

Teacher Education Unit Technology Report

Introduction

The Teacher Education Unit of the College of Education and Human Services at Minnesota State University Moorhead is committed to providing teacher candidates with the tools and knowledge necessary for them to become exemplary teachers in the rapidly changing school environments. With the advances of computer technology in society, it has become a requirement for today's teachers to be competent in the usage of hardware and software found in the modern classroom. Thus, teacher candidates must be knowledgeable in the use of the hardware and software and also skilled in the appropriate use of that technology in the classroom setting. With the diversity of equipment and programs available in school districts across the country, teacher candidates must engage in the use of specific programs. In addition, they must recognize the potential in new technologies and generalize concepts to utilize unfamiliar hardware and software.

Examination of the broad range of technologies used in the geographic region helps the Unit shape the needs and practices on campus. Data collected from seminars held on the MSUM campus with local educators, collaboration between members of this college and local school personnel, visits to local schools, and state and national guidelines provide evidence that there is a broad range of technologies currently in use throughout local districts. Diversity of populations, including rural and urban settings, enables the Unit to observe a variance in application levels. By studying districts with state-of-the-art technology, the trends in education technology, within a limited scope, will be apparent.

The Unit's concern for various aspects of technology use and implementation is evident through its efforts to:

- Examine current campus practices within programs to determine alignment with its vision for technology.
- Outline the levels of technology currently in use in licensure programs and how they match with local, state, and national standards.
- Continue to stay abreast of learning technologies, as they are adapted into school districts while recognizing and responding to the needs of districts with differing levels of technological capabilities.

In accordance with the Unit's emphasis on technology, it will identify and implement defined goals and objectives necessary to support the Unit mission. A program will be established to equip teacher candidates to work with the existing technology in schools while preparing them for future trends. Some goals may be financially challenging; therefore, the Unit must remain flexible. In the near future, the Unit will study P-12 programs that range in use of technology, including those are in early implementation stages or that have not been fully proven. New technologies may make established procedures obsolete if the Unit does not remain flexible and

change-oriented. Cost reductions may make ideas feasible that would not otherwise have been considered.

Status of Technology in Area P-12 Schools

Word Processing

Often, the technology found in secondary schools is much the same as that used by college students. Basic word processing is similar regardless of grade or academic level. High school students are expected to produce papers that meet the same standards for legibility and readability as required in college classes. Differences between secondary and college expectations are probably measured in the type of assignments.

Electronic word processing is used both at the student level and for administration (memos, letters home to parents, student papers and tests). These skills are no longer an option for teacher candidates, but are a requirement for daily activities as well as reasonable job placement.

Different districts, even individual schools in districts, may use a variety of word processing programs. Teachers must be versatile enough to adapt to different programs as well as attain keyboarding skills.

Internet

The use of the Internet has spread from the business and private sectors to become a normal part of school. The Web has educational applications in two distinct areas, general research and personal communication use. Research as a learning activity is applicable at all levels, even for primary grade students. Schools currently have students working in either the classroom or in a lab setting to obtain information from the Internet.

Email is the most obvious use of personal communication. In many districts, email has not just become a useful tool to many teachers, but has developed into a necessity. The second area of personal communication is found on the Internet. An increasing number of schools now require or strongly encourage teachers to have web pages. Teachers need to be able to use web search engines and have an understanding of what makes up a quality educational web site. They will also need a fundamental understanding of the process that goes into the construction of a class web page.

One example of a local school district that integrates technology can be found on the web pages of **Hawley School** District in west central Minnesota. This district uses a “whole-site “ approach rather than expecting individual classroom teachers to maintain sections of the site. This “whole-site “ approach does not preclude the posting of projects from different classes. The Hawley site provides an excellent illustration of how varieties of technology can be adapted to teaching. Another source to find examples of best practice technology using lessons from area

schools is the locally produced CD-ROM set “Innovative Uses of Technology. “

Database and Network

Many schools are using a teacher accessible database system for maintaining grades. These kinds of systems tend to be specific to the software the school has installed and normally linked to a central processor. The information and forms used are designed by/for the individual districts.

Material and personal folders may be located on the school network, but, once again, these networks are set up by personnel at the site and are individual in the way they work and the access privileges. Schools are using networking extensively for the aforementioned grading programs.

Distance Learning Courses

One aspect of teaching at the college level that is being adapted for use at the secondary level is delivery of instruction through on-line courses. On-line instruction gives students opportunities to take courses otherwise not available at smaller schools or to assist students who for some reason do not function well within the standard school environment. [The North Dakota Division of Independent Study](#) is an example of a state site for a variety of locally produced online courses.

Distance learning also includes the satellite and IVN networks for sharing classes. Again, use and implementation varies greatly from school to school. As the Internet becomes more versatile, satellite or television distance learning will become integrated within the network of the World Wide Web. The need for theater type classrooms for television projection has migrated to mobile units, and may eventually end up being broadcast on wide bandwidth Internet networks.

General Skills

Most schools employ technology at least at the minimal level of computer use. So, all teachers need to have an understanding of computer operations. These skills must include capability in simple operations, i.e., keyboarding and mouse functions to more complicated processes involving file management. Schools use Windows and/or Macintosh based equipment, so teachers should be able to operate a computer using either platform.

Schools personnel utilize multi-media software for presentations, both in instruction and in student projects.

Technology in the Future

Educational institutions at the P-12 levels are rarely in the position to install unproven, leading edge technology. Trends are going in the direction of more and/or better on-line courses, a

continuation of the process of using computers more for research and interaction, (as opposed to drill and simple word processing) and the use of laptops or PDAs. Multi-media presentations will increase in complexity as equipment and software to modify and digitize audio and video files become less expensive and more available.

The digital divide is more extensive than the chasm of having technology vs. not having equipment, software, or on-line connections. Schools and/or districts are on different tracks with technology ranging from fully integrated schools, as the Hawley District, to those have few or rarely used computers in a given classroom. “Future “ for some schools is the process of integrating computer technology into a traditional classroom or having appropriate assignments for a scheduled computer lab period each week. Monies have been available over the past few years to install modern equipment in many schools, necessitating districts to hire teachers who prepared to use these expensive tools to their full advantage.

Technology in the Teacher Education Unit

There are two major schools of thought on how best to prepare candidates to integrate technology effectively into their teaching (Brush, 1998). One method is to teach technology as a separate course while integrating educational ideas, lesson plans, and concepts into the technical course work. This is advantageous to instructors who may not be technically enthused or capable, and it may be advantageous to the candidates because they are learning from an expert in technology instruction. This method, however, does not provide candidates with a working model of technology integrated into content learning.

The other method assumes that teacher candidates will learn how to integrate technology effectively into teaching through the modeling of their instructors in various courses. In these courses, the instructors integrate the technology both in delivery and by requiring usage by the learners. Candidates use the technology in conjunction with the delivery of the course content. They practice methods for integrating technology through their assignments and regular course work. This approach has the advantage of demonstrating the use of technology in all content areas. Although this method makes a strong connection between the technology and teaching, only that technology which applies directly to the course work is used. Also, many methods instructors may not be fully versed in applications of various technologies.

The Teacher Education Unit

Using a dual approach to teaching technology, the Unit has grown from an occasional use of word processors to a highly integrated process incorporating technology as an integral component of all courses. The Unit, by both integrating technology into courses and teaching specific skills separately, has developed a well-rounded program. All instructors use computers and some related technologies in their courses with some of these courses or part of the courses being highly technical. Although strongly encouraged, faculty development in the utilization of technology has not been forced. Initially those with an aptitude or desire added technology to

their curriculum. Gradually, more faculty have integrated technology into their coursework. The integration of technology has been a smooth process; the technology is woven into courses and competence is an expectation. A full time technician at the College supports both faculty and candidates.

The entry-level education course, Ed 205, Introduction to Education and Technology, has a strong technology component that is taught separately with a series of technical seminars incorporated in the curriculum. These seminars focus on teaching technology by using the course assignments and examples. In this introductory course candidates are trained in the technology. Skills attained in this class are applied to work and assignments required in subsequent courses.

Most upper level education courses use and expect candidates to use technical applications with which they may not be familiar. Rather than shift the focus from the material of the course, an education technology specialist conducts “just-in-time-training” seminars in technology. These seminars are normally one-hour training sessions conducted in conjunction with the course work. Said differently, the technology is linked directly with the course work. Some instructors in higher-level courses are more comfortable with technology, and therefore, use more in their curricula. Although this may seem to create disparities regarding the amount of technology that individual candidates may experience, all candidates receive the same basic technology training.

Guidelines for technological instruction are taken from the Minnesota Colleges and University System in the Standards for Effective Practice in Educational Technology for Minnesota Beginning Teachers. These standards reflect the [National Education Standards \(NETS\)](#) developed by the [International Society for Technology in Education \(ISTE\)](#) the [Interstate New Teacher Assessment and Support Consortium \(INTASC\)](#), the [Minnesota Board of Teaching \(BOT\)](#). Information gathered from local schools and from MSUM instructors based on the requirements for specific courses also shape decisions regarding technological instruction. The content of the technology seminars is constantly updated based on the expertise of incoming candidates, the requirements set by state and national standards, the changes in technology in the schools, and the immediate needs of instructors.

The Unit installed a computer lab to meet the needs of teacher candidates. This Macintosh lab in Lommen 107/109 is staffed full time with assistants specifically trained on the software being used by teacher candidates. One-on-one assistance from competent lab staff is available at all hours that the lab is open. The lab is scheduled:

- As a classroom for technology training,
- Utilized by instructors at prearranged times when technology use is needed in their regular classes,
- As an open lab for candidate and faculty use.

Two additional labs are housed in the College, one small Windows lab contained within one of

the regular classrooms and a large, open lab. Standards are listed in the [Appendix](#).

Future of Education Technology at MSUM

As more instructors adopt technology, it will become necessary to coordinate the use of the technologies across various programs. This is done within some segments of the Unit, but a linear progression of learning has not been implemented across the entire Unit. The first step in a completely aligned program requires linking all technology segments to courses, building each segment of technology in each course as a permanent requirement. This Unit wide integration is a natural progression as instructors become more proficient with technology relevant to their area of instruction.

The coordination of scope and sequence of technology will require active participation of instructors sharing individual ideas and innovations. This would be a second step with groups of instructors meeting together and sharing similar technologies. Advantages of faculty sharing are improvement of instruction through the introduction of new ideas and assisting newer faculty through the examination of the areas of technology that may not fit well into a particular course.

New processes and technologies will continue to be taught to the candidates. Basic fundamentals will continue to be introduced in the entry-level courses, while more advanced technology will be used throughout the upper level courses. As new processes become available in different colleges on campus, these will be adopted appropriately into the education Unit.

A larger proportion of specialized software will be available for individual courses. Currently, the greatest proportion of software in use is generic enough to be used in multiple courses. As proficiency is reached in basic software, candidates will be trained in software and programming specifically made for a field of study, or even for a single course. This requires a fairly sophisticated level of technical ability on the part of the instructor, as course specific software must be appropriate and useful in order to be cost effective.

More on-line materials will be offered. The Unit is in transition from a paper-based system to one grounded in on-line information and materials. Candidates will have the option of printing material, or using and responding while on-line. Entire courses will be offered via the Internet to accommodate off-campus candidates.

The Unit will continue to upgrade both hardware and software within the restraints of economy and usefulness. Although there will continue to be differences between the Unit's levels of equipment and software and those found in the school districts, the Unit will remain at par or ahead of local schools in acquisition of technology. A close relationship will be maintained between the Unit and the local school districts in order to keep a balance.