

Closing The Gap

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**CREATING A CLASSROOM OF
DISCOVERY AND WONDER**

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**TECHNOLOGY FOR THE
BI-LINGUAL STUDENT**

ICATER AND MAT LAB:
*IMPLEMENTING INNOVATIVE ASSISTIVE
TECHNOLOGY TRAINING IN A PRESERVICE
EDUCATION PROGRAM*

DISCOVERIES



ICATER and MAT Lab:

Implementing Innovative Assistive Technology Training in a Pre-service Teacher Education Program

By James R. Stachowiak and John Achrazoglou

INTRODUCTION

There are many well-documented barriers to student assistive technology (AT) usage in the classroom. One not often addressed barrier can be the teacher's lack of awareness, comfort and experience with AT. This often stems from limited to no exposure to AT at a pre-service level. With mainstreaming and inclusion becoming more prominent in schools, this problem is increasing. General education teachers are now likely to work with students with disabilities who would benefit from using AT. Yet, these teachers lack the background, experience, or comfort with AT to successfully incorporate or support AT usage in their classrooms. Using innovative methods to incorporate AT education via lectures, hands-on projects, and other learning opportunities into a pre-service College of Education setting and providing professional development opportunities, the Iowa Center for Assistive Technology Education and Research (ICATER) at the University of Iowa is striving to reduce this significant barrier to AT access.

In 2006, the College of Education at the University of Iowa opened ICATER with a mandate to improve AT usage in schools across Iowa by providing pre-service AT awareness and training to all COE students, which includes general and special education teachers, administrators, psychologists, and counselors. With the opening of ICATER, the UI College of Education became one of the first to stress AT awareness and training at a general education pre-service level. Initially, ICATER had difficulty incorporating AT education into the College of Education because, due to credit and class requirements already in place for those in the teacher education

program, creating a required AT class was not an option. (ICATER has created an online Introduction to AT class that students can elect to take, but is not required.) These constraints led to ICATER's decision to take an innovative approach to pre-service AT training.

To reach everyone in the College without the benefit of a required class, ICATER worked with the faculty to create a series of AT-based lectures to be given by ICATER employees tailored for a variety of courses in general

"The development of the MAT Lab has been recognized on a national level as an innovative and effective way to introduce future teachers to AT."

education, special education, and counseling, as well as foundations and methods classes in all teacher education subject areas. These lectures build upon each other and allow ICATER to reiterate the importance of AT to students throughout their College of Education career. Topics covered in these lectures include an introduction of the concept of AT, history and laws that have framed AT usage in education, specific types of AT that are commonly used in school settings, where AT fits in and how to write it into an IEP, the

school's and the teacher's responsibilities when AT is written into the IEP, who should be on an AT assessment team, and how to properly assess a student for AT usage. Although early assessments of ICATER efforts showed better student awareness of and knowledge about AT, it was felt a hands-on encounter with AT would give students a more authentic and in-depth appreciation of how AT works, as well as a better understanding of some of the hurdles AT users may encounter.

METHODS AND STRATEGIES

The conviction to create and implement a hands-on AT project led ICATER to partner with Technology in the Classroom, a required class for all teacher education students typically taken early in a student's program of study. The course enrolls 150 students per semester and is taught by teaching assistants in sections of fifteen students. The goal of the course is to teach best practices of using technology in K-12 classrooms, in particular those supporting inquiry and problem solving strategies. To advance assistive technology throughout the teacher education program, it made sense to use this early foundation class so students could build on their AT experience in later classes and field experiences.

Jim Stachowiak, ATP, the ICATER coordinator, John Achrazoglou, PhD, the faculty member in charge of the technology course, and Wayne Kintz, the coordinator of the College's technical support worked together to develop a lesson plan for the AT project and iron out curricular and technical issues on revising the course and delivering a meaningful AT experience to students. Brief surveys of students, faculty, practicing teachers, and employers initially confirmed overriding support to make AT a larger part of the repertoire of technical skills teachers bring to classrooms. Plans to increase emphasis on AT and establish new AT related artifacts on student electronic

portfolios were also approved by the College's Teacher Education Oversight Committee and the Iowa Department of Education.

Prior to ICATER's opening, AT was addressed briefly in Technology in the Classroom as a topic that one group explored and presented on in a group inquiry project. In order for the AT project to fit into the syllabus, AT was removed as a group inquiry project and it was melded into the video production part of the course that previously entailed students creating an instructional video on a topic of their choice. The lesson plan developed for the new AT project begins with ICATER providing a lecture to the class, introducing and discussing the AT devices and software that the class will be exploring. Following the lecture, the class is divided into five groups, with each group assigned one of the following AT categories: scan and read programs, speech recognition software, physical access aids, visual impairment aids, or universal design for learning technologies.

Each group schedules time outside of class to meet with an ICATER employee for an in-depth demonstration of the basic func-

tions of the products in their assigned AT category. The group then checks out a computer containing that technology from ICATER's Mobile Assistive Technology (MAT) Lab. Over the next two weeks, the students explore and experience their assigned AT. Students are encouraged to think about how the AT would benefit different types of students, as well as potential difficulties that could be encountered when using the AT, and how they, as teachers, could best support students' AT needs. While exploring the AT, they also create a demonstration that they present to the rest of the class. The students videotape and edit their demonstration and this video and a short reflective essay are ultimately uploaded to electronic portfolios as performance indicators for standards related to Technology and Diversity. The goal of these demonstrations is that each student in the class will have in depth experience with one type of AT and a broad introduction to the four other

MAT LAB

During the initial pilot testing of this project, students visited ICATER's stationary

lab to work with their assigned AT and through this, a number of technical difficulties were revealed. Security measures employed on student lab computers conflicted with the operations of some AT applications. For example, the user profiles and personal settings that some AT programs use or generate were often modified, relocated or deleted by security measures when the computer was restarted. In other cases, certain AT titles, in this case, speech recognition software and a screen magnifier, conflicted with each other's operation and rendered both programs unusable. It quickly became clear that using general purpose, centrally managed desktop computers in student labs was going to present a host of technical problems. Also, with the number of students participating in the class, space and time constraints of ICATER's lab did not allow students to spend as much time as necessary learning their assigned AT. In order to better control the technical aspects and resolve many of the logistical conflicts, through student technology fee funding, ICATER created a Mobile Assistive Technology (MAT) Lab of computers dedicated to AT.

MAT Lab consists of 16 laptop computers, each with a theme based on AT commonly used by K-12 students. These themes are Speech Recognition Software, Computer Access for Visual Impairments, Alternative Mouse and Keyboard Options, Scan and Read Software, and Universal Design for Learning Tools. Each computer designated as one of these themes is loaded with software and hardware that fits the theme. ICATER does not endorse products, so to avoid showing favoritism and to give students opportunities to compare, multiple products from the same category are available on each computer.

MAT Lab's creation has allowed for the smooth implementation of the AT project into Technology in the Classroom. Removing the time and space constraints of having to use the ICATER lab allows students to spend as much time as they'd like working with the technology in a setting conducive to their learning styles. Laptops checked out to students were crucial in delivering this student centered strategy and early observations reveal students working beyond expectations and doing more experimentation with these complex technologies.

ASSESSMENT

Since MAT Lab was created and the AT project implemented into Technology in the Classroom, ICATER has been collecting data to

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determine the effectiveness of this program. Upon entering the College of Education, students take a survey establishing baseline data for understanding, experience, and comfort with AT. A post-intervention survey is administered following the AT project and a final survey is given when students graduate. Although the first group to participate in the AT project has not yet graduated, ICATER has consistently found significant improvement in students' perceived knowledge and comfort using AT from the initial survey to the survey following the AT project.

In the initial survey, students were asked if they knew how to use AT for students with physical, visual, and learning disabilities. They were also asked to rank their comfort with implementing AT into a lesson plan and classroom curriculum. Following the AT project, these same questions were asked and results for both can be seen in Table 1. Some of this drastic swing can be attributed to the survey being given immediately following the completion of the AT project. ICATER expects that when students graduate and take the survey again, responses to knowledge and comfort with AT will be slightly lower than those seen on the survey immediately following the AT project, but still significantly higher than those from the initial survey.

Success of ICATER's AT education initiative cannot solely be seen in the numbers from the surveys. Many students have shared stories about how the AT project has helped during their student teaching experience. One such example comes from a student whose AT project was on scan and read programs, which included Kurzweil 3000. During her practicum, she worked with a student with autism who teachers could not get to participate in essential class activities, such as reading and discussing articles. Teachers had tried many tactics to get him to read these articles, including taking him to quieter rooms, but nothing seemed to work. One afternoon, upon taking him into the computer lab, the student teacher saw a sign on a computer that read "Kurzweil 3000, Do Not Turn Off" (the prevailing thought being that with Kurzweil on the computer, turning it off would break the computer). Knowing how Kurzweil worked and that it could help the student, she scanned in the article and allowed the student to listen to it at his own pace. This method worked well and the classroom teachers utilized this technology with the student for the rest of the year. They were grateful for the student teacher's AT knowledge because they had had Kurzweil for a long time but no one

	Pre Intervention	Post Intervention
Physical disabilities	82% Disagreed or strongly disagreed being knowledgeable	78% Agree or strongly agree with being knowledgeable
Visual Impairments	81% Disagreed or strongly disagreed being knowledgeable	74% Agree or strongly agree with being knowledgeable
Learning disabilities	78% Disagreed or strongly disagreed being knowledgeable	79% Agree or strongly agree with being knowledgeable
Comfort with implementing AT in lessons	73% Poor or very poor 17% Average	70% Good or excellent 25% Average Pre Intervention

Student responses to AT survey.

knew how to use it, thus this powerful tool was being wasted.

DISCUSSION

Although MAT Lab was originally created for use in Technology in the Classroom, its mobile nature has created new, innovative, and flexible AT learning opportunities for students at UI, as well as education professionals across the state. For UI students, MAT Lab is now available for use throughout their pre-service training, from introductory foundation courses to field experiences. To gain practical experience supporting students with disabilities and incorporating AT into a classroom, students can check out and use MAT Lab computers during their student teaching experiences. This learning opportunity builds upon what students learn early in their program, allowing ICATER in later classes to address advanced AT issues and advanced feature.

MAT Lab's mobility and versatility of programs has also provided ICATER with the capacity to extend training beyond the UI campus and take AT training directly to schools, businesses and other places in the community. With MAT Lab, ICATER can create temporary AT labs onsite to provide innovative, effective, hands-on professional development sessions. In the short time since MAT Lab has been developed, ICATER has already used it to conduct training for public and private agencies and commercial businesses, creating partnerships and advancing awareness of AT to a wider spectrum of audiences than ever envisioned.

Over the past two years, ICATER's incorporation of AT education into the pre-service

curriculum in the UI College of Education has been a success. The development of the MAT Lab has been recognized on a national level as an innovative and effective way to introduce future teachers to AT. Moving into the future, ICATER plans to expand the capacity of MAT Lab to create more educational opportunities by increasing the number of computers and the software titles available on each computer. Expanding MAT Lab will allow ICATER to build upon what is already being taught in the College of Education and extend the AT project beyond the teacher education program to include administrators, psychologists, and counselors. It will also increase ICATER's capacity to provide hands-on training across the state and potentially nationally. In the end, those that benefit most will be students with disabilities whose teachers will have a better understanding of and comfort with the AT tools that will help them succeed in school.

MORE INFORMATION

For more information on the University of Iowa College of Education's ICATER, the MAT Lab, ICATER's online AT course, future ICATER trainings, or ICATER's availability for training, contact ICATER Coordinator Jim Stachowiak, ATP at 319-335-5280 or <HYPERLINK "mailto:james-stachowiak@uiowa.edu"james-stachowiak@uiowa.edu> or visit ICATER's Web site HYPERLINK "http://www.education.uiowa.edu/icater"www.education.uiowa.edu/icater. ■