delays in receiving accessible textbooks, 88% of the 72 students responded affirmatively; 93% of the students responding to the same question reported that OSD offices were present on their campuses. However, it is not known what percentage of the students reporting delays attributed them to the OSD versus other textbook providers. In addition, 60% of the 70 respondents indicated that they had received textbook formats that were not easily useable.

Forty-four (37%) of the respondents identified time-related barriers that contributed to their difficulty in acquiring accessible textbooks. One barrier to gaining accessible textbooks occurred when the OSD required the textbook far in advance of the semester, and the bookstore did not have the text in stock to purchase. Professors did not communicate their book lists to either students or the OSD until close to the beginning of the semester leaving the OSD overwhelmed with the number of books to scan. One respondent's comments echo those of his/her peers.

> Books need to be turned into the DSS office weeks in advance of a new semester. Even when I have gone to professors and gotten book lists a semester early, the school bookstore won't have the book in stock until very shortly before or after the semester.

In addition to the unavailability of texts for scanning, respondents mentioned difficulty procuring up-to-date textbooks. OSDs tended to provide sections of textbooks, according to syllabus readings, rather than providing entire textbooks at one time, hampering students' ability to study at their own pace. Sometimes students received accessible versions of a text that was an earlier edition than the one being used during class. One respondent's explanation of the problem and its impact was representative of many other respondents.

> Professors tend to want to use the up-to-date textbooks, except most recording studios cannot, or

will not, keep up to the exact date on the texts. I usually end up with 2-year or older recorded textbooks that are off volume and off page number.

Some respondents (16 out of a total of 39) identified problems related to how accessible versions of texts were produced. Problems with formatting of electronic files included difficulty working with PDF files, incompatibility of file formats with screen readers, and undesired removal of diagrams from electronic versions of textbooks. Sometimes the copying techniques used when books were enlarged posed problems for students with low vision.

Several respondents (6 out of a total of 39) identified the OSD itself as a barrier. Some (5 respondents) felt that the OSD was not adequately staffed or that the staff were not trained properly to prepare the kind of textbook requested by the respondents. Three respondents experienced stress when requesting their preferred format of textbooks as captured by the following statement, "DSS office makes me feel like I am putting them out by asking for material in a specific way (i.e., needed a book brailled after I tried two different tape versions and a live reader.)"

Strategies for Overcoming Barriers

Respondents were asked how often they notified their OSD when failing to receive accessible textbooks in time for their class assignments. Of the 52 respondents, 37% always and 25% usually notified the OSD office when they failed to receive textbooks in a timely and accessible manner.

When asked what strategies were used to gain access to textbooks other than the OSD, one third of the respondents who answered this question resorted to scanning their own texts instead of notifying the OSD. One respondent captured the frustration expressed by other colleagues when noting, "I end up scanning the books myself, because I am frustrated and don't want to work with the DSS office." Another strategy was, "I ask the professor for alternate formats and it is usually taken care of." One of these respondents commented, "Things come in at a staggered pace, so as long as I'm getting some stuff, I figure the other is coming. If it still doesn't arrive, then I'll say something, but I try to be somewhat fair since the staff doing the converting is small and busy."

Respondents were asked what they do when encountering delays in gaining access to textbooks (They could select more than one answer to this question.) Of the 67 respondents, the majority (73%) elected to scan their own textbooks. Other options included asking the OSD for another format of the textbook (36%), contacting publishers directly to request electronic versions (31%), advocating with the college or university to encourage instructors to turn in book lists earlier for the next semester (31%), trying to read assignments with useable vision (24%), asking family or friends to read assignments (24%), and not reading assignments at all (18%).

Recommendations for Gaining Access to Textbooks

Recommendations from respondents regarding text conversion were directed towards the following themes: preferred formats for accessible textbooks, the structure of electronic texts, recommendations to improve OSD services, and timeliness. A total of 39 individuals (33%) provided recommendations.

Preferred formats. Sixteen respondents (41%) recommended specific formats for accessible textbooks. Of this group, electronic formats such as Microsoft Word, text, or HTML were preferred by 50%. Other preferred formats included compact disks (31%), braille (19%), and PDF documents (13%). Interestingly, 31% specifically noted that PDF documents were not accessible to them.

Structure of electronic texts. The structure of electronic files was addressed by five (13%) of the 39 respondents. One student expressed clear recommendations for increasing access to files. "Adequate markup of page, chapter, and section breaks should be maintained. Also, it is very important to also allow readers to have access to tables of contents when a book is rendered electronically." Another respondent noted that braille and print page numbering should be maintained when producing musical scores.

Improvement of OSD services. Recommendations to improve OSD services focused on hiring staff, training existing staff, notifying students if textbooks might be late, and improving communication with students and faculty. Six respondents (15%) made recommendations. The three following demonstrate the breadth of student concerns as well as the frustration some experience with obtaining accessible textbooks.

> I do not find the folks in my DSS office to be very knowledgeable about adaptive technology. [1]
>
> If possible, I would like to see DSS offices staffed with enough people to begin converting books before the semester begins. [2]
>
> It would be nice if they just listened to students and maybe tried some of the recommendations. At my school, blind students have continuously requested a scanner with Kurzweil be made available, or that the braille embosser be repaired, and despite repeated requests, complaints, threats of law suits, the school DSS office, adaptive computer lab, administration, Chancellor…everyone

ignores us. We feel we are not real students, but only token students whose needs and requests for fair access to materials don't count, aren't important, and sooner or later, most of us either give up or transfer. I'm an A student, but I spend all my time scanning materials, and I don't know how the average student graduates at all. [3]

Timelines. The need for more timely access to textbooks was mentioned by 20% of the respondents. Students need rapid receipt of their textbooks in order to keep up with class assignments. Two respondents offered specific recommendations for improving timeliness. One student suggested that all assignments be given to students one week in advance of their due dates. Another recommended that the OSD office hire enough staff to keep up with text conversion at the beginning of the semester, when the office is typically overwhelmed with requests.

A few recommendations did not fall within one of the above four themes. Although each of the following recommendations were mentioned by only one or two students, their responses present innovative and enlightening ideas for improving access to textbooks. Recommendations included enhancing or creating places where students can access assistive technology to independently scan textbooks, encouraging students to procure copies of accessible textbooks independent of the OSD (since this model of service delivery more closely mirrors that experienced by college graduates), and having publishers make the process of requesting accessible versions of textbooks directly through them more user friendly.

Discussion

The purpose of this research was to study the experiences of full-time college students who are blind or visually impaired in gaining access to their textbooks for college courses. Surprisingly, not all college students with visual impairments responding to this survey reported receiving services from OSD offices. Respondents cited RFB&D and publishers as primary sources for accessible textbooks. Although the majority of students reported ultimate success in accessing textbooks, higher numbers identified delays in procuring textbooks.

Several findings are noteworthy. Although known anecdotally, evidence of the ratio of students served by OSDs to nonserved students on college campuses is useful. That almost one tenth of respondents reported they were not served by an OSD could be attributable to a number of factors. Perhaps such students elected not to disclose their disabilities to the OSD designated at their college or university (Barry & Mellard, 2002; Roessler, Brown, & Rumrill, 1998) or perhaps not all colleges and universities have offices designated to serve students with disabilities (Fichten, Asuncion, & Barile, 2001; Michaels et al., 2002).

RFB&D provided text conversion services to three quarters of the respondents. This verification of the importance of RFB&D to the academic lives of students with visual impairments only reinforces the need for adequate staffing and funding of organizations providing accessible textbooks. Since RFB&D often has only older versions of textbooks, students may struggle to follow along with course syllabi if page numbers or content covered differ significantly from edition to edition. Because RFB&D serves so many students with print disabilities, students wishing to order books for a given semester must do so earlier than their non disabled colleagues. Therefore, professors who only make book lists available a week or two before a semester begins, whether due to their own procrastination or systemic constraints such as not being assigned to a course until soon before it begins, may be inadvertently causing students with print disabilities to fall behind in their courses. RFB&D's current transformation from analog to digital recording of textbooks necessitates that students utilizing their services be either computer literate or familiar with hardware-based digital playback equipment to listen to their textbooks. Since students in general, and those with disabilities in particular, tend to be poor (Louis Harris and Associates, 2000) the purchase of such players may present a significant barrier to accessing textbooks.

The preferred format for gaining access to textbooks for many participants was electronic text, reflecting a change in how textbooks are made accessible. This finding is substantiated by the rising popularity among college students with visual impairments of RFB&D and Bookshare.org, as identified in the Results section of this paper, and by Marks, Kessler, Londergan, and Galindo (2004). The preference for electronic text may well reflect participants' their comfort level in using computers, since the survey was web-based. Previous studies did not examine publisher provision of files to students as a viable means to gain access to textbooks (McBroom, 1997; Senge & Dote-Kwan, 1998; West et al., 1993) although such means were anticipated to have utility in the future (Green, 1996). Careful attention must be paid by electronic text providers to the structure of the text (Homey & Anderson-Inman, 1999; McKenna, Reinking, Labbo, & Kieffer, 1999) to ensure easy navigation and searching capabilities.

Respondents queried about their level of success in gaining access to their textbooks painted a fairly optimistic view, with 70.4% reporting successfully gaining access to textbooks. These data corroborate satisfaction levels with OSDs reported by Barry and Mellard (2002), Hill (1996), and Roessler and Kirk (1998). However, this optimistic view of success stands in contrast to the fact that a majority of respondents reported delays in gaining access to, and difficulty in using, accessible textbooks. Reporting success in accessing textbooks might demonstrate the social desirability bias (Phillips, 1971), in which respondents tend to select options based on what is socially desirable rather than what is actually true. Or, it could allude to the success of OSDs and other vendors such as RFB&D in providing access to textbooks. Yet another explanation could be that college students with disabilities utilize several options when gaining access to textbooks such as self-scanning, using OSD services, investigating the availability of textbooks through commercial or specialized providers such as Audible.com (http://www.audible.com) or the National Library Service for the Blind and Physically Handicapped (http://www.loc.gov/nls), and relying on human readers. What this study demonstrates, similar to others in the past have as well (McBroom, 1997; Senge & Dote-Kwan, 1998; West et al., 1993), is that timely access to textbooks is rarely the norm for postsecondary students with print disabilities.

Almost one fifth of students who experienced difficulty procuring accessible textbooks failed to read their textbooks. Students choosing to not read their textbooks may have felt they could adequately keep up with their classes by attending lectures and taking copious notes, as do many students without disabilities. Others may simply have given up on procuring their textbooks because of the number and complexity of the barriers inhibiting access to textbooks (Senge & Dote-Kwan, 1995). Finally, these troubling data may exemplify the lack of self-advocacy and self-determination skills displayed by many people with disabilities who have not been adequately prepared for college (Jones, 2002; Stodden, 2001; Stodden, Jones, & Chang, 2002).

College students with print disabilities should possess the ability to problem solve when accommodations for gaining access to textbooks falter. Roy and MacKay (2002) found that people with visual impairments generally have higher rates of an external locus of control than do people without vision loss; students with learning disabilities – the most common print disability for college students – also face self-esteem and locus of control issues (Finn, 1997; Hartman-Hall & Haaga, 2002; Tominey, 1996). Students who have an external locus of control may blame the OSD for their inability to read their textbooks, while students with an inner locus of control may take the initiative and problem solve when notified that their textbooks will not be made available through the OSD office.

Limitations

Several limitations of this study warrant discussion. Only college students with visual impairments who were computer savvy had the opportunity to participate when the invitation to take part was e-mailed to potential participants. Hence, an important subset of potentially noncomputer-literate college students with visual impairments was not given the opportunity to participate. These results may underestimate the true difficulties encountered in gaining access to textbooks, since noncomputer literate students with visual impairments are not represented. Although every effort was made to ensure that the website, that hosted the survey was accessible, some students initially willing to participate may have found the website confusing or difficult to navigate (Butler, Crudden, Sansing, & LeJeune, 2002; Gerber, 2003). This may explain the reason for so many surveys being only partially filled out. The e-mails soliciting participation in the study were sent only to people who were subscribing to either the National Alliance of Blind Students' or the National Association of Blind Students' listserves. Because both the American Council of the Blind and the National Federation of the Blind are advocacy organizations, some students may have chosen not to participate in their listserves; other blind or visually impaired college students may not have been aware of the existence of these organizations. Finally, the sample was not random. It is likely that bias shaped the results, because students willing to participate in the survey may have represented those more successful in their college careers.

Practical Implications

Although the ADA requires colleges and universities to provide accessible versions of textbooks (HEATH Resource Center, 2003; Kroeger & Schuck, 1993), the findings of the present study seem to indicate that improvement to service delivery is needed. Funding increases that afford RFB&D, Bookshare.org, and OSDs the ability to efficiently serve students with disabilities through the hiring of sufficient and properly trained staff is essential (Michaels et al., 2002). Further, regular evaluation of OSDs and other accessible textbook providers would increase the likelihood of program improvement (Patton, 1997).

Publishing houses are playing an increasingly important role in the provision of accessible textbooks to college students who have print disabilities. Respondents identified the need for specific contact persons at publishing houses to simplify the process of requesting accessible formats of textbooks. Current debates over how accessible textbooks should be provided to students requesting them (i.e., through the students making requests directly to publishers or through OSDs requesting books on behalf of students) (J. Marks, personal communication, September 21, 2004) should be resolved as well.

In order to surmount barriers caused by the lack of accessible textbooks, students must possess the advocacy skills recognized by Roessler, Brown, and Rumrill (1998) as crucial for their success when interacting with accessible textbook providers. Since such skills take time to perfect, K-12 teachers and other service providers should introduce self-advocacy skills at an early age (Jones, 2002). Specific contexts should be made available in which students with print disabilities can practice such skills. In this way, they will be better prepared to apply self-advocacy skills in the postsecondary environment.

Documentation of the willingness of publishing houses to provide accessible formats of textbooks is needed in order to evaluate the feasibility of widespread accessible textbook procurement from these sources. Since the language contained within the latest reauthorization of the IDEA (2004) requires accessible textbooks to be provided by publishers for K-12 students, publishing houses may well reevaluate their positions on college-level textbooks. Although large publishing houses have designated specific channels through which students or OSDs may request accessible textbooks, smaller companies often lack such infrastructures. Hence, standardization of formats in which publishing houses provide accessible textbooks is also needed.

Research Implications

This research provides a recent examination of the needs of full-time college students who are blind or visually impaired related to text conversion. However, the needs of and barriers faced by OSDs struggling to provide such services are currently not well documented in the literature. The prevalence of OSDs assuming the responsibility to provide access to university- or college-based materials in accessible formats is not known. Campus maps, course catalogs, class schedules, and tuition statements are integral parts of college life. Research is needed, not only to document the prevalence of such materials in accessible media, but to learn how such documents are rendered in accessible formats. Continuing research monitoring developments in technology that provides access to textbooks for college students with disabilities is crucial. Innovative companies may well develop new solutions for providing access to textbooks, but if these solutions are not easily usable or affordable to the students who would benefit from them, such solutions are not practical.

Unless the needs of students with print disabilities or the program constraints of OSDs are understood, it is not likely that text conversion services for students with visual impairments, or, for that matter, students with other disabilities, including learning and physical ones, will improve. Research that investigates the needs of noncomputer-literate students with print disabilities is sorely needed, for the way in which these students access their textbooks would likely differ substantially from the respondents in this survey. Because students with learning disabilities are the majority of students served by OSDs and many of them require text conversion services, their unique needs must be better articulated.

As more students with disabilities attend college, studies like the present one will provide researchers, service providers, and policy makers with information that may enhance postsecondary success for this subset of the college/university population.

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