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# Assistive technology training for teachers – Innovation and accessibility online

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*As teachers face increasing demands to meet the needs of students with special needs in inclusive classrooms, there is a corresponding increase in the need for professional development opportunities for practicing teachers in areas that will assist them to become more knowledgeable in meeting these needs. One area of concern for teachers is the use of assistive technology tools in the classroom with students with special needs. Teachers frequently report a lack of skills and knowledge in the area of providing support for the use of assistive technology tools in the classroom, largely as a result of inadequate preservice training (Chmiliar, this issue). Opportunities for teachers to engage in accessible professional development in the area of assistive technology are important. Athabasca University has developed a unique online course in assistive technology to meet these professional development needs. This paper will discuss the survey that led to the development of this course in assistive technology, as well as the development and implementation of the innovative online features of the course.*

## Introduction

Assistive technology (AT) refers to a wide range of devices, services, strategies, and practices that are developed and used to assist individuals with disabilities to deal with their problems (Cook & Hussey, 2002). Assistive technology tools range from simple solutions such as a hand grip that enables a student with fine motor difficulties to hold a pencil, to portable, programmable, communication devices for individuals with speech and language difficulties (McGregor & Pachuski, 1995). Assistive technology tools are widely regarded as holding the potential to enhance access, inclusion, productivity, and the quality of life of individuals with disabilities (Derer, Polsrove, & Reith, 1995).

The provision and implementation of assistive technology requires the involvement and services of a number of professionals in a multidisciplinary team (Carney & Cynthia, 1992). This team may be composed of health professionals, speech and language pathologists, teachers, assistants; and an AT specialist participating in the AT assessment process, selection of the AT, determining the student and teacher support required for AT use, evaluating the students' progress with AT, and problem solving to eliminate problems and barriers (Johnston, Beard, & Carpenter 2007). Knowledgeable participation by each of these professionals in these processes is critical to successful assistive technology use. To competently participate in the multidisciplinary assistive technology team each member must possess adequate skills and knowledge. Further, interdisciplinary knowledge is important in AT team membership to facilitate productive participation. Professionals need to work together and cross disciplinary boundaries to promote student success (Bryant & Bryant, 2003).

Assistive technology training has traditionally been the realm of occupational and physical therapies and speech and language pathology. However, teachers have a pivotal role in the implementation of assistive technology as they carry out the integration of the AT plan (Carney & Cynthia, 1992). Unfortunately, teachers do not typically receive training in assistive technology at the preservice or postgraduate levels. In Alberta, a survey of teacher perceptions regarding assistive technology was sent out to 2000 practicing special education teachers in the province (Chmiliar, this issue). Of these teachers, 70% indicated that they had not had an opportunity to be trained in assistive technology. Those teachers with training had participated in workshops, conferences, and training by venders. The majority of the teachers reported that they need support in the areas of assistive technology, some are still unskilled, some are proficient, and none reported that they were very skilled. 86% of the teachers expressed dissatisfaction with their current level of skills and knowledge in the field.

As a result of the teacher needs expressed in this survey, Athabasca University developed an online distance course for teachers in Assistive Technology. This paper will discuss the development and features of

this course as well as present initial staff and teacher evaluations of the course.

*Course Development and Features*

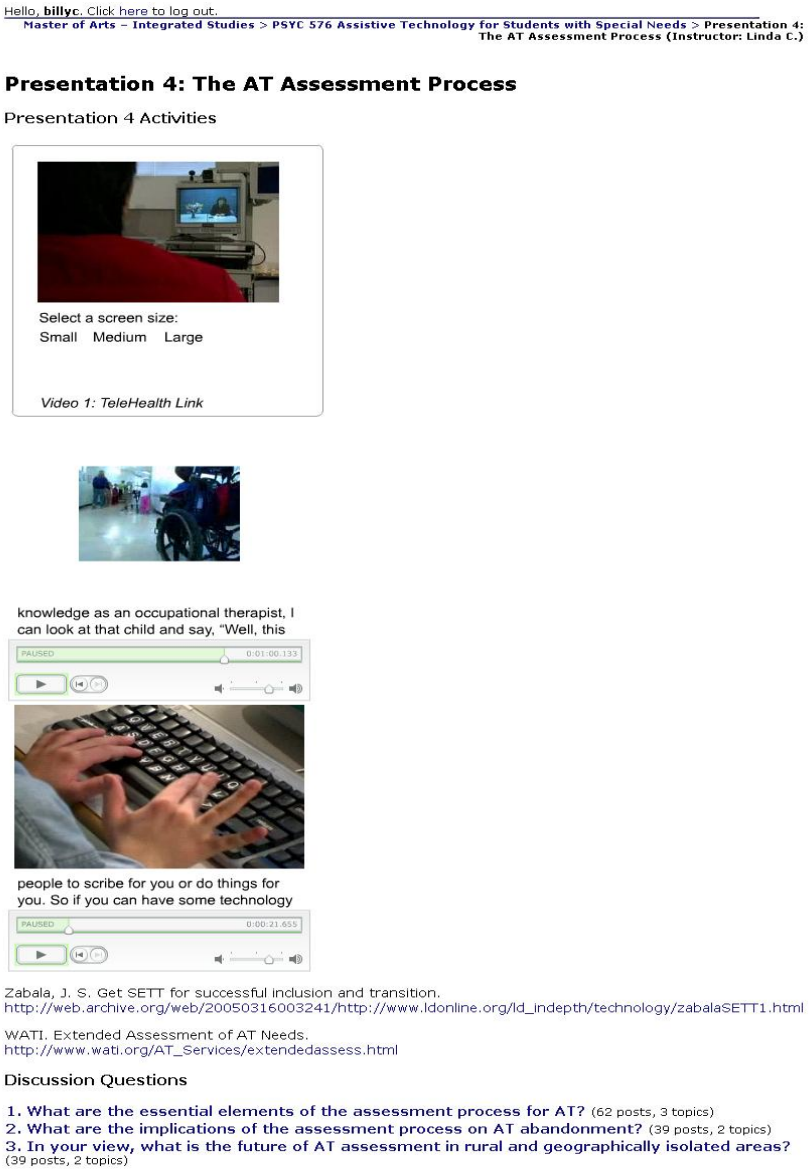
Psychology 476/576 Assistive Technology for Students with Special Needs was developed over a two year period of time specifically for teachers. It was designed to serve as an introduction to the field, because the majority of teachers in Alberta have had no previous coursework in the field. However, the course is extensive enough in content that teachers participating in the course would develop sufficient knowledge and skills to participate as a competent team member in an assistive technology team. The course was developed at the undergraduate and graduate levels, with different expectations on assignments and readings, so both preservice and postgraduate teachers could benefit from the course. The course is totally online and accessible to any teachers in Alberta, or throughout Canada, regardless of their geographic location.

The course was developed to incorporate a number of innovative and unique features. These features are outlined below.

*AT Tool Lending Library*. The course assignments include a review of an assistive technology tool. The tool can be one that the teacher has in the school or district, can be a software or program available on line, or teachers can borrow a tool or tools from our lending library. Teachers request the tool from the library and it is mailed out to them anywhere in Canada.

*Discussion Forum*. Students are required to participate in an online discussion forum once a month. The discussion boards are run on a university-made discussion software Bazaar for Psychology 476 and on an open source learning management system Moodle for Psychology 576. During the week that the forum is open to the students, they view video clips and readings for discussion, and then post their responses to three discussion questions. They also respond to two posts by other students (See Figure 1).

*Figure 1.* Discussion forum screenshot showing videos and discussion questions.



*Multimedia*. The course makes extensive use of multimedia clips. Teachers are able to "see and hear" how the technologies can be implemented in the classroom by viewing clips of case studies. For example, teachers can see how text to speech software can be used in the classroom, or view students using word processing programs that are supported by picture symbols. Effort was made to ensure that the multimedia were technically accessible. The transcript is displayed as the caption as well as a downloadable file. Video is encoded in three different sizes to accommodate different bandwidth capacity at the client side. An access key was added to the Flash movie. The user can select the size of the video by pressing either "S," "M," or "L." A paragraph of instructions is embedded as an accessible object that is readable by text reader when "Make object accessible" option is checked. Similarly, the transcript is a block of text that is visible to screen reader (See Figure 2 and 3).

*Figure 2.* Screen reader visible instruction for different video size.

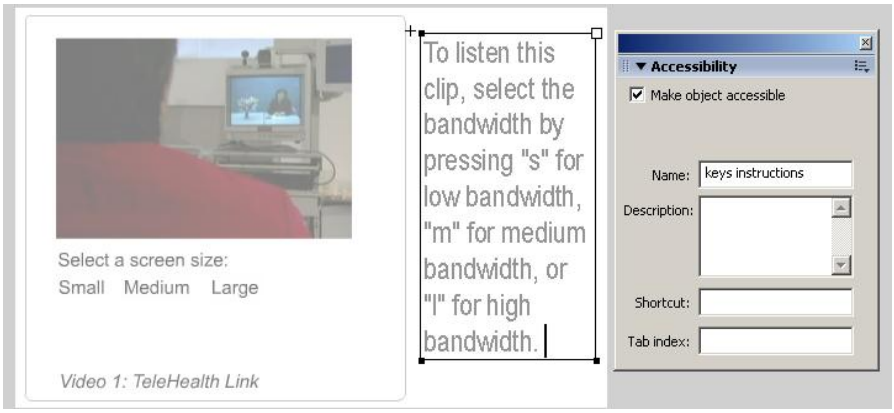
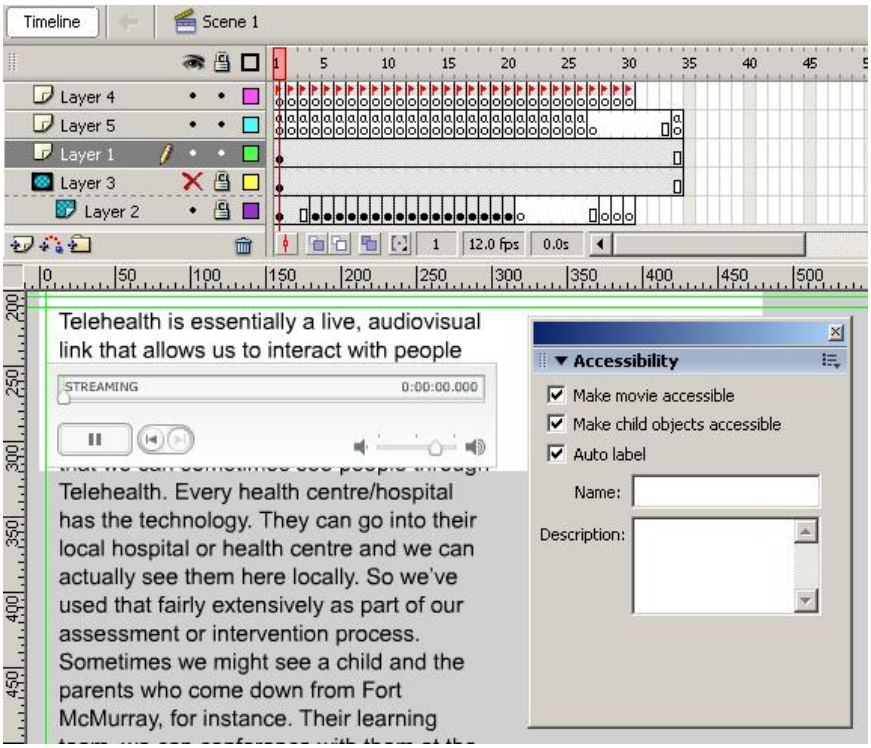
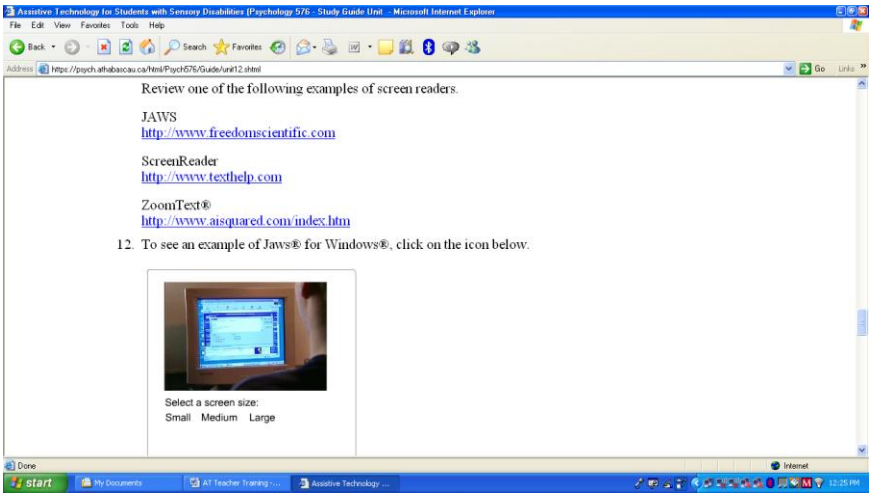


*Figure 3.* Back View of video clips and captioning.



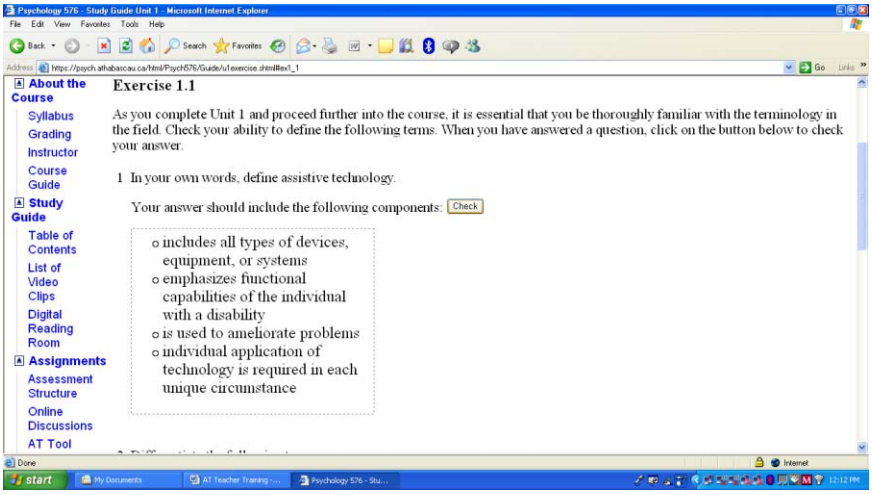

*Interactive Study Modules*. In each of the study modules, students follow an interactive study process. They are required to complete a number of readings that are either print or online. Included in the process, with participant consent, are video clips of students, parents, and teachers using and discussing specific AT tools. Students are also directed to explore further information provided on specific assistive technology tools through links in the study modules to manufacturers' sites (See Figure 4). After completing the readings, they are asked to complete interactive exercises that are designed to help them learn and review the materials. Students answer the questions on the screen and are then

*Figure 4.* Interactive Study Process showing links and video clips.




able to check their responses by clicking a button (See Figure 5).

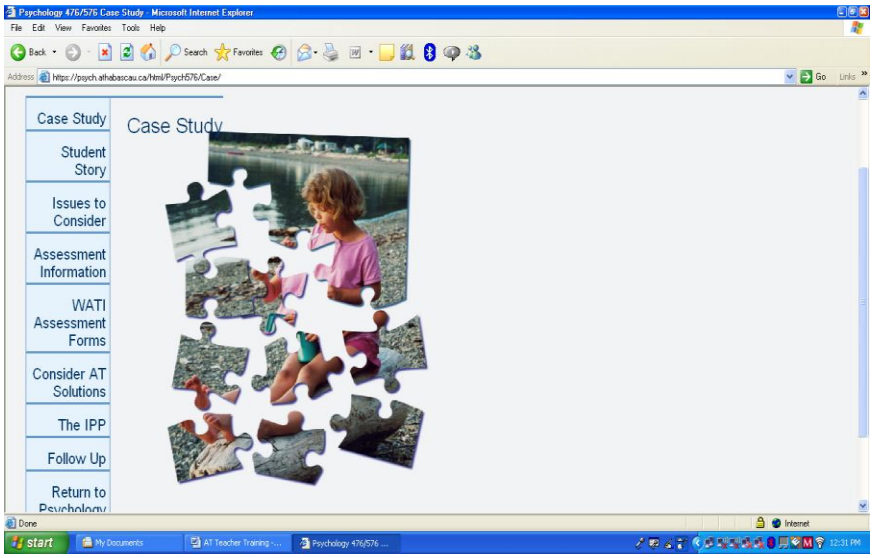
*Figure 5.* Example of exercise questions with check box and answer.




*Assignments.* The culminating assignment in the course is an applied project where students must apply what they have learned in the course

to a case study. The students must discuss all of the steps in the case study from the issues to consider when beginning, the assessment process, selection of the AT, the writing of the IPP, and the followup. To guide them in this process a fictional case study was developed as a model. The case study is interactive and makes use of multimedia so that the students can actually experience the situation (See Figure 6).

*Figure 6*. View of the case study and its components.




*Digital Reading Room*. The students are able to access all of their readings in the study modules by going to a Digital Reading Room. They can reach all of the materials that are required through their learning modules by clicking on links in the course study process.

## Evaluation

Psychology 476/576 has only been open for a short period of time and evaluation of the course by students and developers has begun and will continue. A number of students have completed the course and provided their feedback on the various components. At this point, the feedback has been very positive. One student commented that working

through the course was like having "the world at …(her) fingertips." Another wrote that she was "amazed at what is out there." Students liked the easy accessibility to the course components and the fact that everything they needed was right there. Students reported that they enjoyed the discussion forum and were surprised at how much they learned conversing with their peers. They enjoyed the multimedia clips as the clips allowed them to view real life applications in the classroom. Several students made use of the lending library while others had access to assistive technologies in their work environments. On the other side of the coin, several students had difficulties signing on to the discussion forum platforms and experienced some frustration learning how to navigate and participate. Others expressed some frustration with links that went down. Also, some students had difficulties downloading the multimedia as they did not have the necessary software installed on their computer. Overall, however, the majority of the students reported that the course contributed significantly to their knowledge and skills in the field. In the final journal submissions, a number of students reported opportunities to take leadership roles in AT in their school, district, or workplace. One teacher reported that she has now documented all the devices that are available to students in her school and circulated to her fellow teachers what is available for use. One consultant indicated that he was setting up small workshops on various aspects of AT in his division.

## Conclusion

Huge advances in AT have occurred over the last decade along with the advances in computer-based technology. These advances have resulted in the increase in the repertoire of AT tools available to enhance the participation of students with disabilities. However, the benefits of these innovations cannot be realized by students unless teachers are adequately prepared to operate the equipment and integrate it within their classroom routine. Unfortunately, in Alberta, many teachers do not have the background skills and knowledge to implement assistive technology in their classrooms and would like to increase their skills in this area. As a response to this need, Athabasca University developed the online course for teachers, PSYC 476/576 Assistive Technology for

Students with Special Needs. This course was developed to incorporate a number of innovative and unique features and provide access to training in assistive technology for teachers across Alberta regardless of their geographical location. Although there has been limited opportunity to evaluate the course at this point, teacher feedback has been very positive.

The development of the course, PSYC 476/576 Assistive Technology for Students with Special Needs, has increased the opportunity for teachers to update their skills and knowledge in AT. However, even if teachers increase their general background knowledge and proficiency in the use of AT in the classroom, there are continued issues in this area. The need for specific focused training on the actual equipment used in the classroom will continue. Some technology-specific supports such as set-up, programming, upgrading, maintenance, and repair will still present barriers to AT implementation (McGregor & Pachuski, 1995). Therefore, further options and opportunities for professional development in the area of assistive technology to meet these needs have to be available and these options need to be flexible to meet the demanding schedules of working in schools, and available to teachers working in rural or remote locations.

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