



ID 4 the Web

A Case for Using the *Making Cognitive Connections*[®] Approach as an Effective Smart Device Train-the-Trainer Model

Technical Report
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Abstract

ID 4 the Web received funding in 2011 as part of the Nebraska TBI Implementation Partnership Grant to conduct two train-the-trainer workshops for brain injury (BI) service providers across the state of Nebraska. The *Making Cognitive Connections* iPod Touch Train-the-Trainer workshops were delivered in two different formats: a one-day site-based training and a two-week online training. The online training was designed to meet the needs of trainers in remote locations who might not be able to participate in site-based training options due to distance, scheduling conflicts, finances, etc.

The purpose of this technical report is to share outcome results of the *Making Cognitive Connections* iPod Touch train-the-trainer model and to evaluate and compare the overall effectiveness of site-based versus online versions of the model. The results provided within the report support the efficacy of the model and suggest that the structured curriculum assisted all participants, regardless of prior knowledge of smart device technology.

Overall satisfaction rates were remarkably similar between the site-based and online groups. After training, 79% of participants expressed confidence in their ability to train either another professional or a BI survivor how to use the iPod Touch as a cognitive prosthetic. In fact, within 60 days, 43% of participants trained one person, 29% trained two people, and 21% trained three or more individuals. Perhaps most importantly, trainers indicated that all individuals they trained now used their devices independently at work or home.

Introduction

ID 4 the Web received funding in 2011 as part of the Nebraska TBI Implementation Partnership Grant to conduct two train-the-trainer workshops for brain injury (BI) service providers across the state of Nebraska. The *Making Cognitive Connections* iPod Touch Train-the-Trainer workshops were delivered in two different formats: a one-day site-based training and a two-week online training.

The train-the-trainer content was designed to meet the growing needs of professionals in the BI community to train and assist individual survivors and/or groups of survivors in the use of smart devices as cognitive prosthetics. In addition to device-specific training, the materials integrate aspects of cognitive rehabilitation therapy (CRT) to provide a very unique training approach.

The *Making Cognitive Connections* approach teaches the fundamental technical skills necessary to operate a smart device (i.e., iPad, iPhone, and iPod Touch), while simultaneously drawing a parallel to the cognitive skills that underlie the development of those technical skills. Focusing on the cognitive skills required to use the device—and then having the users apply those same cognitive skills to their everyday lives—makes this approach practical, concrete, relevant, and transferable.

Background

For many years, brain injury rehabilitation professionals have routinely advised survivors to carry a notebook for writing down important events, tasks, and appointments as a means of compensating for memory impairments (Sohlberg & Mateer, 2001). Although this approach is still widely recommended, issues such as losing and/or misplacing notes and not having the information available when needed continue to plague survivors. In addition, carrying a notebook may be stigmatizing for many individuals, and few survivors comply consistently.

One potential solution resulting from the steady improvements in and popularity of smart devices is using a smart device as a cognitive prosthetic, also known as assistive technology for cognition (ATC).

The Veterans Health Administration defines a cognitive prosthetic as:

“...any electronic-based product or system, whether acquired as a retail item, a modified retail item, or a customized one, that is used by an individual to compensate for cognitive-communication impairments that affect his/her ability to participate in activities of daily living (ADLs) and higher level ADLs (IADLs) including work.”

Recent research sponsored by the National Institute on Disabilities and Rehabilitation Research (NIDRR) has provided evidence that people with BI who use traditional paper notebooks do not perform as well as those who use hand-held computers (i.e., pocket PCs or PDAs) programmed to prompt the performance of various common tasks (Gillete & DePompei, 2008). The researchers found that PDA use not only improved survivors’ functioning, but it also improved their sociability, self-esteem, and independence. Despite these findings, service providers do not yet routinely introduce such devices to survivors, and, hence, PDAs and other portable electronic systems are under-utilized by people with BIs (O’Neil-Pirozzi, Kendrick, Goldstein, & Glenn, 2004).

Expecting service providers to program and routinely update PDAs individually for all persons with BI is daunting and unrealistic. It is also unnecessary, because many individuals with BI can learn to program their own PDAs and assistive technology devices (Gentry, Wallace, Kvarfordt, & Lynch, 2008; Gillete & DePompei, 2008; Wright, Rogers, Hall, Wilson, Evans, & Emslie, 2001). Researchers have established that this can be accomplished by using a structured curriculum—*Making Cognitive Connections*—specifically designed to meet the unique learning needs of BI survivors (Wild & Schwartz, 2008). The curriculum is effective in teaching individuals with BI to track their appointments, create to-do lists, set reminder alarms, store and recall names and addresses and take notes. Simultaneously, as survivors attain self-sufficiency in underlying cognitive skills needed to perform tasks on a smart device (e.g., attending to details, sequencing events, etc.), they can begin applying those skills to other real-life activities typically addressed through formal cognitive rehabilitation therapy. Cognitive skills addressed in the curriculum include attention to detail, sequencing, categorization, problem solving, etc.

Several advantages exist for encouraging survivors of BI to use smart devices for memory compensation. First, considerable motivation exists among survivors to master and implement this type of technology in their daily lives (Dry, Colantonio, Cameron, & Mihailidis, 2006). Second, survivors avoid the stigma of carrying memory prosthetics that other people associate

with disabilities. No stigma exists with using a PDA or comparable device, and, in fact, the “coolness” of having such a device may promote compliance regarding consistent use. Third, people can synchronize data stored on a smart device with that on a personal computer or in the cloud. This feature can help minimize the loss of important information if a person misplaces his device—thereby eliminating one of the biggest disadvantages of the paper notebook approach. Fourth, the small size of a smart device is an advantage, because a survivor can easily carry it in a purse or pocket, thereby making misplacement or loss less likely than is the case with paper notebooks. Finally, the success survivors experience by learning to use a smart device for memory compensation may provide encouragement for them to attempt implementation of other compensatory strategies for additional persistent challenges.

According to Sohlberg (2011), “Despite the rehabilitative potential of technological devices and the growing number of affordable, accessible devices, clinicians may not implement them, in part because they may be uncomfortable or inexperienced with technology (Hart et al., 2004; Sohlberg et al., 2007).”

The *Making Cognitive Connections* train-the-trainer project was designed to assist clinicians in overcoming their discomfort with learning and/or training technology. This was accomplished by teaching them the fundamental functions of the smart devices in a very practical, step-by-step manner while integrating those functions with the specific cognitive skills that BI professionals are accustomed to teaching their clients.

Project Details

ID 4 the Web was awarded Nebraska TBI Implementation Partnership Grant funds to implement its train-the-trainer model in both site-based and online training settings. A total of 47 BI professionals participated in the workshops (March 2011) and were provided with iPod Touch devices (for a period of 60 days) and the *Making Cognitive Connection* training materials. As a condition of participation, each professional was required to train at least one brain injury professional (or survivor) in using the iPod Touch within 60 days of the workshop. iPod Touch devices were purchased and tracked by Assistive Technology Partnership (ATP) as part of this project. Devices were returned to ATP after completion of the project.

Site-based Training

The one-day site-based training occurred over 8 hours and was conducted at Madonna Rehabilitation Hospital in Lincoln, Nebraska. Thirty-two professionals from across the state attended. The training consisted of live demonstration, hands-on practice, completion of *Making Cognitive Connections* activities from the training workbook, and optional participation in an online forum created for this purpose.

Online Training

The two-week online training involved access to a comprehensive training Web site. Fifteen professionals from across the state participated in the online training. The training consisted of viewing detailed video recordings of all device features addressed in the site-base training, hands-on practice, completion of *Making Cognitive Connections* activities from the training workbook, and optional participation in an online forum created for this purpose.

Participants

Workshop participants included professionals from educational institutions, healthcare facilities, and state/government agencies. The following considerations were used in selecting potential participants:

- Participant had to be providing brain injury rehab or support services to at least one individual with brain injury at the time of the training.
- Participant had to agree to train at least one other person in the use of the iPod Touch for cognitive support for persons with brain injury.
- Facilities were chosen to assure a wide geographic distribution across the state.
- Registration for the online training was reserved primarily for those individuals in more remote areas of the state who would not be able to participate otherwise.

Based on the above criteria, the participants included:

- 11 participants from educational institutions including public K-12 schools, private schools, community colleges, and the University of Nebraska
- 16 participants from healthcare facilities including acute care and rehabilitation hospitals, as well assisted living and transitional care facilities.
- 20 participants from state government agencies including Assistive Technology Partnership, Department of Veterans Affairs, Department of Vocational Rehabilitation, and the Nebraska Commission for the Blind & Visually Impaired

Results and Discussion

The purpose of this technical report is to share outcome results of the *Making Cognitive Connections* iPod Touch train-the-trainer model and to evaluate and compare the overall effectiveness of site-based versus online versions of the model.

Participant Background Survey

After officially registering for either the site-based or online workshop, participants were asked to complete a background survey. The survey was designed to help determine experience working with brain injury and familiarity and/or comfort in using technology. Fifty percent of participants indicated that they had been working with clients/students with brain injury for more than 10 years, while thirty-eight percent had been working with BI clients/students for less than 5 years.

When asked which smart devices they were familiar with, 64% of participants said they were somewhat familiar with the iPod Touch; 42% with the iPad; 38% with the iPhone. Based on this information, it is not too surprising that 97% of participants indicated they were somewhat or very comfortable learning new types of technology. However, only 23% of participants responded that they frequently used technology with their clients/students at the time of the training, even though an overwhelming majority of their clients used iOS-based smart devices (i.e., the iPhone, iPad, and iPod Touch).

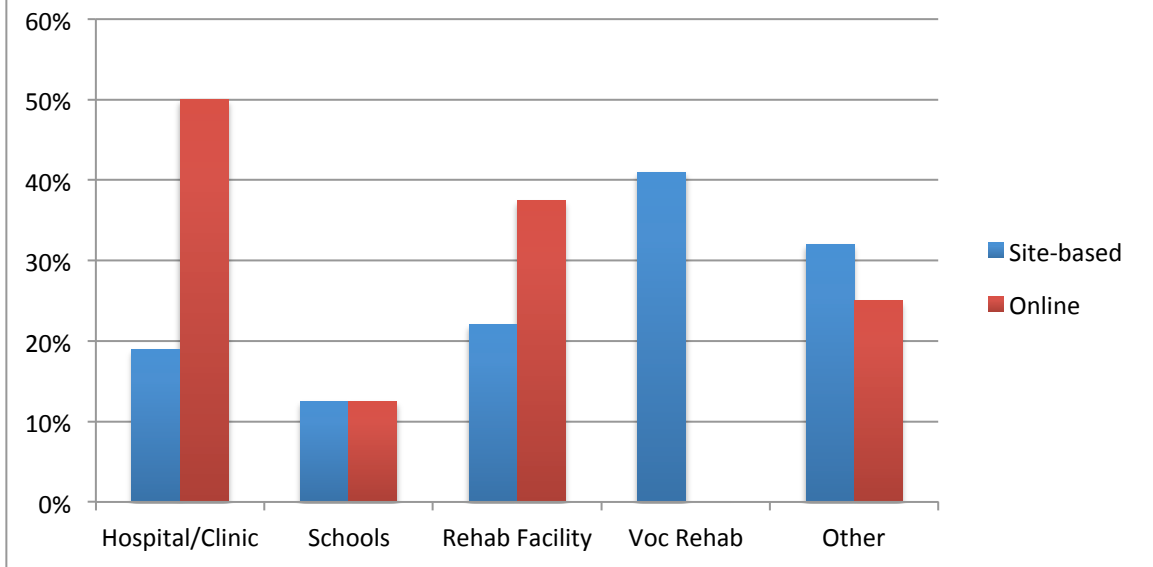
Training Evaluation Results

Twenty-nine out of 32 site-based participants and eight of the 16 online participants completed the evaluation form.

When asked why they attended the training, both groups indicated that being interested in the subject and learning additional skills were the two most important reasons for participating.

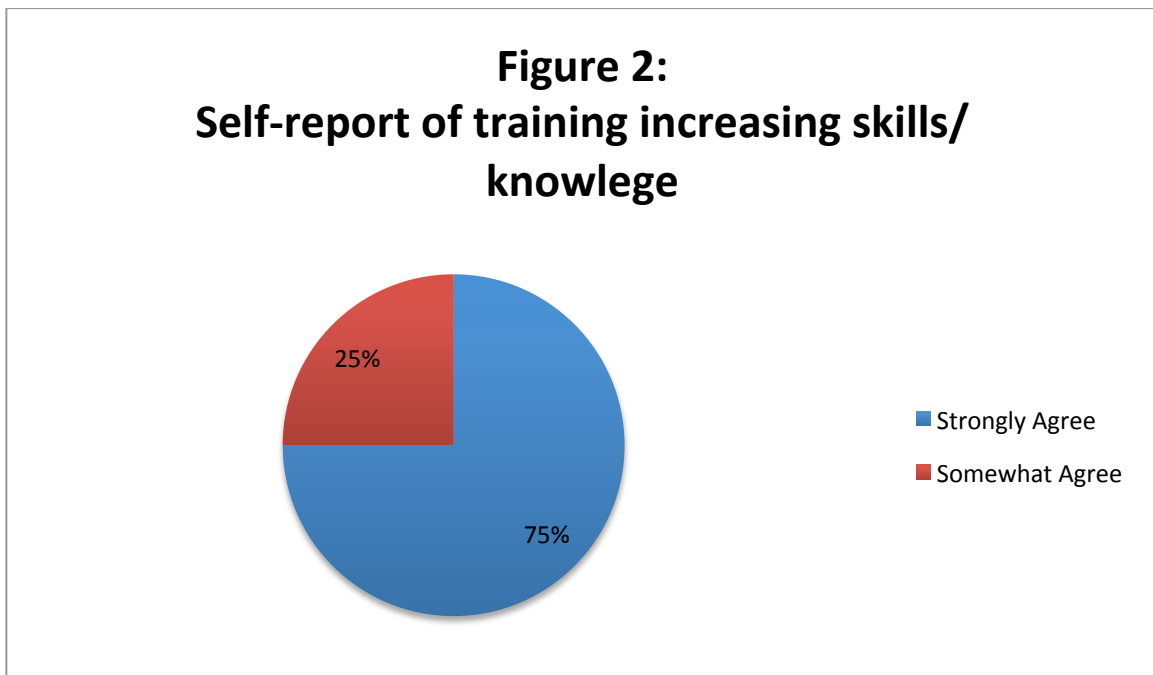
Participants came from a variety of settings, as shown in Figure 1. Hospital/clinic employees were more highly represented in the online training, while the vocational rehabilitation and "other" category had the most participants in the site-based training. Those in the "other" category either didn't fit into the existing categories or had jobs that crossed over from one setting to another.

Figure 1: Work setting of participants

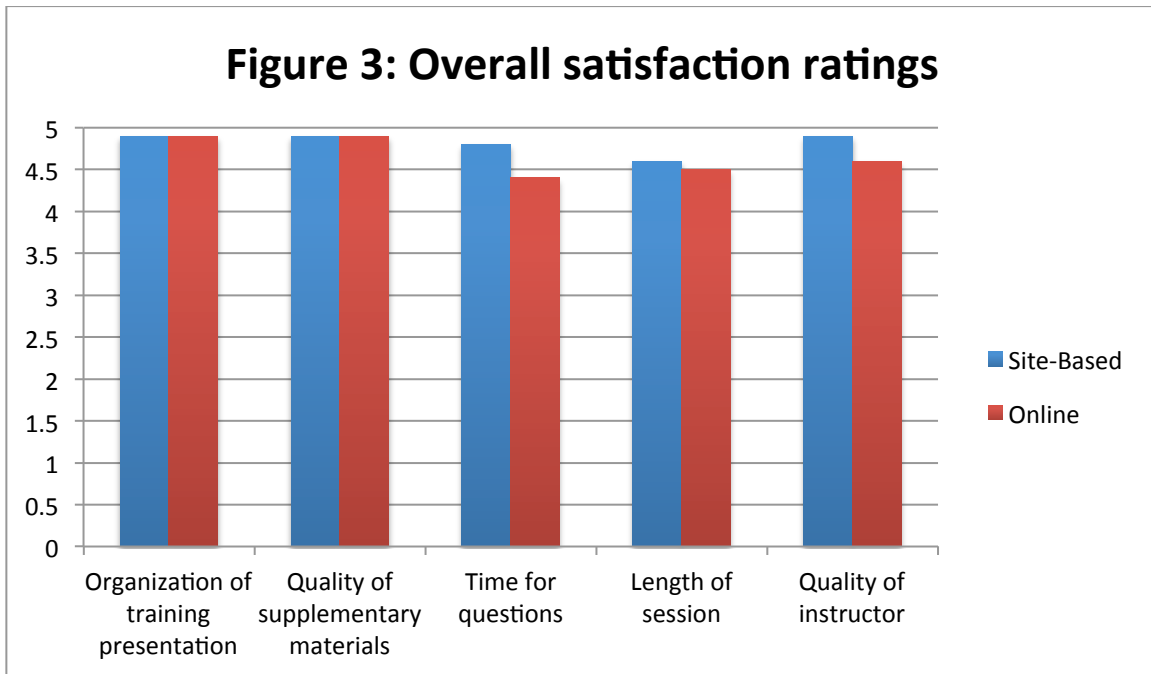


When asked whether the training increased their skills/knowledge, all participants from both training options indicated that they either strongly agreed or somewhat agreed (see Figure 2 below). Seventy-five percent of participants responded that they strongly agreed, while twenty-five percent responded that they somewhat agreed.

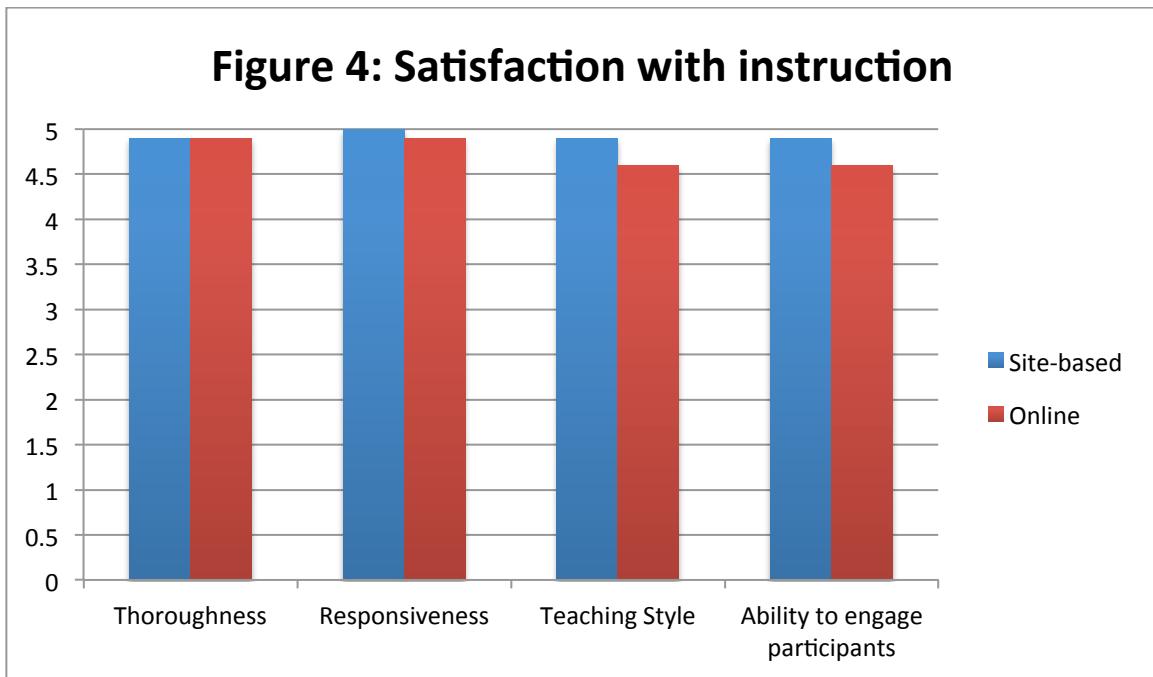
**Figure 2:
Self-report of training increasing skills/
knowledge**



Participants were asked to rate their satisfaction on several aspects of the training. Satisfaction ratings ranged from 4.6 to 5 out of 5 on each of the attributes as shown in Figure 3 below.



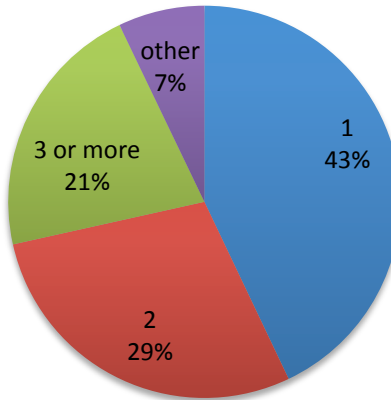
In addition, participants were asked to rate the quality of the instruction based on several attributes. Figure 4 shows the satisfaction rating of the instruction fell between 4.6 to and 5 on a 5-point scale.



A brief follow-up survey was sent approximately 4 months after the training. Fourteen participants responded to the follow-up survey. All respondents indicated at least some level of confidence in their ability to use and provide training on the iPod Touch since taking the workshop; seventy-nine percent indicated that they were still either very confident or confident in their abilities.

Figure 5 shows responses to how many individuals were trained after completion of the training. Forty-three percent of participants trained one person, while 29% trained two people and 21% trained more than 2 individuals.

Figure 5: Number of trainees trained by participants after training



Participants were also asked whether their trainees were now independently using their devices to improve their performance at work and or home. Trainers indicated that all individuals they trained now used their devices independently at work or home. One trainer did not respond to this question.

Discussion

The purpose of this technical report is to share outcome results of the *Making Cognitive Connections* iPod Touch train-the-trainer model and to evaluate and compare the overall effectiveness of site-based versus online versions of the model.

The site-based and online versions of the training were evaluated using the same criteria. Site-based participants completed and turned in their evaluation survey at the end of the all-day training, while online participants were asked to complete the survey within a week after the two-week online training. The high return rate for the site-based evaluation is not surprising given that the forms were collected at the end of the session. The relatively lower return rate for the online evaluation was anticipated, given that participants had to initiate opening and responding to the survey. It is unknown how long each participant took to complete the online training; however, all participants completed the training within a two-week period.

Based on the types of participation settings across the site-based and online approaches, it is interesting to note that vocational rehabilitation

professionals were only enrolled in the site-based training. One possible reason is that vocational rehabilitation counselors may have been more readily available given the location of the site-based training. Another possible explanation may be the vocational rehabilitation department's lack of experience with online trainings.

Equally interesting is that a larger percentage of hospital/clinic and rehabilitation facilities enrolled in the online training. This may be explained by their case load and time limitations in their schedule. It is also possible that this group was spread out more across the state and, as a result, the online option provided a training opportunity that might not have been otherwise available.

Both site-based and online participants indicated the same degree of certainty that the training increased their skills/knowledge of the iPod Touch. There were several participants that had some previous exposure to the iPod Touch; it is possible that at least some of the 25% that responded that they somewhat agreed with the statement already had some level of skill going into the training. This would suggest that even with some level of skill, those participants were able to gain some additional skills or knowledge.

Overall satisfaction ratings were very similar across site-based and online participants. In fact, the largest difference between groups on any single question was only four-tenths of a rating unit (i.e., a difference between an average 4.4 and 4.8 response). The difference in the response related to time for questions was not surprising given the online environment. Although there was a discussion forum created for the online participants to ask questions and the instructor was available via e-mail and phone, it is not uncommon for some participants to feel less connected when the instructor is at a distance. In addition, training was not provided expressly for the forum and this may have prevented some participants from using that venue for asking questions.

A second difference occurred with the length of session evaluation question. This was the lowest rating for the site-based group. Information provided in the comments section of the evaluations suggested that the all-day site-based training was intense and perhaps too condensed for some participants. Online participants did not express a similar concern; however, an extended timeframe (e.g., increasing from 2 weeks to 3 weeks) might reduce stress and increase the opportunity for online participants to complete the training.

A third difference in the overall criteria related to the quality of the instructor. Although there was only a slight difference in the ratings averages of the two groups (three-tenths of a rating unit), it is not surprising that the online group rated this factor lower than the site-based group. The perceived absence of an instructor when reading content and watching videos in an online environment can impact the overall rating of the quality of the instructor, even though the instructional design and overall Web site were created by the site-based instructor. This same rationale may apply to the slight differences in the ratings on teaching style associated with the satisfaction ratings on instruction.

Although there was only a three-tenths of a rating unit difference in the ratings related to the ability to engage the participants, adding additional interactive elements to the online training environment would make it more engaging. Additional interactive elements might include polls and the integration of *Making Cognitive Connections* workbook activities into the Web pages themselves.

The number of individuals trained by train-the-trainer workshop participants exceeded project expectations. Participants trained the individuals and groups using a combination of the training models provided, including both in-person training (using the workbook as part of their training materials) and online training (using the same online Website made available to them), as well as the workbook.

One of the most important outcomes of this project is the finding that, four months after the trainers completed training, approximately 75% of *their* trainees were using their iPod Touch devices independently at work or home. Based on comments provided by participants, the remaining trainees had used the loaner iPod Touch devices for the training and, unfortunately, were not able to afford the devices to continue using them after the 60-day loaner period.

Conclusions and Recommendations

The following conclusions are based on data collected from site-based and online participants of the *Making Cognitive Connections* iPod Touch train-the-trainer sessions offered in March 2011.

Survey results strongly support the efficacy of the train-the-trainer model for both site-based and online training. In addition, results support the use of

the online training materials and the workbook as supplemental materials for trainers to use when training other professionals or BI survivors.

According to Keri Bennett, Program Director for ABI, Nebraska Department of Education, Division of Vocational Rehabilitation, "... We believe the training she provided will benefit Nebraskans experiencing brain injury for many years to come. I recommend Michelle Wild as an excellent trainer; one who is actively changing the landscape for people with disabilities."

Recommendations

Although the efficacy of the training was strongly supported by the data collected, there are several recommendations that may add to the success of future trainings:

- Modify the site-based training schedule from one 8-hour session to two 4-hour sessions to reduce participant fatigue or sense of being overwhelmed.
- Add a brief training in the use and benefits of discussion forums to increase online participation.
- Offer continuing education units (CEUs) (when available) for participants.
- Integrate videos of instructor throughout online training materials to help participants feel more connected with the instructor in the online environment.
- Conduct a long-term follow-up survey to determine:
 - The number of participants who continue to use the technology with their clients/students
 - The number of trainees who are still using the device(s) after six months and one year
 - How trainees use the device(s) in their everyday lives
- Explore funding options for low-income survivors to purchase devices.