Captioned Media: Teacher Perceptions of Potential Value for Students With No Hearing Impairments

A National Survey of Special Educators

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Abstract

A national survey of 359 special educators from 45 states found that most perceive value in captioned media for some special education students, notably those who are English Language Learners and those classified as having specific learning disabilities. Although most were experienced teachers, with 11+ years in the classroom, few had ever used captioned media in their classrooms. Results suggest that captioning technologies be explored in more depth, particularly since they are available to classroom teachers at the touch of a button.

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Introduction

Captioned videos, films and DVDs are being used in the education of students who are deaf or hard of hearing. They are also used, much less frequently, with students who are English Language Learners (ELL). The literature contains no evidence of their use with students who are identified as having specific learning disabilities, speech or language impairments, or mental retardation. This article explores teacher perceptions about the potential value of such uses.

The U. S. Department of Education has supported captioning of educational media since 1958. Currently administered by the Department's Office of Special Education Programs (OSEP), this support takes a number of forms. OSEP supports research on captioning through its division on research. The office provides partial funding for the captioning of some television programming. In addition, OSEP provides financial assistance to several major providers of captioning services, notably the Captioned Media Program (CMP). This program is administered by the National Association of the Deaf (NAD). It supplies open and closed captions for educational and entertainment media, including videos and Digital Video Disks (DVDs). CMP also distributes, free of charge, captioned media to educational institutions nationwide. To date, materials have been made available only to teachers who use them with deaf or hard of hearing students.

Background: Captioned Media

Captioning of educational media is a technology that is often available to classroom teachers at the touch of a button. Television receivers made or distributed after July 1993 are equipped with built-in caption decoder circuitry (P. L. 101-431, the Television Decoder Circuitry Act of 1990). Most TV's in use in American K-12 schools are so equipped. Depending on the model, the teacher touches a button on the monitor or one on a remote control unit, selects Caption I or the equivalent, and exits the control panel. Half of all broadcast and cable-cast television programming is captioned, pursuant to requirements in the Telecommunications Act of 1996 (P.L.

104-104) and implementing rules of the Federal Communications Commission (FCC), which call for 50% of all new programming to be captioned as of January 2002 (a 148-page Report and Order, as well as a separate Order of Reconsideration, are available at www.fcc.gov).

However, the same cannot be said of educational videos and DVDs. Most such media are produced by private companies. These vendors are subject to title III of the Americans with Disabilities Act (P. L. 101-336) which requires, among other things, that communications be made accessible to and usable by persons with disabilities, if readily achievable. Public schools are subject to title II of the ADA, so are expected to make their communications accessible to and usable by persons with disabilities. Finally, videos and other media that are developed using federal financial assistance are to be made accessible to and usable by persons with disabilities, pursuant to regulations promulgated by the U. S. Department of Education (20 USC Sec 1404). CMP (*www.cfv.org*) and the Media Access Group at WGBH (www.wgbh.org) estimate that as few as 15% of educational media are distributed with captions or subtitles, apparently because state and local education agencies do not insist upon captioning. For this reason, classroom teachers wishing to show captioned videos or DVDs must explicitly order a captioned version or arrange for a third party to caption the videos. Both CMP and WGBH provide such captioning services.

Videos, DVDs, films and other media (including streamed video delivered over the World Wide Web) may be closed- or open-captioned. They also may be subtitled, as are many foreign films and videos. Any of these modes would satisfy the above requirements. In closed captioning, the captions are hidden and are activated by command. In open captioning, by contrast, the captions are permanently part of the media and appear without user activation. Open captions are similar to subtitles. The major difference between the two is that open captions signal sound effects, music and laughter; subtitles do not. When DVD is used, captions may be provided in a choice of languages: producers may offer viewers the option to, for example, watch captions in Spanish while listening to dialogue in English, or vice versa.

Literature Review

Considerable research demonstrates that captions may enhance comprehension of educational materials by K-12 students who do and who do not have hearing impairments (e.g., Lewis & Jackson, 2001). This is particularly true because the speed in which captions are displayed may range from as low as 60 words per minute (wpm) for programming intended for preschoolers (e.g., “Sesame Street”) to as high as 250 wpm for programming intended for highly literate adults (e.g., nightly news programs). Students in middle school and high school, both deaf or hearing, have been shown to comprehend captions at all of these speeds. Jensema and Burch (1999), for example, tested deaf and hearing students aged 11 to 19 with videos captioned at speeds ranging from 80 wpm to 220 wpm, finding no significant differences by speed in student reading comprehension. In another study, this one of 578 deaf, hard of hearing, and hearing persons aged eight to 80, Jensema (1998) found that the average “OK” speed (comfortable; neither too slow nor too fast) was 145 wpm, which the researcher reported as nearly identical to the 141 wpm speed found in TV programs.

A smaller but still impressive body of research shows that English Language Learners (ELL; also ESL) may benefit when videos are captioned (Bean & Wilson, 1989; Goldman & Goldman, 1988; Spanos & Smith, 1990). Comprehension and vocabulary may both increase among ELL students, particularly when the vocabulary to be learned and remembered is challenging (Garza, 1991; Huang & Eskey, 2000). Adults with lower-than-average levels of reading ability despite unimpaired hearing have also been shown to benefit from captioned videos. Rogner (1992), for example, demonstrated such effects with functionally illiterate adults.

However, the literature contains no published reports on use of captioned media with students classified as having specific learning disabilities, speech or language impairments, or mental retardation. In theory, captions may help students who are visual learners, individuals with auditory processing disorders, and mild mental retardation. On the other hand, it is theoretically possible that captions and subtitles may distract special-education students, perhaps even

inhibiting their learning. This survey was undertaken at the request of CMP as an initial effort to collect information on such potential uses.

Method

A random sampling of members of the Council for Exceptional Children (CEC) divisions on specific learning disabilities, mental retardation, and linguistic/cultural diversity was ordered from MSGi Direct (Wilmington, MA). These divisions had, respectively, 19,233, 10,071, and 2,526 division members at the time. The company was asked to randomly select one in every 17 members (N = 1,850 labels) proportionally, producing a list comprised of, respectively, 1,118, 585, and 147 members. Two sets of labels were ordered so that a follow-up mailing could be performed. MSGi Direct refused the researchers' request for e-mail addresses, citing confidentiality.

A 19-item questionnaire was developed which posed questions of special educators about their knowledge of captioned media (closed-captioned, open-captioned, subtitled), their perceptions of the potential value of these materials with students having specific learning disabilities and mental retardation, as well as with students who are ELL in addition to having disabilities. Most opinion questions used a 4-point Likert scale (e.g., captions are perceived as having value: Very, Some, Little, Not). The instrument also inquired about teachers' experience with different populations in K-12 schools, including characteristics of their current students.

The questionnaire was reviewed sequentially by the director of CMP and a four-member panel of experts on captioning of educational media, after each of which reviews revisions were made. CMP's director, Bill Stark, was asked to verify that the content captured areas of interest to the Captioned Media Program. The expert panel assessed the content validity of the questions. The revised questionnaire then was pre-tested with N=25 teachers enrolled in a Master's degree program in special education, most of whom were working teachers. After changes were made to reflect findings from the pre-test (e.g., a few questions were not clear to the participants), the instrument was reviewed by a professor of psychology who teaches survey research methodology, who was asked to verify that the format of the questions was such that statistical analysis could be performed as desired. Finally, OSEP, as the sponsoring agency, approved the use of federal funds to print and mail the instrument.

The initial mail-out was delayed until February 2002 due to widespread media reports of continued consumer unease about opening unsolicited mail after the late-September 2001 anthrax scare. (We discuss the impact on the project of this event later, in "Conclusions".) A total of 1,538 envelopes were addressed and mailed. The other 312 labels were discarded because they were for university professors, researchers or others not affiliated with K-12 schools. Computer professionals at the authors' university, which licenses Survey Engine 2.0 Enterprise, posted the questionnaire to a URL residing on a server. This software, made by Active Feedback (Santa Clara, CA), allows recipients to respond electronically if this were more convenient to them than return mail. This project was the authors' second to use Active Feedback software (the first such use was reported in Bowe, 2002). This option was offered because some participants may have preferred to respond electronically.

Results

Of the 1,538 envelopes mailed, 67 (4%) were returned undeliverable, 34 (2%) were returned non-completed with a note to the effect that the recipient declined to participate (often because "I am now a supervisor and so my answers would not be relevant" or words to that effect), 14 (0.9%) were returned but with incomplete responses, and 7 were returned after data analysis had been completed. Of the balance (1,406), 279 usable responses were received (20%), including 10 electronic responses. A follow-up mailing of 340 questionnaires produced another 80 usable responses. Overall, 359 acceptable responses were received, representing 26% of the 1,406 contacted.

Responses from the follow-up mail-out were compared to those from the initial mail-out to determine whether differences in opinions and demographics existed between the two groups.

Crosstabs and independent sample t tests revealed no significant differences: the two groups were statistically indistinguishable. This finding reinforced the investigators' confidence that non-responding special educators probably were similar to respondents in their perceptions and experiences. Responses from the two mail-outs were combined for further analysis.

Respondent Characteristics

Teachers from 45 different states responded to the survey, with Illinois (11.1%), California (8.4%), Florida (7.5%) and Michigan (7.0%) most frequently represented. Of the respondents, 168 (46.8%) taught at primary or elementary levels while 75 (20.9%) worked with students at middle school and 76 (21.2%) at high school levels. The vast majority of respondents taught at public schools (79%) as opposed to private schools. More than half (53.8%) had 11 or more years of experience teaching. Another 20% had six to ten years of experience, and 19% had two to five years. Respondents were currently teaching students with a wide range of disabilities. Participants commonly had students with more than one disability in their classrooms. The proportions reported were: specific learning disabilities (66.3%), emotional disturbance (40.4%), mental retardation (39.3%), speech or language impairments (36.5%), Autism/PDD (24.2%), hearing impairments (14.2%), and multiple disabilities (17.3%).

Responses

Most respondents reported having used educational media such as videos (83.3%), PC Software (82.5%), and the Internet (71.6%) in their teaching. However, two out of every three (66.3%) had used neither captioned nor subtitled media in their classes. Of the one-third who had used captioned or subtitled media, 87% found them helpful. None who had used captioned or subtitled media reported any harmful effects on student learning.

A strong majority (86.1%) of respondents reported seeing potential value in captioned/subtitled media to teach students with disabilities who are not deaf. A chi-square analysis showed that the proportion of respondents seeing value to that not seeing value differed substantially from a 50-50 split (^{2} = 225.01, *df* = 1, *p* < .01), with many more teachers seeing potential value. The chi-square test is "one of the simplest and yet most useful of statistical tests" (Kerlinger, 1973, p. 166) because it shows whether obtained responses differ significantly from those that would be expected by chance. A summary of this analysis is presented in Table 1.

Table 1

Chi Square Analysis for Teachers Seeing Value in Captioned/Subtitled Media versus Teachers Seeing Little or No Value

Respondent Group	*Expected N*	X^2	*df*
Teachers Seeing Value in Captioned/Subtitled Media (*N* = 309) Teachers Seeing Little/No Value in Captioned/Subtitled Media (*N* = 32)	170.5	225.012*	1

Value for Whom?

Of the 119 respondents reporting that they perceive captioned media to be very valuable for students, the majority (71.4%) believe this media would be most valuable for children with specific learning disabilities. A much smaller proportion (16.8%) indicated that captions could help students with mental retardation. Similarly, of the 89 (24%) respondents who believe that subtitled media would be very valuable for students, most (68.5%) pointed to students with specific learning disabilities. Fewer (13.5%) identified students with mental retardation when answering this question. Overall, specific learning disabilities (67.4%) and mental retardation (15%) were the

two disability categories teachers most commonly thought of while providing their opinion regarding their perceived value of caption media.

However, there were few differences with respect to the perceived value of captioned media between teachers who were thinking of these two categories and those who reported having other disability categories in mind. This suggests that most special-education teachers participating in the survey perceive captioned media to have some value for children with various types of disabilities.

VHS v. DVD.

Survey participants expressed the view that DVD media which provide two or more language options (e.g., Spanish and English speech and captions) are potentially of value for English Language Learners (ELL) in special education. Although most respondents (56.3%) have had experience teaching ELL students with disabilities, few (11%) have used DVD in their classrooms. Those expressing an opinion about the potential value of DVD indicated that DVD titles that offer a choice of language are very valuable (46.8%) or somewhat valuable (39%) for students with disabilities who are also learning the English language. Even teachers reporting little experience with ELL students reported perceiving value in DVD media that offered a choice of languages: no significant differences were found between the opinions regarding the value of DVDs between teachers who have and have not had experience teaching ELL students. A chi-square analysis showed that the proportion of respondents perceiving DVDs to be very valuable or to have some value to that seeing them as having little or no value differed substantially from a 50-50 split (^{2} = 215.07, *df* = 1, *p* < .01). A summary of this analysis is presented in Table 2.

Table 2

Chi Square Analysis for Teachers Perceiving DVDs to have Value versus Teachers Perceiving DVDs to have Little or No Value

Respondent Group	*Expected N*	X^2	*df*
Teachers Perceiving DVDs to have Value (*N* = 308) Teachers Perceiving DVDs to have Little or No Value (*N* = 36)	172.0	215.070*	1

How Valuable?

Mean ratings (on a 4-point scale with 1=Very, 2=Some, 3=Little and 4=Not) revealed that most survey respondents perceive captioned media (*M* = 1.76) and subtitled media (*M* = 1.92) to have some value for non-deaf students in special education. A summary of mean ratings by different respondent groups is presented in Table 3. Statistical analyses using independent sample t tests suggested that small, non-significant, differences existed in the perceived value of captioned media between teachers of younger (*M* = 1.74) and older children (*M* = 1.79).

Captions v. Subtitles.

Similar small differences were found between the perceived values of subtitled media and DVDs between these groups of teachers. Consequently, these results suggest that special education teachers with different experiences hold similar views regarding the value of captioned and subtitled media.

Table 3

Mean Scores on Perceived Value Rating of Captioned and Subtitled Media by Different Respondent Groups

Respondent Group	Perceived Value Rating of Captioned Media *M* (*SD*)	Perceived Value Rating of Subtitled Media *M* (*SD*)	Perceived Value Rating of DVDs *M* (*SD*)
Teachers with Experience Teaching English Language Learners with Disabilities (*N* = 202)	1.72 (.78)	1.88 (.85)	1.62 (.74)
Teachers without Experience Teaching English Language Learners with Disabilities (*N* = 156)	1.81 (.74)	1.98 (.84)	1.68 (.77)
Teachers of Younger Children (Early Childhood, Primary and Elementary Levels) (*N* = 133)	1.74 (.79)	1.87 (.90)	1.64 (.74)
Teachers of Older Children (Middle School, High School, Post High School) (*N* = 186)	1.79 (.72)	1.96 (.90)	1.64 (.74)
Teachers from Public Schools (*N* = 284)	1.76 (.78)	1.94 (.85)	1.63 (.74)
Teachers from Private Schools (*N* = 41)	1.78 (.72)	1.80 (.87)	1.72 (.94)
Teaching Experience; Less than Six Years (*N* = 91)	1.80 (.75)	1.97 (.86)	1.53 (.70)
Teaching Experience; Six or More Years (*N* = 263)	1.75 (.77)	1.91 (.84)	1.68 (.77)

Note. Items were rated on a 4-point Likert scale: 1 = Very, 2 = Some, 3 = Little, 4 = Not

Conclusions

The vast majority (86.1%) of special educators participating in this survey indicated that, in their opinions, captions and subtitles on VHS or DVD are of value for special education students who are not deaf. Respondents expressed the opinion that captions and subtitles are of "some" value for non-deaf students in special education. On a 4-point scale, they rated captions at 1.76 and subtitles at 1.92. Thus, special educators participating in the survey were not convinced that captions or subtitles were "very" valuable. On the other hand, they did not perceive them as of "little" or no value, either.

Special educators participating in this study suggested that students with specific learning disabilities, as compared to others in special education, are the most likely to benefit from captions/subtitles. This appears to be a function of the fact that captions and subtitles offer visual redundancy to the auditory input: students can read what they hear and hear what they read. A much smaller proportion of special educators expressed the view that students with mental retardation may benefit from captions/subtitles. Survey participants may have felt that the speed at which captions and subtitles are displayed and then removed from the screen limit their value for this population.

Respondents expressed favorable opinions about DVD media offering a choice of language for ELL students in special education. This support was broad-based, occurring both among teachers having experience with this population and those with little such experience. Those findings were not surprising to the researchers. The literature includes several studies documenting the positive effects of captions with ELL populations. However, just 11% of respondents reported having used DVD in their teaching. To date, evidently, DVD is more of a home entertainment medium than one adopted in K-12 schools.

Participants did not differ in their perceptions of the potential value of captioning as a function of the ages of the students they teach. This was a modest surprise, as the investigators had expected that captions might be more useful with students having better-developed reading skills (e.g., older) than with younger students having less well-developed reading competencies

Respondents to the second mail-out were statistically indistinguishable from those to the first mail-out, suggesting that findings may be generalized to the universe of special educators contacted in this project. However, the researchers would have had greater confidence in generalizing were the response rate higher than it was. The investigators believe that the disappointing rate of return may be attributed to several factors. First, some K-12 special educators may have discarded the questionnaires, perhaps believing that since they do not teach deaf students and since captions are usable only for such students, the survey was not applicable to them. If non-respondents hold such views, this perception would itself constitute a relevant finding: many special educators do not recognize the potential value of captioned media for students who do not have impaired hearing. Second, some recipients reported via e-mail to the senior author that they discarded the questionnaire because they are administrators rather than classroom teachers. Although the senior author responded that their participation was very much desired, few such educators returned completed questionnaires.

Other possible reasons are less germane to the issue of captioning. Some questionnaires may have been seriously delayed or even not delivered to the intended recipients. News articles published as late as August 2002 indicated that disruptions and delays of first-class mail still persisted; published reports allude delays in delivery of first-class mail by as much as three or four weeks, and even to Christmas 2001 party invitations arriving in July or August (e.g., Rumbelow, 2002). Some recipients may have discarded envelopes unopened because of lingering worries about anthrax. Others who received the questionnaires after mail delays may have discarded the questionnaires because these requested replies within two weeks.

Despite the modest return rate, the fact that the overwhelming majority of special educators responding to this survey offered the opinion that captions/subtitles are of at least some value for non-deaf students in special education suggests that further research is warranted. The investigators suggest that a logical next step is to assess the educational value of captions for students who have specific learning disabilities and those who have mild mental retardation, as well as for special-education students who are ELL. It would be interesting to see if, as the special educators surveyed here apparently believe will be the case, captioning of educational media adds value for such children and youth.

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