Technology in Education
Virginia Society for VSTE

Journal

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Contents

Technology in Education
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Editor's Comments:

Welcome to a new school year, and to a new VSTE Journal. We have made some exciting changes to the format of the Journal in keeping with the Virginia Society for Technology in Education's mission to promote excellence in education through the integration of existing and emerging technologies.

The Editorial Board consists of educational technology experts from our community of K-12 teachers, administrators and higher education institutions. Although the editors have varying interests and backgrounds relating to the use of technology in education, each editor is committed to reviewing and working with any author who wishes to submit an article that reflects the vision of the society. That vision is to be an influence in technological innovation in education and be recognized as an agent of change across the Commonwealth.

We welcome articles that include, but may not necessarily be limited to, topics that address:

- Curriculum and instructional strategies: technology use in a particular subject area, multidisciplinary or general education.
- Current and emerging technologies: focussing on specific technology or training related to topics such as distance education, multimedia, simulations, peripherals and telecommunications.
- Assistive Technologies: exploring creative solutions for the use of technology to facilitate learning for students with special needs.
- Technology implementation: focussing on how technology is used throughout an educational building, district, school board, university, state, region or at the federal level.
- Teacher Education and Training: examining/developing/showcasing models for infusing technology and its use instructionally in teacher education.
- Research: researching the background and use of technology in education as it pertains to best practices, theory, cognitive development and agents of change.

The first exciting change is how the Journal is presented. It is now in electronic format, brought to our readers as a PDF attachment to an e-mail message and as part of the VSTE Web site. Readers can now read the Journal online or print off selected articles or entire issues. This also means that it will be easy to retrieve archived articles and to distribute articles easily to others. Notice the easy-to-read online text and the way the links navigate to specific articles from the table of contents?

Why this new look? We want to broaden our reader base and make our Journal easily accessible. That is the second exciting change. It means that our Journal now has a worldwide audience at no cost to its readers.

Our third exciting change is in how articles are submitted. Instead of submitting an article to a specific editor, there is now just one submission e-mail

Technology in Education
Virginia Society for VSTE
www.vste.org

Editor's Comments, continued

link that will send the article to the Editorial Board for review. Send your submissions to: Editors@vste.org

The fourth exciting change is in how submissions will be selected for publication. Since we are committed to publishing a premiere publication, articles will be peer-reviewed. Two of our editors are professors at leading technology universities (University of Virginia and Johns Hopkins University).

The other editors are teachers, staff development specialists and administrators with technology integration expertise. If a submission contains content that is not within the framework of the our expertise, we will have the article reviewed by those who have the needed knowledge. The style guide for an article submission can be found at http://www.vste.org/communication/stylesheet.html.

There is a fifth exciting change (well, exciting to me that is) and it may be of interest to you. I am now the Managing Editor of the Journal and will be the acting Research Editor until the VSTE Board of Directors appoints a new editor with an interest and expertise in research within the educational setting.

If you have an interest in educational-based research and are willing to solicit, review and work with authors who have a story to tell about their use of technology within an educational setting, please let us know. E-mail us with your background and research experience to vste@vste.org. Be sure to include how we can get in touch with you by e-mail, phone and mailing address.

On behalf of the Editorial Board and the Board of Directors of the Virginia Society in Education, I invite you to be a part of the new Journal. Please feel free to contact me with any questions, comments or suggestions that you would like to make. Hopefully you will also want to share your experiences and knowledge with others "worldwide" by submitting an article for review. We are looking forward to hearing from you.

Diane DeMott Painter, Ph.D.
Managing Editor

Technology in Education
Virginia Society for VSTE
www.vste.org

Beyond Speech: The Importance of Multi-modal Communication for Individuals with Low-Incidence Disabilities

by Kathryn R. Bak

Children with low-incidence disabilities, even those children who use natural speech, often have problems communicating effectively. Studies have shown that instructing children in many different communication modalities improves their use of speech.

As a result, we now realize that a variety of appropriate communication modes are useful for more comprehensive communication systems. By considering children's individual strengths and needs along with the tasks across home, school, and community environments, a variety of communication methods can be recommended. This multi-modal approach is needed in order to meet an individual's range of expressive communication needs.

Augmentative Communication as a Function of Language

The ability to communicate is essential for basic human interaction. Many children and youth with low-incidence disabilities are unable to communicate effectively using natural speech alone. In order for them to become more proficient communicators, different means of communication should be considered. Many special educators and related service providers recognize this need and work towards teaching students how to communicate more effectively using other modes of communication. This may include signing or using an augmentative and alternative communication (AAC) device or communication display.

The term "AAC" is used to describe communication methods other than

Beyond Speech, continued

speech. These methods include, but are not limited to, computers with speech output, gestures, sign language, facial expressions, and picture boards (Glennen & DeCoste,1997). When speech is not present, the need for alternative methods of communication should be evident.

What happens in the case of students who speak, but whose speech does not adequately meet their communication needs? Should AAC be used with these individuals? There are many students who use natural speech as their primary method of communication. If they are unintelligible, speech alone cannot meet their communicative needs.

When parents, teachers, and others view natural speech and AAC as an either/or decision, the student's success in communication attempts is limited (Beukelman, 1997). Unfortunately, the "either/or" viewpoint is still common when educators and parents do not have knowledge or training in AAC.

Too often the ability to communicate is confused with the ability to express oneself through the use of speech. Parents and professionals need to look beyond speech and focus on the overall ability to communicate. This does not mean giving up on speech. Providing other means of communication can allow an individual to begin experiencing successful communication attempts while still working on improved speech intelligibility.

As attitudes and laws have changed, the consideration of AAC has increased. The reauthorization of the Individuals with Disabilities Act (IDEA) requires that assistive technology be considered when developing the Individualized Education Plan (IEP) for a student. AAC falls under the broad umbrella of assistive technology and should therefore be considered for all students who receive special education services. This leaves teams with a difficult task to complete.

How can a group of people with varying knowledge and expertise be expected to come up with the single best way for a student to communicate? The answer is simply that they cannot. There is not a single best method of communication to be chosen. Teams need to look instead to a multi-modal approach in order to meet a student's needs across different environments.

Assistive Technology Evaluation Frameworks

Joy Zabala designed a framework as a way to guide teams through the assistive technology decision-making process. Because her framework looks at the **S**tudent, the **E**nvironment, the **T**ask, and the appropriate **T**ools, it is often referred to as the **SETT** framework. By using the SETT framework or a similar tool, teams can consider the student's strengths and needs in the setting of a specific task in order to come up with a range of solutions to barriers (Zabala, 1995).

Communication modalities, which are appropriate in one situation, may not be as effective in others. For people trained in assistive technology or AAC evaluation, it is not difficult to see how different needs and situations require different communication modes. It is unlikely that a high tech voice output communication device would be used for swimming class. The device may be appropriate for the student, but not well suited to the particular environment or

Beyond Speech, continued

Image 1: Examples of picture communication symbols

probable tasks. That same device may, however, be appropriate for the individual to use when shopping in the mall. The individual needing AAC support to communicate has not changed, but the environment and the tasks are significantly different.

Going through a step-by-step process of examining students and what they will need to do improves the chances of appropriate communication methods being in place. This decision making process also supports teams in coming up with a back-up communication plan for a student to use if the primary communication mode is not successful.

Image 2: Using this photograph of a dog would probably help a peer to understand that a student has something to say about his dog.

Sometimes a little extra support provides enough information that previously unintelligible speech can be understood. For example, if a student who relies on speech is unintelligible to an unfamiliar listener, signing or gesturing may help clarify the message. Perhaps a picture graphic symbol would be useful to give the listener a general idea of what the student is trying to communicate. Picture communication symbols (PCS) adapted from Mayer-Johnson's Boardmaker (Mayer-Johnson, 2001) could be used to communicate preference for a certain song or rhyme.

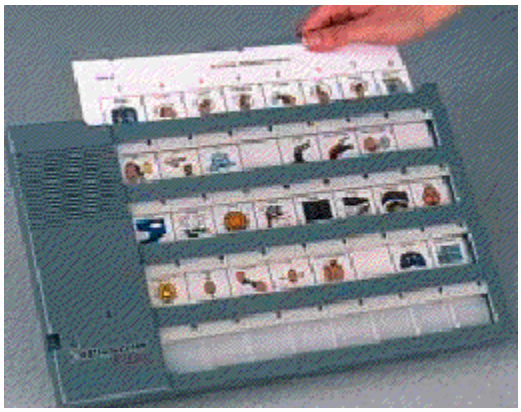

Image3: Pictured is the Holly.com E-lite, one of many AAC devices that meets the team criteria.

A Case Example

Kevin is in a first grade class all morning and in a special education classroom in the afternoon. Kevin has autism and although he has some speech, it is not always sufficient to meet his communication needs. When trying to find what communication system would work for Kevin, his team used the SETT framework and took into account the various settings he is in throughout the day.

Beyond Speech, continued

Kevin is able to use natural speech to express when he needs to use the bathroom, wants more to eat or drink, or needs help getting school supplies such as crayons or glue. Since he can use speech in these situations, that was the primary communication mode recommended by the team for those situations.

Because the students in the first grade class would not all be able to see a communication board during whole class activities, a voice output device was suggested for him to use for many activities. During "opening circle", the class talks about the calendar, the weather, and the schedule for the day. In order to allow Kevin a chance to participate, a voice output communication device with 32 messages and multiple overlays was recommended. His teacher programs in the vocabulary Kevin will need to participate in circle activities. This overlay would be one of many available for Kevin to use throughout the school day.

Kevin remains in one place during circle time so he does not have to carry the device with him from one place to another. At recess time this device is not practical to use on the playground. Kevin's team recommended that he try an Ablenet TalkTrac for the time he is on the playground (Ablenet, 2001). This device is a small, four-message voice output communication device that can be worn around the wrist like a watch. It could contain a few messages specific to Kevin's needs on the playground, such as asking for a turn.

The team would continue to make recommendations using the SETT framework and their knowledge of Kevin and his abilities. Kevin would be encouraged to use any method he had available to express himself. While natural speech would be a desired method, the focus would be on successful communication rather than focusing solely on natural speech.

The Communication Continuum

Musselwhite and St. Louis (1998) note that pure examples of vocal or augmented communication are uncommon. They view communication on a continuum from totally augmented communication on one end to totally vocal communication at the other end. Since vocal communication is the standard communication mode used by individuals without disabilities, teams should try to find communicative methods that are as close to the vocal end of the continuum as appropriate for the student and the particular situation.

An individual does not remain stationary on the continuum, but moves constantly according to need. Even individuals without disabilities employ augmentative strategies to add meaning or to clarify the spoken word. Individuals with low-incidence disabilities often have a breakdown in communication. This can frequently place them in a situation in which they will need to use another method of communication instead of, or in addition to, natural speech.

Importance of Planning Multi-modal Communication

Once the fears that AAC will hinder an individual from increasing natural speech abilities are put aside, the benefit of introducing such methods come into

Beyond Speech, continued

play. This includes consideration of students who are often overlooked as AAC candidates because they use natural speech. Why use AAC, especially if a student already has some speech?

Bodine and Beukelman (1991) provide a few guidelines for when AAC should be considered. Their recommendation is that any individual who is unable to meet his or her communication needs should be considered for AAC support. While this may seem to be common sense, too often parents and professionals put off the training that could better enable students to adequately convey what they wish to express.

Beukelman and Mirenda (1992) speculate that if an AAC system is not in place for students by the first grade, they won't be active participants in the general education curriculum. If students with low incidence disabilities are going to have access to the general education curriculum as part of a free and appropriate public education (FAPE), it is essential for teams to introduce the use of AAC as early as possible. Now that there is a greater availability of more affordable devices, access to AAC is not the barrier it once was. Parents and professionals are exploring the use of AAC use at an earlier age. As these young children grow, studies can be done to show the effect that this early intervention has on students with low incidence disabilities.

Increased access to AAC and continued advances in technology will likely lead to the development of new instructional strategies. New studies will be done to determine how students with low incidence disabilities can better take advantage of available AAC resources. Regardless of the types of advances that are made, the SETT framework can provide a sound process for teams to use when considering options to meet an individual's communication needs.

Conclusion

The idea of using several different methods to communicate should become a seamless process initiated by educators and parents when dealing with the communication needs of individuals with low-incidence disabilities. Most people communicate using a variety of methods in combinations. This leads to efficiency and enrichment of meaning (Iacono, Mirenda, & Beukelman,1993). Facial expressions, body language, gestures, speech, and non-speech sounds are all ways in which an individual can convey a message. A glare from across a crowded room can say more to a person than the spoken word; a facial expression can betray a lie.

Individuals with disabilities need to be instructed how to use non-speech methods to convey meaning, including both unaided and aided modes of communication. Unaided techniques do not require external support. Gestures, pointing, signing, and non-speech sounds would fall in this category. Aided techniques need some external device. Communication displays and voice output devices are common examples of this category. Augmentative and Alternative Communication can include techniques in both of these categories.

Beyond Speech, continued

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Technology in Education
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A Review of "Internet and Computer Ethics for Kids"

by Diane DeMott Painter, Ph.D.

During the weekend of Oct. 6-8, 2000 I had the opportunity to attend the National Conference on Cyber Ethics at Marymount University in Arlington, Virginia. Educators, parents, government officials, and business leaders from all over the country attended this joint initiative between the Department of Justice and the Information Technology Association of America. The mission of the Cyber Citizen Partnership Conference was to bring together a body of proactive individuals who would create, launch and lead a program dedicated to teaching young computer users, their parents and teachers smart, ethical, safe and socially conscious online behaviors.

It was through this conference that I met Winn Schwartau, president of Interpact, Inc., a security awareness consulting firm that develops innovative and entertaining corporate awareness programs. Schwartau is the founder of www.nicekids.net, a web site that is a forum for parents and teachers to address cyber safety and cyber ethics issues. Contained in this web site are online resources designed to help create ethical, educated and responsible Internet and computer users.

Schwartau is also an author of numerous books and articles that address cyber warfare and security. His latest book, Internet & Computer Ethics for Kids (and Parents and Teachers Who Haven't Got a Clue,) caught my interest as a resource worthy of review and discussion with children in grades three on up. This is not a "rule" book but a practical guide for the ethical navigation of cyberspace. The book provides information and tools to help parents and teachers communicate with children about the many ethical issues that they are likely to encounter when utilizing the Internet as a student, or later on when employed by a large corporation, a small business or the government. Designed to be read and discussed, the book fosters debate and open dialogue about applying ethics to technology.

The chapters are outlined to walk readers through the ethical questions that they should be asking their children and themselves, helping create guidelines and suggesting limits while explaining how the law actually works. The book begins with a discussion of what is "ethics?" Schwartau defines ethics as "the understanding about how your actions affect other people, knowing what is right and wrong, and taking personal responsibility for your actions, even if they are legal." The chapters cover a range of topics from what does it mean to be a

Ethics for Kids, continued

hacker, to annoying and illegal acts such as spamming, scams and hoaxes, plagiarism, flaming, sending hate mail, stalking and pornography. At the end of the book, Schwartau addresses the topics of ethics and the law and cyber parenting.

The book and the web site have prompted some concern. One concern is Schwartau's statement found in chapter one of the book, "Since Internet and Computer Ethics for Kids is for parents and businesses as well as kids, I declare no rules. Just like the Internet, we are all learning as we move along. So who am I to tell you how to behave?" Several discussion board participants on the web site expressed the concern that children need to have rules and that the book should at least present some guidelines for ethical behavior. For example, several messages were posted that expressed a need for youngsters to have a set of rules to abide by (i.e. spelled out as to what is right and what is wrong). I find it very interesting to note how many questions are also posted on this discussion board asking for information on "how to" hack into computers!

Recently I discussed the book with a high school teacher and an elementary teacher from Fairfax County, Virginia, and a Loudoun County, Virginia minister who is a parent of four children. I invited them to discuss with me their views in this article in order to stimulate thinking and debate on the issue of what we should and should not be doing to address cyber safety and cyber ethics with children. Our points and counter-point views are presented below:

Point:

Kids need rules. They need to know what is right and what is wrong. The book does not give a clear indication of how we should behave while using computer technology and when clearly unethical behaviors are described, the absence of clear reprimand tends to glorify the misbehavior. (High School Teacher)

Counter-points:

If you teach children to "just say no" when they are asked to perform an illegal or unethical behavior using computers, it is inadequate preparation for them making difficult decisions in their lives. Remember, in general there are no clear-cut answers when it comes to issues of ethics and morals. Schwartau clearly states that his book is designed to challenge you to think through ethical questions and dilemmas that kids, parents, and teachers face on the Internet every day. He stresses that ethics is a personal choice and responsibility. Schwartau states that cyber-ethics is very complicated and contains many gray areas. There are things that people do while using technology which are not so clear as to whether a crime has or has not been committed. He simply wants people to think about the consequences of their behaviors and the harm that their behaviors may cause." (Elementary Teacher)

While I agree kids and adults need to learn to think critically, as opposed to simply following a set of right and wrongs, I think the author was too quick to hide behind "who am I to impose my rules on other people." At minimum he could have further developed the "What does the law say?" and not simply left it at open-ended questions. With that said, if you follow through with his

Ethics for Kids, continued

suggestions and truly discuss the questions with parents sharing their thoughts, the environment would be much safer for all involved. (Minister/parent)

Point:

The book invites kids to listen to others and determine a code of ethics that is right for them and encourages them to take responsibility for their actions. (Elementary Teacher)

Counter-point:

I am afraid students may think it is OK to have a code of ethics that violates ethical behavior as long as it seems right to them! (High School Teacher)

Point:

Let's look at hacking behavior. Can it ever be ethical? The book describes the many different reasons people hack into computers. Some of the reasons are legitimate, such as people hired to test the security of companies. Others perform illegal hacking activities such as 'crackers' who want to break into computers or networks that they have no business accessing. Won't the mere description of different types of hacking behaviors influence some kids to try to do the same kinds of things? I mean, just take a look at the discussion board. People are asking questions about "how to" hack into computers. (Diane Painter, Editor)

Counter-Point:

If the book seems overly descriptive in hacking, why all the questions on "how to" hack? I think the book is simply trying to indicate that some hacking behaviors are legitimate and useful for helping to protect our infrastructure, and other hacking behaviors are clearly illegitimate and are unethical. As Schwartau states, "Just because something can be done does not mean it should be done." (Chapter two) The book is to be used within families and teaching situations between students and professional educators. It is not meant to stand-alone. Why are we so hesitant to take responsibility for teaching our children right from wrong instead of expecting "experts" to influence and guide them in making the right decisions? (Elementary Teacher)

There is always a risk as information is presented. Does teaching sex education actually make kids more sexually active? In my judgment, the information is not necessarily the problem. Rather, what will we do with it is the key concern, and in answering that we are brought back to questions of ethics. We must couple the discussion of hacking with discussion of what we believe is ethical. (Minister/parent)

Point:

What about the annoying, nuisance behaviors addressed in the book such as morphing and special effects? I have kids at my school that would think it funny to try to morph a teacher and print it out or send it electronically

Ethics for Kids, continued

throughout the school community. Schwartau states, "There is nothing illegal about using morphing and special effects software. It can be a lot of fun to put people's heads on an animal body, or make a picture more attractive."

He even states that his favorite tabloid cover is the President shaking hands with an alien. Some students may read the words "can be a lot of fun" and "personal favorite" as encouragement from an adult to engage in these nuisance behaviors. In addition, in the chapter on anonymity Schwartau states that these students can engage in these nuisance behaviors in anonymous ways. I think it is very important for young people to feel the emotions and consequences of harm that can result from unkind and unethical uses of the computer. (High School Teacher)

Counter-Points:

While morphing is certainly a nuisance behavior, I would be reluctant to limit expression of free speech within broad limits. (I know there is disagreement on these "broad limits") The greater point in my mind is helping the kids and adults to think ethically and understand how their work impacts other people and take steps to build up, rather then tear down. (Minister/parent)

Define "nuisance behavior." What is artistic expression to some is trash to others. That's the point of the book. The reader, based on his or hers own personal belief system, needs to decide where the lines should be drawn. That is the beauty of the book. It fosters discussion and self-reflection, expecting the readers to think about ramifications for their actions and how they affect others. Hopefully, children along with the adults who read and discuss the book with them, will conclude that the golden rule, "do unto others as you would have others do unto you" applies to computer use as well as other areas of life. (Elementary School Teacher)

I will say that Schwartau does an excellent job discussing consequences of behaviors such as spoofing (chapter 13), scamming and hoaxes (chapter 16) and fraud (chapter 17). He clearly states that fraud is unacceptable behavior on or off the Internet. In chapter 21 Schwartau states that plagiarizing and violation of copyrights are unacceptable and unethical behaviors. (Diane Painter, Editor)

Point:

The author states early in the book that he is not planning to tell kids what is right and wrong, and throughout most of the book, he sticks to this. However, in the last chapter, he clearly does state right from wrong behaviors. I think if the last chapter were at the beginning of the book, I would have felt more trusting about the author's intentions to provide guiding information to parents and their children rather than telling them what is right and wrong.

I think the book title should be aimed at parents and teachers with the subtitle 'and kids who want to help them understand.' Children would help adults understand the "computer talk" contained in the book and this would lead to family and classroom dialogue about the ethical issues that go along with the

Ethics for Kids, continued

"computer talk." This is particularly important in classrooms where these discussions are avoided by teachers who need help in understanding how computer ethics pertain to the use of technology in and out of the classroom. (High School Teacher)

Counter-Point:

I see the last chapter reinforcing what he says at the beginning of the book. He said he was not going to tell kids how to behave, just present points for discussion that hopefully will lead parents, teachers and children to a clear of understanding of "responsibility." As he states in the last chapter, "Kids are constantly faced with challenges and choices. They have to decide between right and wrong, and then deal with the consequences of their choices." Just telling kids the "rules" and expecting them to follow the rules does not always work. Children need to "buy into" those expectations. (Diane Painter, Editor)

If you are interested in reviewing Schwartau's materials, portions of the text from the book can be found on the Internet at www.nicekids.net. The section in PDF can be freely copied and distributed in both electronic and hard copy form as long as no content changes of any form are made and full credit is given. Additional fair use of the contents of the book includes pulling quotes, descriptive material, promotion and biographical information for review and commentary.

Customized versions of the book are also available for schools, educational institutions, corporations or government organizations. Contact Winn Schwartau for more information by calling 727-393-6600 or send an e-mail message to winn@nicekids.net. Reactions to this review are welcomed. I would love to hear from you. Please contact me at dpainter@vste.org.

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Should Schools Use Wireless in Classrooms?

by Janet Copenhaver

As new technological advances are invented, schools and school divisions must investigate these innovations and then decide their value for the classroom. With the growth of wireless technology, a decision needs to be made whether to keep stationary computers in place or switch to portable machines that are "connected" without cables.

After many hours of deliberation, my division has chosen to implement wireless mobile technology in our middle and high school classrooms. We assessed many factors in our decision, including our technology plan and the reasons for going wireless; our network and what was needed; how we were going to use the wireless, and the curriculum effectiveness of the technology itself.

"Why wireless?"

The background data from our laptop program provides insights for understanding why we chose a wireless environment. In 1998 with the collaboration of our School Board and Board of Supervisors, our division purchased laptop computers for each fourth and eighth grade student. The next year, we purchased laptops for each fifth and ninth grade student. Unfortunately, though, several major companies in our area announced layoffs and closings by the end of this fiscal year.

Among them were well known companies like Dupont, Tultex, and Pluma. In addition to these large companies, several smaller companies closed immediately or filed for bankruptcy. Because of our county's economic conditions, our goal of having laptops in grades four through twelve seemed unattainable. However, after many meetings, the two local governments came to our rescue and allowed the division to purchase around 300 laptops.

We chose the wireless iBooks and with certain strategic planning endeavors with the Apple Computer Company, we placed the iBooks in carts with two airports on top of the cart. Staff members assigned IP numbers and allowed ten computers to hit each airport. After days of frustration we quickly decided this was not our answer.

During this time frame, I was selected as an Apple distinguished educator. As part of this award, I attended the University of Florida for training sessions. When I opened my laptop, I found that I could access the Internet through a wireless connection anywhere in the building where the training was being

Wireless in Classrooms, continued

conducted. After further investigation, I saw that airports were placed in certain areas in the building and not on carts. I knew this was the answer we were looking for in our four middle schools.

When I came back to work, we took the airports from the carts and placed them, all over the schools, with some of them being placed near the ceiling. Success at last! We now have thirteen mobile labs divided between four middle schools that can be checked out by teachers. The mobile lab goes to the classroom rather than students going to a lab. With a wireless mobile lab, network cabling is not visible or necessary. The lab is more convenient and faster to implement. It is truly "plug and play" technology. This new technology helps maintain our technology plan's goals of smaller computer/pupil ratio and technology integration with a tool that is easily accessible.

"How can we use the wireless?"

We use the wireless labs and mobile carts with web and server-based curriculum applications. Riverdeep and Alexandria are two of the software applications that we access with laptops. All of the laptops are allowed to access the Internet but are proxied and filtered through a server housed at the high school in their zone. Media specialists use the wireless labs in the media center. As soon as students check out their books, a laptop is taken out of the cart and students start accessing the server or web-based applications. Classes can also be held outside the school and students are able to "hit" the network as they work on projects within wireless range.

Probably one of the most rewarding activities we have experienced with wireless technology is our interaction at night with parents and students. We received a Learn and Serve grant that allows us to bring schools and communities together to work on projects. This grant gives the communities an opportunity to come to their schools and interact with teachers, other parents and business partners. Students and parents then use the wireless laptops' connections to research the Internet and create a project usually based on an aspect of our Virginia Standards of Learning.

After implementing our laptop program, we accessed the effectiveness of the program on our curriculum. Our technology scores went up 20% in each tested grade level with a laptop. We are excited about the wireless and will track these students' scores in technology and subject based test scores. Our goal is to make this tool transparent. We can already state that the wireless makes students eager to learn. Because of being easily accessible, our wireless technology motivates students at all learning levels to use this technology as a tool to further their expertise in all subject matters. Technology acts as an equalizer for students that may not be able to write as neatly or effectively as other students in their classroom. We have also found that discipline problems are reduced if a student uses a laptop to fill daily time gaps in certain classes.

Where do we go from here?

Since we have achieved success in the middle schools, we decided to integrate the wireless into our four high schools. As stated from our laptop

Wireless in Classrooms, continued

program, our two local governments purchased laptops for all ninth graders. After one year in the ninth grade, we decided to give the laptops to seniors and issue each one a dial-in account to our server. We have not experienced a great deal of difficulty with this implementation but have changed our focus to installing a wireless card in all 745 MetroBooks laptops, establish mobile wireless classroom sets, and issue a wireless laptop to each high school teacher. Our technology staff will install Lucent technology wireless access points in each of the four high schools to make the inside of the building totally wireless. In addition, we issued a wireless laptop to middle school teachers. Basic training was given to teachers before the end of school and an intermediate and advance training and integration sessions will be given in the fall.

School divisions interested in implementing this form of technology will need computers with wireless cards, several access points, carts, networked printers, a network to hook airports into and basic configuration knowledge.

As cognitive learning becomes merged with e learning, students and teachers are changing the technological environment. Appropriate tools are necessary for this merger and as more and more of these products are constantly being 'birthed" discriminatory measures are necessary for instructional and technology staff members to reach the right conclusion.

As Eleanor Roosevelt stated," The future belongs to those who believe in the beauty of the dream."

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Hints on Preventing Computer Lab Catastrophes

By Keith E. Polonoli

Envision a line of well-mannered children marching down the hallway to the microcomputer lab. As the troop comes to a halt, their teacher gingerly opens the door. Raising an index finger to her lips, she gives her cadre a last *shhhhh*. Immediately, eighteen fifth-graders race to their favorite computer to begin the ritual of button pushing and mouse clicking.

If the scene above makes you a little anxious, maybe a few suggestions will help. The hints I offer for a successful sojourn to your school's computer lab are based on commonsense and over five years of experience spending a somewhat embarrassing amount of time in elementary school, high school, and university computer labs instructing students and faculty. If you are savvy in the ways of navigating the computer lab mêlée, you are probably already using some of these strategies. If you are a pure novice or fall somewhere between, maybe these 12 suggestions can help give you an edge and increase your comfort level as you start the journey of teaching with technology.

1. Explain the need for patience to your students.

Patience is a virtue, especially in the computer lab. I am very frank with students that I take to the computer lab for instruction; events outside my control occur. It is necessary to tell them that things do not always go as planned when using technology. Stringently convey to them that everyone must exercise patience.

This is sound advice; no matter what grade level you are instructing. However, for elementary-age children, it may be the most prudent. Engage your students in a simple call and response. Ask them the following question: What must we have when we work with computers? Be sure to elicit a resounding cry of PATIENCE from your group. It may seem a little silly, but when a problem arises, asking your group this simple question can defuse a tense situation until help arrives.

2. Do not enter the computer lab without having a specific instructional purpose for being there.

This is the number one cause of computer lab chaos. An educational

Preventing Lab Catastrophes, continued

objective must be the catalyst to propel you and your class to the computer lab. The computer must be part of your instructional strategy or be ready to field the question that many students seem to chant as their mantra - "Why do we have to do this?" Instructional time is precious; the computer lab is not a place to burn this commodity.

3. Always have a back-up plan.

Computers do not always work. To some, this may seem like a great understatement. Therefore, it may be wise to have a contingency plan. If you choose to teach a new lesson with technology, a set of just-in-case overhead transparencies, worksheets, or other activities may be in order. This endeavor, however, is much simpler if you choose to teach a lesson taught earlier in a traditional manner. The benefits being, you already have your "backup" material if the technology fails and you are familiar with the lesson and the classroom dynamics it fosters.

4. Stick to a "hands off" policy.

This is not only a good strategy for the computer lab, but it is a good policy to adhere to in general. I would encourage you to have a student model the keystrokes or display the mouse path on their machine, but avoid physically completing these tasks on another pupil's machine. When a student begins to operate another classmate's machine, a learning opportunity is lost and one student may be left feeling victimized. It is also wise for teachers to heed this advice. I am aware that it is difficult to witness a student struggle with a particular task, but it is through his/her own resolve that learning occurs.

5. Use assigned seats.

Most computer labs have the machines numbered in a logical manner; simply assign each child a number that corresponds to a machine. Assigning seats in the computer lab prevents mad rushes and wasted instructional time as each student maneuvers to take a seat near their best friend or sweetheart of the week. In addition, assigning computers allows you to diagnose any recurring technical problems your students may be experiencing. For example, if a particular machine is constantly being shut down improperly after your second period class has used the lab, it is simple to identify the child and correct the situation.

6. Find an extra set of hands if possible.

A trip to the computer lab is a time to call in favors. If you can find an aid, a teacher willing to sacrifice a planning period, or train a parent volunteer, do it. It seems that things go much smoother when another person is in the lab to field questions. Other students are great-untapped resources. It has been my experience that older students enjoy teaching their younger counterparts. We sometimes forget that teaching is a wonderful learning strategy.

Preventing Lab Catastrophes, continued

7. Be certain you are proficient with the software application that you will be using.

Nothing can be more frustrating, or dangerous, than teaching something you know nothing about. If you plan to use a particular piece of software for instructional purposes, please read the manual and work with it in your spare time. See if you can borrow a copy to use at home. You will gain confidence by mastering the software you intend to use for instruction, and your students will recognize this confidence. Teachers are not the only ones who can tell when someone has not done his/her homework.

8. Make sure the software application(s), computers, and the network that you will be using are in proper working order.

This seems like commonsense, but it is surprising how easily we forget the obvious. Checking the software, computers, and the network the day before you are to perform the lesson will not work. Strange things seem to happen overnight. It is wise to check these items one period before use. It is much easier to initiate your contingency plan before you begin a technology-rich lesson than when you are in its midst's. Remember Murphy's Law.

9. Show tolerance to emotional responses.

Most children see the computer lab as a fun place. To many, it is a chance to engage in something out of the ordinary. As children build word skills with such classic programs as *Spellivator* and *Word Muncher*, emotional displays in the forms of "Ooo's", "Aha's", and "Darn's" should be expected. Maintain classroom discipline, but show a little extra tolerance for verbal outbursts. Emotional responses are a good sign. Engaging educational software will stimulate this behavior. A red flag should go up when your students are staring stoically at their computer screen. This is a harbinger of pedagogical doom.

10. Bookmark web sites that you intend to use as a resource in the computer lab.

Taking a few minutes before your class to bookmark web sights is a major timesaving strategy. This is especially helpful with younger students whose keyboarding skills may not be up to speed. Or if you like, use a floppy disk to type the web addresses, saved as text, which you will be using in class at your leisure. When you are finished, share them over your building's network shared drive so your students can access them.

11. Have a Chalkboard or Whiteboard handy.

These are handy devices to use in order to post notes or to jot down instructions. You would be amazed at how many computer labs I have taught in

Preventing Lab Catastrophes, continued

over the years that were void of this simple tool. If you find your lab is missing this device, it may be wise to purchase one. Portable whiteboards can be found at any office supply store for under $20.00, and they have a myriad of classroom uses.

12. Have Fun!

This one is self-explanatory.

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Stand By Me

By Robert Lamons

In 1992 a clarion bell was sounded and its reverberations would penetrate all aspects of every school system. How Schools Shortchange Girls, by the American Association of University Women (AAUW), started a wave of introspection in how we educate our young women. The publication pointed out a glaring discrepancy in the apportionment and use of technology and computers for instruction of females.

Shortcomings were also noted in the differential treatment of females through technology instruction in schools (Cushner et al., 1992). This study is an attempt to address one aspect of that report, namely the lack of comfort and confidence in many female students feel when using technology. While this lack of comfort is by no means limited to girls, it is predominately a female symptom from gender-based, cultural expectations.

Bob Lamons, a Geosystems teacher from Annandale High School in Fairfax County, conducted a teacher research study to identify teacher behaviors that promote comfort and feelings of mastery while female students worked with computers. The behaviors that were identified came from data collected from students in five science course sections that use a high level of technology. Through a series of surveys, interviews and personal journals, female students identified teacher behaviors they found to be helpful when working through computer problems. Those teacher behaviors were implemented into regular class sessions and follow up interviews were performed to evaluate the impact of these behaviors on female students.

Introduction

In a lesson on evaluating the pattern of solar flares, my students were given a listing of the number of recorded solar flares for the years 1750 to the present. The data was to be plotted in a spreadsheet and graphs were to be made from the student entries. Before the students began to enter the data, I orally instructed them in how the program could do most of the graphing work for them through a feature called “autofill”, then provided them with detailed, written instructions.

As I circulated around the room, checking on student progress, I noticed most girls chose to type in each and every number while the boys had figured out how to get the autofill feature to do the work for them. When I saw this I wondered, “Why were the girls less willing to work through the new method of entering data?” My next thoughts were, “What teacher attitude or behavior would encourage the girls to attempt to use the newer method of data entry?”

My primary goal for my research project was to determine possible teacher behaviors that are conducive to encouraging female confidence and comfort levels in computer related assignments. Hypothetically, if girls can move through

Stand By Me, continued

exercises more comfortably and quickly, learning will increase as will self-image and feelings of mastery. This will lead to a greater sense of competency with technology. This sense of competence will encourage female students to explore and troubleshoot their own work, thereby enabling them to satisfy their own technology needs.

I wanted to investigate, "What teacher behaviors improve the comfort levels and confidence levels of female science students involved in the daily use of technology?"

Research Setting

Annandale High School (AHS) is located in Fairfax County, a Virginia suburb of Washington D.C. Built in 1953, Annandale High School is now a model of diversity with 2,200 pupils representing students from 72 countries, speaking over 52 different languages.

The 140 boys and girls who were the subjects in my research project were eleventh and twelfth grade students enrolled in a semi-elective, college prep science course named Geosystems. Classes met on an alternating day schedule for ninety minutes each period. Every class worked on the computers each class session.

Research Design

The students were given a survey to determine their personal level of perceived proficiency and comfort in working with technology (Appendix 1). The seventy-five female responses were separated into two groups of female students who felt competent or adequate with technology, and female students who did not feel competent or adequate with technology. The twenty-six females in the sample who felt uncomfortable with technology were subsequently issued a second questionnaire (Appendix 2). These student responses were parsed and condensed into a list of sixteen young ladies who were subsequently interviewed as to their preferences for computer instruction. (Collaboration, peer tutoring, and same sex grouping have already been implemented in this classroom).

The scope of this research was to look for behaviors that would help female students not well served by the standard male centered approach commonly employed for instructing students in technology (Mangione, 1995). The average classroom pits students against applications in a manner commonly preferred by male students. Females prefer interpersonal interactions as a highly regarded factor contributing to their aesthetic comfort with computers (Hanor, 1998). Therefore, an effective teaching strategy to positively influence female comfort with technology would certainly address this critical interpersonal need. Four behaviors were identified as serving a beneficial purpose and given the following identifiers: "Directed Instruction", "Stand by Me", "Kneeling Down", and "Personal Session".

"Directed Instruction" is what students called giving general instructions to a particular individual student. When a problem was encountered, the confused

Stand By Me, continued

student asked for direction or help from me. I responded directly to the question from whatever part of the classroom I was located in at the time the question was posed. During especially busy periods of the day I would query a student, "What's the problem?" when the student who raised her hand. After a brief explanation of the problem, I would suggest an appropriate remedy for that particular problem. I generally moved toward the student, or was in the process of moving towards the student when the question was asked, arriving in a position standing behind the student so that the computer monitor was visible to me.

To indicate particular spots or menu options on the computer screen, I would use a standard pointer, yardstick, laser pointer or finger. (Use of the finger necessitated my leaning over the student from behind their seated position, a somewhat uncomfortable position for both student and me.)

"Stand by me" is an adjustment to the previously described directed instruction. In this behavior I never gave advice or explanations until I was standing in a position adjacent to the student's seat and computer. Seldom did I use a pointer of any type, using my index finger instead. The name given to this teacher was so-named by a student in her journal. She stated, "I like it best when you stand by me".

"Kneeling Down" is just what the name implies. I would kneel down next to a student station instead of assuming a position standing next to the student. During a post survey interview a female student claimed, "I like it when you're kneeling down next to us…" and another was heard in class imploring me to, "kneel down here a minute!" This position not only appeared to facilitate communication between the student and me because it allowed for easy eye contact, but it also made it less likely that another student in another part of the room would distract me away from the student I was assisting. It also gave me longer periods of time to give explanations and to convey my interest in my students' difficulties, sharing ideas and options. Female students indicated they liked this behavior because it provided interpersonal contact, which they preferred to the more authoritative instruction of pointing to a screen from a distance.

A "Personal Session" was the term given by students to describe a mini-lesson designed to explain the area of difficulty in a very thorough, extended manner. In this behavior, I might use many of the options described in the previous behaviors, as the personal session often involved more than one question. It usually involved me pulling up a free chair to sit comfortably while taking time to completely explain the details to the student. The "session" might last several minutes. Some students told me that this technique was a strange balance between being extra helpful and feeling too much like a lecture.

Over the course of the next several weeks, each of the four teacher behaviors was implemented on a rotating basis. Using one behavior each day, the rotation of all four behaviors through four iterations took 32 school days. At the conclusion of the trial period, students were requested to journal their thoughts concerning which teacher behavior for assisting them through

Stand By Me, continued

computer difficulties was most helpful. They were asked to relate which behavior was most effective in not only helping them fix their problem, but giving them a sense of accomplishment and the confidence to work through the next problem on their own. Which behavior created the most confidence?

Findings

"Directed Instruction", was not a particularly female friendly technique because it provided very little interpersonal interaction between the teacher and student and always made the student's difficulties public. The female students indicated feelings of embarrassment about their computer difficulties. The girls didn't appreciate my use of laser pointers or yardsticks. Some girls would cover their monitors with their hands and say, "Just tell me, don't use that pointy thingy!"

In "Stand By Me" my presence was maintained without any public acknowledgement of student difficulty. The opportunity for communication was left open and I was situated in a closer, more supportive position. "Stand By Me" was favored by female students over "Directed Instruction" but not over the "Kneeling Down" technique. "Stand By Me" did allow for a more private and personal interaction between the student and myself. It also helped alleviate the girl's fears that if something goes wrong while using high-tech equipment, she would not be faulted (Koch, 1994).

"Kneeling Down" is an adaptation of the "stand by me" technique. During the course of this investigation I suffered from lower back pain and was unable to stand in a stationery position for any length of time. To adapt, I assumed a kneeling position that was more comfortable and allowed for lengthy assistance. An unexpected benefit of this position was the leveling of the eye contact levels. On equal levels, the female students appeared to be more willing to ask probing and explorative questions. This added time spent with the student further improved the chances of inter personal connection.

A "Personal Session" for female students became more of an indictment of the student's ability and less of the helpful contact it was intended to be. I often spent more time than the student desired on one subject or problem. Later, students could be heard to say, "Gosh, I don't need a personal session!"

The "Stand By Me" approach had an interesting effect on the students. In many post trial interviews, students spoke of feeling "less like a student" and "not as stupid". The careful observer would note that this perceived acknowledgement of a "best position" is less a matter of position in reference to the computer but more a matter of position as in "authority." "Kneeling Down" also reduces the barrier between the teacher-student relationship. Student journal writings confirmed I was no longer an authority figure, but had become "nicer", "more friendly" and "more like my brother". Journals also indicated students recognized my single goal of "assisting them with a difficult computer problem." Girls consider the teacher as the determining factor where ideas at the computer are given consideration and respect (Hanor, 1998).

An interesting pattern by the students most approving of the kneeling behavior emerged. When these students requested my assistance, they

Stand By Me, continued

immediately, and of their own accord, scooted their chairs to one side and made room for me to kneel. This was a keen indicator these students found this behavior preferable to others. Through their actions they encouraged a kneeling behavior from me. After kneeling students remarked, "I think I can take it from here." This appeared to demonstrate an improved comfort level and increased confidence in the students' own abilities.

One unexpected finding may have roots in cultural lenses. More than once, "Stand By Me" or "Kneeling" techniques created tension and discomfort in students from Korean cultures. Students would visibly tense up, and appear uncomfortable. One student stopped asking questions. Not all cultures encourage the removal of the student-teacher hierarchy.

On the most basic level, we all have zones of personal space. The most proximal zone, the intimate zone, is larger for some cultures than others. These two techniques place the instructor inside the student comfort zone and can be unpleasant for some students. I would caution teachers to watch for clues of discomfort such as fidgeting, leaning away, or quick acceptance of your answer when the problem is obviously more involved. In these cases a teacher should use one of the other techniques that avoid such closeness.

Implications

The logical extension of this research is its application in other teaching situations. Honesty and fairness facilitate closeness. These virtues help develop trust between student and teacher. Through trust, an interpersonal relationship can develop and information will pass between teacher and student quickly and readily.

While the quest of my research was to pinpoint a behavior that would improve student performance, the inquiry instead revealed behaviors that improved student teacher interactions which in turn improved student performance. From this study I learned the most beneficial technique for increasing student proficiency on computer applications was appropriate, affirming input in a pattern welcomed by female students. This occurred most often when I used the kneeling behavior. Being close with level eye-contact helped with girl's needs to be affirmed in their skills, interests and emerging talents (Gilligan, Lyons & Hanmer, 1990).

Conclusion

The teacher behaviors herein named "Stand by Me" and "Kneeling Down" have been determined to be female friendly behaviors. These techniques mandate no special training, no extra time, nor any extra preparation. They require only a caring attitude and the ability to engage students inside their zone of proximal development.

This caring attitude improves student comfort levels in young ladies by meeting their preference to grow and work through interpersonal activities rather than goal oriented missions. It allows girls to work in an atmosphere that makes them comfortable while allowing boys to work in their preferred mode. This shift

Stand By Me, continued

from an authority figure delivery to a teacher-student interactive process allows young ladies the opportunity to work in a manner that is comfortable for them. Equity can be supplied with no detrimental effect on equality.

The question before the education community today is how to minimize behaviors that clash with some students and maximize the end product of education, knowledge. How to take the random and sometimes abstract tools a student acquires and meld them into a cohesive approach to accountability for one's own education. How do we as teachers fan the spark of curiosity into the blaze of continual inquiry? How do we fan one spark and not douse another with water? We start with acknowledging the need for differentiated instruction.

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Appendix 1

Questionnaire

Computer Use Survey

Please fill out this survey truthfully. It is for a class I am taking through GMU. The results will go no further than myself. I will combine this information with other interviews to come up with composite pictures of computer users.

Please mark each question with:
A) I agree completely!
B) I mostly agree
C) I'm not sure
D) I barely agree
E) I never agree, no way!

1. I am in grade 11
2. I am in grade 12
3. I am a girl
4. I am a boy
5. I could explain what a computer is
6. I could explain what a computer does
7. I could explain how it works
8. I feel comfortable with computers
9. I can help others on computers
10. I hardly ever need help with computers
11. I know word processing
12. I know spreadsheets
13. I know databases
14. I know presentation software
15. I know web browsers
16. I know what RAM is
17. I know what a hard drive is
18. I know what a CPU is
19. I know what C: means
20. I know what a folder is
21. I know what a file is
22. I know what a document is
23. I know what DOS is
24. I know DOS
25. I feel comfortable with computers
26. I feel comfortable trying things on my own
27. I feel comfortable with a new piece of software
28. I usually need some help with new software
29. I usually prefer to find things out by myself
30. I usually feel rushed when learning new software
31. I usually look forward to new software
32. When problems arise I usually figure it out myself
33. When problems arise I usually ask my neighbors for help
34. When problems arise I usually call the teacher
35. When problems arise I usually get frustrated
36. When problems arise I usually feel challenged
37. People would say I am good with computers
38. People come to me for help

Appendix 2

Second Survey

- How would you describe yourself as a computer user?
- Could you describe how you learned most of what you know?
- When do you find a computer application especially difficult to learn/work through?
- When do you feel comfortable working through a computer problem?
- What does the teacher do that makes it easier for you to work through a computer problem?
- What action does the teacher take that makes working through an application difficult?
- What would the ideal teacher do to help you with computer problems?

Appendix 3

Post Behavior Interview Questions

A. When is the teacher most helpful?
Why?
What would make it better?
It wouldn't be as good if he…

B. When is he least helpful?
Why?
What would make it better?
It would be great if he…

C. How would you complete this sentence? I like it best when Mr. L …

D. What would you like the teacher to know when helping you?

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Issues Related to Creating Web-Based High School Courses

Ross Perkins & Robert Cobb, Jr.

Value of Distance Education for High Schools

Extending the learning choices in any school excites both teachers and students. Because of this, distance education has found a niche in secondary schools across the country. It is an appealing option for smaller high schools that want to offer students more choices for credit. Proponents say that distance education can give high school students in districts with limited financial resources opportunities to take advanced or specialty courses (Carr & Young, 1999). Web-based learning is appealing because all one needs is Internet accessibility and applications to access a course (ie: a browser, e-mail program, certain plug-ins, etc.) Many of these tools are available to educators and students.

Other reasons for offering web-based courses to students include:

- Creating opportunities for a more diverse, collaborative learning experience by opening access to peers in other locations.
- Providing technology-rich instruction by challenging learners to become technologically literate.
- Enhancing a teacher's skills in technology. These skills can then extend to the classroom.
- Addressing teacher shortages in certain subject areas.
- Delivering instruction to suits learners who have interpersonal deficiencies or who may not be able to attend school due to physical ailments.
- Offering a wider variety of courses to help end scheduling conflicts.
- Creating an environment where resistant learners cannot adversely affect others.

Who's offering web-based courses to high school students?

Virtual high schools are organizations that bring together instructional design resources of local universities or private companies and offer distance education courses (most web-based) to high school students. The states of Arizona,

Web-Based Courses, continued

California, Kentucky, Florida, Massachusetts, Michigan, Nebraska, and Utah all have accredited virtual high schools. Most of these virtual high schools provide courses only to students within their respective states, but some offer courses that extend beyond state boundaries. There are some private companies that offer courses for high school students, but often operate independently of school systems.

Exciting to note is that web-based classes can also be created at the local level. Terri Breyman, an English teacher at Falls Church High School (Fairfax County, Virginia), and Sandy Todd, of Fairfax County's Office of High School Instruction, presented at the Virginia Society for Technology in Education (VSTE) conference in March 2001. Advice that Breyman and Todd gave to attendees is included in this article. The fact that creating and teaching web-based courses is within the purview of instructors who have time, patience, and a willingness to learn was among the most important insights they shared. One does not need a doctorate in distance education, a contract with a national organization, or access to thousands of dollars worth of technology equipment to create a course.

The focus on distance education will be narrowed even further to a system that is of immediate practical use to classroom teachers, which is web-based learning (WBL). Other distance education systems, such as video conferencing, satellite-based systems, correspondence courses, etc. will not be discussed. Specifically, this article will address to common criticisms of distance education, look at the characteristics of distance learners, provide practical tips for building a web-based course, and pose some questions germane to distance course development.

Addressing the common criticism

Skeptics of web-based learning often interject, "An on-line course is not as good as one taught in the classroom." To some extent, they are right, although only in one way. They are right because there is a lot to be said for face-to-face interaction – we are, after all, social creatures. Learners who enroll in distance education courses do so for many reasons, but avoiding human contact is not among them. They often report that they miss the personal interaction that they had in traditional classrooms.

But the critics who say that web-based courses are "not as good as" face-to-face classes are making some erroneous assumptions. All traditional classes are not of the same quality, and not all learners process information in the same manner. Given the reality of negative classroom experiences, are we to believe that any traditional course is better than any on-line course? Certainly not. Some people excel in face-to-face situations, where others benefit from a web-based instructional context with minimal personal interaction.

Those who claim that students enrolled in on-line courses are more motivated and/or who have higher test scores than their peers enrolled in building-based courses make as much of a mistake as detractors of distance education. Such claims are simply not examples of quality distance education research (Lockee, Burton, & Cross, 1999; McIssac & Gunawardena, 1996).

Web-Based Courses, continued

Comparing distance education courses to its classroom-based counterpart is tantamount to comparing the proverbial apple and orange; the distance learning experience is inherently different for both the teacher and the student. One must evaluate distance courses against other distance courses and at the same time, examine those qualities about the course that help people learn. This article rests on the assumption that on-line courses either in whole or in part (as enhancements to classroom-based courses) can be a valuable part of the instructional process.

What are some characteristics of distance learners?

The typical successful distance learner is one who is focused, self-motivated, self-directed, and independent. This type of learner needs little external interaction in order to attain goals or tasks. The ability to perform these skills is most prominent in adult learners due to their experiences that come with age – qualities that correlate with self-regulation. A self-regulated learner is able to use skills according to metacognitive, environmental, and behavioral standards. Implementing these skill prompts the learner to set goals, utilize strategies, judge the effectiveness of these strategies, and modify them accordingly. Unless the learner actively seeks help, these things occur internally, without any external interaction.

In the virtual high school environment, there are students participating in the courses who are "atypical" distance learners. Some of the virtual high schools claim to service unmotivated students, such as those who have been expelled from school or those who resist the educational process. The most common claim made by many of the virtual high schools presently in existence is that they can provide an equal and fair educational experience for a larger body of learners. In actuality, this environment is only beneficial to a minimal number of learners who are targeted for educational services. This attempt to service a multitude and diverse group of learners has nothing to do with physical accessibility to the subject matter. The concern lies within the psychological capability of the student to learn from the content in an on-line environment.

The teacher who creates a web-based course should not believe that only students with the aforementioned qualities will be successful. A teacher will prompt learners to use strategies that will increase the probability of their completion and success in a web-based course. Evidence indicates that students can be taught to use many discrete cognitive strategies and that their immediate performance can be elevated by explicit practice in the use of these strategies (Boekaerts, 1997).

Some practical tips

The teacher must be aware that time is an extraordinarily important factor when designing a web-based course. To construct a quality web-based class, Breyman emphasized that teachers must plan for weeks of preparation time. Completing a portion of the instruction and adding the rest as the course progresses is ill advised. Completing the course before it begins "allows you to

Web-Based Courses, continued

fix snags, allows you to determine discussion topics, allows you to spend time on-line with students, and allows you to have a life" (Breyman & Todd, 2001).

Administrative Issues

The same things that help a student understand what is expected in a traditional classroom are those things that help a student who is taking an on-line class. A clearly defined syllabus with assignments and due dates, a list of course materials, rules and procedures for turning in homework, a late-work policy, attendance policy, etc. should all be included. Teachers must make every effort to ensure that students are "in the know." Doing so helps alleviate misunderstandings and helps reduce what is known as "psychological distance," which refers to the feeling of isolation from other learners and the teacher. Therefore, easily accessible information is all the more imperative.

Keeping in contact with students other than by e-mail alone is important because, as Breyman stated, students do not check e-mail as often as the teacher would like. In order to do this a database of student names, phone numbers, addresses, and other pertinent information should be created. This allows the instructor another means of holding students accountable. How to accept, organize, grade, and return student work, most of which will be done electronically is another issue.

Breyman found it became necessary to establish "office hours." She did so because students need to know when the teacher is going to be on-line and available to take questions or give immediate guidance on assignments. Students may also just want to share ideas. A teacher should build in time for students to get to know each other on-line or post biographical sketches. Activities such as these help decrease psychological distance as well.

Instructional Design Issues

All teachers must be keenly aware that creating an on-line class is not simply creating one's notes in hypertext (HTML) format. Good teachers create interaction in their classes even if most of the information is lecture-based. Developing opportunities for interaction in a web-based class requires a lot more forethought than simply "opening the floor for discussion." Guided questions should be part of the instruction in a web-based class.

If an on-line discussion is implemented, will it be synchronous (such as through Instant Messenger) or will it be done asynchronously, as with a bulletin board? If the discussion happens at a specific time, the teacher must set ground rules for how people will "talk" to each other – moderation is an important component of a good discussion. Some course management software includes moderation tools, but many high school teachers and students do not have access to such a system, thereby necessitating "rules of interaction." These rules require forethought, research, and consultation with other experienced educators.

Web-Based Courses, continued

Getting students to work together on projects is not as simple as telling them they must do so. Teachers who use collaborative learning effectively know that it takes a great deal of preparation to ensure that each student contributes equally. Clear instructions and written examples of all work that a teacher requires are imperative. The teacher is advised to pilot-test any on-line course before going "live" with it. Student feedback during formative evaluation can save many headaches later.

According to Osman and Hannafin (1992), research has provided concrete evidence that [self] regulation strategies may be embedded within instruction" (p. 88). The instruction is able to facilitate and prompt learners to use such strategies. Ley and Young (2001) address four instructional principles that can be employed in an asynchronous or synchronous web-based course. The four principles are preparing and structuring the learning environment, organizing and transforming instructional material, record keeping and monitoring, and evaluating performance. The premise of these four principles are based on the six self-regulation components: goal setting, environmental structuring, organizing material, self-monitoring, self-evaluation, and reviewing previous materials. If the learner is provided with activities within the context of the instruction, along with explicit instruction concerning the function of the activity, these skills can be attained and transferred within a web-based (or traditional) classroom setting.

Related Concerns

In the question and answer session following Breyman & Todd's presentation, a number of tangential issues were raised by fellow educators. We do not have the space to address the concerns individually, but we would like to give the reader some questions to consider.

Support

1. Do you have the support of administrators in your district to ensure that the course is offered for credit?
2. How will your course be promoted to students in your school or district?
3. If video and audio are integrated into your course, do you have access to multimedia resources for creating digital files?
4. Do you have technical support staff available?
5. How will handle student registration be handled?
6. Do you have support from counselors to ensure students have met the course prerequisites?

Compensation

1. If you have been asked to create a distance learning course for your district, are you being fairly compensated or is it among your "expected" planning duties?
2. What kind of extra training (or education) will your school or district provide should they want you to coordinate other web-based courses?
3. How much release time will you have to design and then teach the course?
4. Will students be charged to take the course?

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Web-Based Courses, continued

Intellectual Property

1. Once you have created the course, who owns it? (Are you able to teach it in the same form if you move to another district?)
2. Is course ownership in contractual language, or just "word of mouth?"
3. If you use materials from other sources as part of the course, are you able to distribute them over the web?

Access & Security

1. What kind of resources will your audience need? If you want to deliver multimedia over the web, do students have a connection robust enough to receive the files?
2. Is the interface easy-to-use for learners of the targeted age group?
3. Have special-needs issues been address, such as size of font, labeling of pictures, access to audio descriptions, etc.?
4. If the course you create is hosted on the school server, is there enough security in place to protect it?
5. Are students who are not enrolled in your district (such as those being home-schooled or those attending private schools) eligible to access the course for credit?
6. Are students in other states eligible to take your course for credit?
7. Do you need to protect course content from being viewed by a world-wide audience? If so, how will access be granted or denied?
8. Will students have to buy books and materials, or will they borrow them from a local school?

Final Thoughts

For teachers who want to begin building a course or even web enhancements to a face-to-face class, there are at least two options on the web that allow them to do so without having to know anything about hypertext markup language (HTML), creating secured access, or building a discussion forum. One option is Blackboard's on-line learning tool called "CourseInfo." The other has recently become available through Yahoo! (Y! Education). The URL for each tool is listed at the end of this article.

Both tools are available for free, but read the Terms of Understanding carefully, especially on the Blackboard site. File space is limited in both, but the interfaces provide a great solution for some of the administrative issues raised above. The Blackboard site also includes a number of links and articles that promote the professional development of teachers who are teaching web-based classes. The Y! Education site, which has similar features to CourseInfo, lacks assessment and grading components that some teachers find quite useful. The selection of one tool over the other requires the designer to take some time to look over the features and decide which is easier to use – both for the teacher and the student.

Building and teaching a web-based class is a lot of work and there are certainly a number of issues to resolve, but those who do it have found that this mode of teaching and learning can be rewarding for everyone involved.

Web-Based Courses, continued

URLs

Fairfax County Public School On-Line campus:
http://www.fcps.k12.va.us/DIS/OHSICS/onlinecampus2/index.htm

CourseInfo:
http://www.blackboard.com

Yahoo! Education:
http://education.yahoo.com

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The Development of Electronic Portfolios in Teacher Education Programs for Assessment of Student Teachers in Relation to Professional Teaching Standards

David Hicks, Kathleen M. Carico, and George E. Glasson

Teacher preparation has emerged as a critical factor in the effective use of new technologies in education. Federal, state, and local agencies are investing billions of dollars to equip schools with modern computers and telecommunications networks. But these information technology investments will not pay off, unless future teachers become technology proficient educators who know how to use these new learning tools to improve learning (Carroll, 2000).

Preparing tomorrow teachers to recognize and harness the potential of technology within their content areas is seen as a vital and necessary role of teacher education institutions throughout the United States (NCATE, 1997; Presidents Committee, 1997). However, concerns continue to be expressed regarding the ability of teacher education institutions to fulfill this need. Both the National Council for Accreditation of Teacher Education (NCATE) and the International Society for Technology in Education (ISTE) report that schools of education are not adequately preparing pre-service teacher education students to effectively integrate technology in their future classroom. (NCATE, 1997; ISTE, 1999)

One response to the perceived weakness on the part of teacher education institutions to prepare teachers to integrate technology effectively has been the development of state and national technology standards. Technology standards

Electronic Portfolios, continued

have been incorporated into both NCATE and the Commonwealth of Virginia's accreditation protocols for colleges and schools of teacher education. Meeting such standards, NCATE (1997) notes, will require "a vision and a plan … that will integrate technology into teacher education curriculum." Specifically, it is a vision that moves from treating technology as another "special addition to the teacher education curriculum" toward one that seeks to integrate technology within and through the entire education program.

Responding to this call, faculty members responsible for several secondary licensure programs at Virginia Tech (otherwise known as TESH: Teacher Education in the Sciences and Humanities) began in 1998 to realign our programs to meet new technology and content standards mandated by the Virginia Department of Education and our respective national organizations (i.e. National Council for the Social Studies, 1994; National Council of Teachers of English/International Reading Association, 1996; National Council of Teachers of Mathematics, 1989; National Research Council, 1996). The result was the design and implementation of web based electronic portfolios that assess, document, and connect to the Interstate New Teacher Assessment and Support Consortium (INTASC), the National Board of Professional Teaching Standards (NBPTS), and the professional standards for teaching and learning within each content discipline. This paper will introduce our rationale for the use of electronic portfolios, outline our development process, and detail key issues related to building a framework for organizing, supporting, and assessing the development of electronic portfolios that communicate pre-service teachers' understandings and competencies in order to meet specific performance standards and principles.

The Importance of Portfolios in Teacher Education

Portfolios provide a connection to the contexts and personal histories of real teaching and make it possible to document the unfolding of both teaching and learning over time (K. Wolf, 1991)

Currently, portfolios are widely used within teacher education programs to promote and assess student learning, professional development, and reflection (Barry and Shannon, 1997; Nettles and Petrick, 1995; Rafferty; 1994; Reagin, 2000; Stone 1998; Tierney, 1993). Results of the Teacher Assessment Project (TAP) at Stanford reveal that engaging in the process of portfolio development appears to encourage teachers to become more reflective about their instructional practices (Krause, 1996; Vavrus and Collings, 1991). In more recent history, the National Board for Professional Teaching Standards utilizes teacher portfolios as part of its assessment process to identify accomplished teachers. Shulman (1992) highlighted the importance and need for portfolios in pre-service teacher education when he contended that "teaching is like dry ice, it evaporates and goes away ... Student teachers are told to learn from experience but the experience doesn't stay put so one can learn from it." Portfolios are a strategy designed to allow beginning teachers to capture the complexities of learning, teaching, and learning to teach during their preparation program.

Electronic Portfolios, continued

One focus of the stated mission of TESH is to "provide multiple opportunities for prospective teachers to learn, practice, evaluate and reflect upon the profession of teaching" (http://www.tandl.vt.edu/TESH/). Portfolio construction can serve as self reflection process through which teachers can examine "critical incidents" (Carter and Gonzalez, 1993), select meaningful artifacts, and reflect upon their growth as beginning teachers as they move back and forth between their university based courses and field placements. In this process, teacher interns have the opportunity to re-define and direct their professional development as they consider evidence for meeting standards in their own professional practice.

Situated within the context of (a) discipline specific National Standards that embrace constructivist philosophies (NCTM, 1989; NCSS; 1984; NCTE/IRA, 1996; NRC, 1996), (b) on-going efforts to prepare tomorrow's teachers to seamlessly integrate technology within their classrooms, (c) Virginia's teacher education standards, and (d) a recognition that learning to teach is a socially constructed process of self organization and enculturation, TESH sought to harness and combine the potential of current and emerging technologies and portfolio assessment by requiring all secondary pre-service students to design, develop and present an electronic portfolio as part of their exit requirement for licensure.

The Potential of Electronic Portfolios

During the past several years, science, social studies, and math education faculty have been in the process of researching portfolio development (Glasson & McKenzie, 1999; Lloyd and Wilson, in press). This research, along with the development of the worldwide web and other hypermedia environments and the increasing availability of electronic resources and support in our University, made electronic portfolios seem particularly feasible for use in our teacher education programs at Virginia Tech.

The final decision to move toward electronic portfolios within TESH was based upon a pilot program in the 1997-1998 within the social studies and science methods courses to utilize electronic portfolios. The results of these initial efforts suggested that incorporating electronic portfolios into the assessment systems of pre-service teacher education programs offered a number of distinct advantages over the typical three ring binder portfolio, which had formerly been used:

1) Web based electronic portfolios are easier to store and are portable and more accessible than typical hard copy portfolios. Located on the Teaching and Learning server and or distributed via CD-ROM, our students' portfolios were easily accessible by committee members, cooperating teachers and future employers.

2) The process of developing electronic portfolios provides teachers with a strong 'real world' application of the knowledge and skills from which to subsequently draw as they enter into their own classrooms and seek to integrate technology. Follow up work with alumni has indeed revealed that many of the teachers who constructed electronic portfolios the year before felt more ready, willing and able to introduce and meaningfully integrate web based technologies into their own classrooms.

Electronic Portfolios, continued

3) The use of hyper text and other multi-media elements, such as digital photographs, videos, PowerPoint slide shows, and both scanned and pdf documents within their portfolios provide students with the opportunity to create and present a richly detailed, contextual, layered and reflective story of their growth as teachers. The non-linear capabilities of hypermedia make it possible for students to more tightly and flexibly link artifacts and reflections to specific and appropriate performance standards than is likely and, often, possible in a standard binder portfolio.

Propelled by convincing evidence from the previous year and our reading, the next step toward fully implementing web based electronic portfolio as a program area required the development of the following: a clear framework for organizing the structure and scope of the portfolios with regard to specific standards and principles within and through all our content specific programs; clear, consistent, and attainable indicators and established benchmarks of success available for students and faculty as they approached the portfolio development; and the development of guidelines to support and nurture the development of reflective and ethically responsible portfolios that were accessible on the world wide web. In addition to the work we faced together as a faculty, the development of a successful portfolio process required an important assistance aspect that we could not ourselves address: technology support for ourselves and for our students.

Support Structures for Faculty

Beneath most successful technology ventures are layered networks of support, many of which are often invisible. However, these layers represent important incremental processes and financial and technical resources that were critical in the development of a shared portfolio framework.

Our work was supported financially by a United States Department of Education Grant entitled, "Capacity Building for Preparing Tomorrow's Teachers to Use Technology: An Integrated Approach." Written by Dr. Patricia Kelly, Director of the Virginia Tech Center for Teacher Education, in collaboration with several faculty members, the grant supported our work with colleagues in Arts and Sciences and with local teachers to arrive at practical, long-term solutions to our challenge of preparing the pre-service teachers. In addition, the grant provided both material and human resources needed for technical training. Although some of the faculty were proficient at many of the technology tasks we would eventually ask our students to do, not all of us were, nor could any of us commit the time it would take to train students in technology skills on top of our responsibilities to involve them in a cycle of learning to teach, analyze and reflect.

In October of 1999, TESH faculty met for a full day with faculty members from the College of Arts and Sciences as well faculty from a local high school. These teachers were chosen because of their willingness to be involved in learning the same technology tasks in which their student teachers were engaged in learning, in order that both groups could work together to integrate technology into the curriculum during the internship experience. Grouped by content areas, our charge that day was to find correlations among state,

Electronic Portfolios, continued

technology, and content area standards in order to design tasks that would seamlessly integrate technology in our methods courses, in the student teaching experience, and, ultimately, in the portfolio process. Individual work as well as monthly program meetings followed this meeting over the course of the school year. During the following summer, TESH faculty attended a retreat for the purpose of designing portfolio tasks in each of our content areas.

Meanwhile, Dr. Kelly and other faculty and staff worked to build the technology component of the support structure. While the faculty focus during that year was the integration of standards and the design of tasks, we also submitted lists of the technical support we predicted we would need. Using our feedback as well as input from both our technology and clinical faculty colleagues, Dr. Kelly and many support personnel went to work on building several layers of support, including the following: (1) a technology-enhanced classroom in which we could teach our methods courses and model appropriate integration of technology: (2) installation of hardware and software at the field site to match the resources our students used on campus; (3) a series of training modules given on campus for students, campus faculty and clinical faculty; and (4) the development of a support web site.

Using Professional Teaching and Technology Standards as a Framework for Organizing the Electronic Portfolio

After considering all of the relevant standards, the faculty chose a design framework that would reflect the standards in each of our content areas, in national professional teaching organizations, and in technology. Because TESH uses an adaptation of standards from National Board for Professional Teaching Standards (NBPTS) and Interstate New Teacher Assessment and Support Consortium (INTASC) in student teaching evaluation, we chose those same standards to target in the portfolio as a framework for student reflection. The five NBPTS standards are complemented by the more specific INTASC standards within our portfolio evaluation form (Insert Figure 1).

As the NBPTS organization is affiliated with INTASC, the emphasis of the standards of both organizations is on the use of careful, systematic reflection to improve teaching. The practice of examining student work to inform teacher practice would, we believed, provide us with an opportunity to enhance skills of analysis and to reinforce the notion of student assessment as a way to inform instruction. Although we recognize the NBPST standards are written for experienced teachers, they form a concise framework within which to make decisions about portfolio construction and assessment while the INTASC standards provide more specific recommendations for beginning teachers. Within the portfolio evaluation, we also added standards related to the design, development and presentation of the portfolio itself, since student teachers do not use a ready made web page template but are expected to develop their own personal electronic portfolio. (see figure 1)

Electronic Portfolios, continued

On the left side of the portfolio evaluation form are specific categories of seven professional teaching and technology standards. In an effort to provide students with specific information regarding how these standards can be met, we included a column entitled "Indicators of Success" which are suggestions for portfolio tasks that reflect more specific performance indicators for each standard. Based upon our experiences with both traditional and online portfolios, the TESH faculty established clear benchmarks for success to be included on the evaluation form in anticipation of this year's portfolio presentations.

While initially developing three distinct evaluation categories: advanced, proficient, and unsatisfactory, we felt it was important to add a fourth 'distinguished' category that recognizes those portfolios that are truly outstanding (see figure 1). A "Technology Checklist" (Insert Figure 2), outlines specific competencies that are consistent with ISTE (2000) standards and the Commonwealth of Virginia's technology standards for instructional personnel (1998) and that, when met, fulfill Virginia Tech's current vision of preparing technologically competent and effective beginning teachers.

Examining all of the relevant standards and weaving them into one piece has been instructive and time-consuming. However, we are hopeful that the portfolio process will provide students with an integrated, coherent, educative experience that meets their needs as well as ours as a teacher preparation faculty.

To support the work of the students, TESH faculty worked together to develop our own TESH Portfolio web site, which outlines the entire construction process, including the documents shown in this paper. In addition to links to sample portfolios from the pilot year, articles and web sites on portfolio development, and all of the standards consulted in the development of the framework, the site provides clearly articulated guidelines and requirements for the development of electronic portfolios and student teacher reflections that are appropriate for non-secure portfolio web pages.

Developing Guidelines for Development of Electronic Portfolios and Reflection on Teaching Practices

Reflective practice can be defined as "behavior which involves active, persistent, and careful consideration of any belief or practice in light of the grounds that support it and further consequences to which it leads" (Dewey, 1933). An essential ingredient within teaching is the conscious ability to observe one's own behavior in order to uncover underlying processes, issues, causes and results, and to then make connections between theory and practice, which in turn influence future decisions and actions. Electronic portfolios provide the opportunity for students to seamlessly link their analytical reflections to specific artifacts and principles as they communicate their understandings and abilities to teach. However, many students' initial reflections of their own teaching and learning lack the sensitivity, discourse and level of thoughtfulness of more experienced teachers as they try to reconcile their own vision and philosophies of education with their experiences in the field. Within such reflections, not only

Electronic Portfolios, continued

are students critical of themselves, but they can be critical of their cooperating teachers, students and the schools within which they are placed. Recent experiences with reflections and electronic portfolios reveal that such examples of reflection, while regularly read in papers and field journals or brought up within class discussion or online threaded discussion, are not appropriate for non-secured web sites. Within the methods classroom, reflections such as these can be unpacked and explored and treated as part of the process of learning to teach. Publishing such reflection on the World Wide Web, however, can be harmful for ongoing relationships with partner schools and cooperating teachers on the one hand, and potentially destructive for the future career of student teachers on the other. In framing the direction of our electronic portfolios, it became very clear that issues of privacy, ethics, and representation would clearly impact the nature of the reflections that could be allowed on unsecured web pages.

In seeking to address these sensitive issues, TESH faculty developed a series of guidelines relating to the development of electronic portfolios and types of reflections and artifacts that could be placed on the web. The following guidelines are made available to all students as they enter our programs and begin to think about developing their portfolios and the types of artifacts and reflections that are appropriate:

Guidelines for Development of Electronic Portfolios

1. Each portfolio should be designed for electronic access on the web. For more information on portfolio construction and accessing Virginia Tech web servers, see the TEEPS support website:URL for site http://dsianez@www.tandl.vt.edu/teepshelp/teeps3/index.htm

2. Each portfolio should include a table of contents and an opening narrative that highlights how your portfolio meets the professional standards.

3. A personal statement of educational philosophy and a current resume are also the required elements for every portfolio. Seminar and class discussions, papers, and teaching experiences should assist you in shaping the philosophy statement.

4. The portfolio should contain evidence of your teaching and learning that you feel represents you as a professional educator in terms of the five propositions of the National Board for Professional Teaching Standards and professional teaching standards in your field. Examples may include lesson and unit plans, digitized photos or video/audio clips, self-assessments/reflections, evaluations and assessments, professional development activities, class organization and management information, research, and the integration of interactive technologies into the classroom.

5. Each piece of work or evidence should contain a caption, annotation, or short narrative to explain how this piece connects to your learning and the professional standards.

Electronic Portfolios, continued

6. Note that the electronic portfolio is not an electronic scrapbook or a fancy multimedia presentation. Your portfolio should demonstrate that you have the knowledge, skills and perspectives to be an effective beginning teacher and that you are capable of translating pedagogical knowledge into practice. The portfolio should contain thoughtful responses about each item that connect with your teaching philosophy in relation to professional standards.

Guidelines for Reflection on Teaching Practices.

1. Focus on your own teaching and learning and student learning in relation to professional teaching standards. Do not focus on the teaching of your cooperating teacher. Your focus should be on how you helped students learn in the context of the school culture in which you are teaching.

2. Because your written reflections will be public, you have a responsibility to communicate to your audience in a professional manner, avoiding judgements and comments about other teachers, administrators, parents or students which may be construed as hurtful or derogatory.

3. Use pseudonyms for students, teachers, and schools when reflecting on your experiences.

4. Any written analysis of students, classroom, or the school community should be approved by the program advisor before it is added to your web page.

5. Photos or videoclips of individual students should not be posted on the web. Photos of student teachers or backs of students are acceptable.

6. Students may have the option of linking their electronic portfolio website to the TESH or other program websites.

Plans for Longitudinal Performance-based Assessment of Pre-service Teachers.

The TESH faculty is committed to document the performance of student teachers in relation to state and national standards each year. In accordance to NCATE and state requirements for performance-based assessment of student progress, faculty will collect and score data from the "Portfolio Evaluation" (see figure 1). In addition, the electronic portfolios will be analyzed for compliance with professional standards by examining and comparing artifacts in all of the portfolios that provide evidence for meeting teaching standards. Artifacts such as lesson plans, reflections on videotaped instruction, and assessment of student achievement will be systematically evaluated to provide faculty with information to improve the teacher education program. The electronic format of the portfolios will provide for easy access and retrieval of information in the evaluation process. In effect, the use of electronic portfolios in the Virginia Tech teacher education program is essential in providing evidence for our compliance with NCATE and state standards for teacher education licensure programs.

Electronic Portfolios, continued

Creating an environment conducive to integrating technology into the education and assessment of beginning teachers is for us an evolving process that requires considerable investments of time, resources and energy. Developing a shared vision of our expectations for the electronic portfolio has been necessary for us as a faculty to be able to provide consistency in our instruction and in order to be satisfied with the direction of an endeavor that would require much from us and our students. Establishing specific standards-based assessment criteria with accompanying indicators and benchmarks for success and providing guidelines for the presentation of online reflections has been critical, not just for program coherence and integrity, but for our students' success at creating meaningful work. Finally, developing ongoing support and assessment systems while utilizing current technologies has been vital for creating a strong foundation from which to begin to effectively prepare tomorrow's teachers for 21st century classrooms.

As a faculty, TESH will have the opportunity this spring to use the assessment of our students' portfolios to further critique our framework. And the process will continue.

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Electronic Portfolios, continued

Figure 1: Teacher Education in the Sciences and the Humanities (TESH)

Portfolio Evaluation

This evaluation is modeled after recommendations from the National Board for Professional Teaching Standards (NBPTS), the Interstate New Teacher Assessment and Support Consortium (INTASC) and the standards from the International Society for Technology in Education (ISTE). Please complete the evaluation using the following scale and descriptors:

3 – Distinguished: exceeds expectations for providing evidence ((i.e. artifacts and annotations) for meeting professional standards in all areas

2 - Advanced: provides clear and coherent evidence that makes a compelling case for meeting the professional standard

1 - Proficient: provides sufficient evidence that standard is met

0 - Unsatisfactory*: provides little or no evidence that standard is met

Standards Indicators of Success

____I. Teachers are committed to all students and their teaching.

+ The teacher intern understands how students learn and develop and can provide learning opportunities that support a student's intellectual, social, and personal development.
+ The teacher intern understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.
+ Teacher reflections on diverse life experiences, cultures, and experiences with diversity in field settings (e.g. teaching philosophy, autobiography, shadow study, self study)
+ Lesson plans designed to meet the needs of a diverse student population (students with different abilities, ethnicity, socioeconomic backgrounds, languages, special needs, gender)
+ Selection of teaching resources and materials designed to meet the needs of a diverse student population

Electronic Portfolios, continued
Figure 1

____II. Teachers know the subjects and how to teach those subjects to students.

+ The teacher intern understands the central concepts, tools of inquiry, and structures of the discipline he or she teaches and can create learning experiences that make these aspects of subject matter meaningful to students.
+ The teacher intern plans instruction based upon knowledge of subject matter, state and national standards, students, and the community.
+ The teacher intern understands and uses a variety of instructional strategies to encourage student development of critical thinking, problem solving, and performance skills.
+ The teacher intern uses knowledge of effective verbal, non-verbal and media communication techniques and appropriate technology to foster active inquiry, collaboration, and supportive interaction in the classroom.
+ Lesson and units designed and taught according to professional standards in teaching field
+ Research and investigations within academic discipline
+ Reflections on audio taped and/or video taped instruction as evidence for meeting professional teaching standards
+ Planning logs

____III. Teachers are responsible for managing and monitoring student learning.

+ The teacher intern uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.
+ The teacher intern understands and uses formal and informal assessment strategies, consistent with instructional goals, to evaluate and ensure the continuous intellectual, social, and physical development of the learner.
+ Teaching philosophy
+ Classroom management plans
+ Authentic assessment system (e.g. rubrics, performance assessments)
+ Examples and analysis of student work
+ Contributions to listserv or web forums

Electronic Portfolios, continued
Figure 1

____IV. Teachers think systematically about their practice and learn from experience.

+ The teacher intern is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.
+ The teacher intern responds well to constructive feedback.
+ Reflections on video or audio tape of teaching in relation to professional teaching standards
+ Analysis and reflection of student work
+ Analysis and reflection of teaching
+ Planning and Reflection Logs

____V. Teachers are members of learning communities.

+ The teacher intern fosters relationships with school colleagues, parents, and agencies in the larger community to support students and well being.
+ The teacher intern demonstrates a professional attitude toward the community by leaning and adhering to school policies
+ Membership in professional organizations
+ Attendance or presentation at professional conferences
+ Participation in team meetings, department meetings, or faculty meetings at school sites
+ Synopsis of professional readings
+ Evidence of communication with parents (e.g. newsletter, logs of phone calls)
+ Interactions with web mentor

____VI. Electronic portfolio is designed, organized, and presented in professional manner.

+ Opening page with clear overview of purpose and navigation links
+ Consistent site layout (evenness in depth of sections)
+ Legibility of text and font
+ Overall site balanced to navigate with clear connections to opening page
+ Clear captions and explanations that facilitate navigation and understanding of portfolio contents
+ Accuracy in spelling and mechanics

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Electronic Portfolios, continued
Figure 1

_____VII. Artifacts chosen for electronic portfolio provide evidence for purposeful uses of technology and reflection on standards for teaching and learning.

+ Digital photos of student work
+ Powerpoint, hyperstudio or other multimedia presentations
+ Conceptual maps of curriculum planning
+ Scanned documents of student or teacher work (e.g. graphs, journal entries, observations, reports)
+ Audio clips of student dialogue
+ Short (15 sec) video clips
+ PDF Files
+ Web resources and link in content area
+ Analytical pieces
+ Instructional activities
+ Annotated external links

Scoring:

20-21. . .Distinguished
14-19. . .Advanced
Total Score:_____

7 –13 . . .Proficient
0-6 . . . Unsatisfactory*

*Students must score a minimum rating of “proficient” on all categories and a “proficient” or higher rating on the total evaluation in order to pass.

Comments:

Electronic Portfolios, continued

Figure 2

Technology Checklist

We are gathering some baseline information about the kinds of technology/ software competencies that students demonstrat through their portfolios as well as a personal self-assessment of the types of technology that student teachers know. Competency in using this technology is a requirement for state licensure in Virginia and is consistent with standards from the International Society for Technology in Education (ISTE).

In the first column, please check the technology components that were used in your portfolio. In the second column, please indicate where you used the particular technology elsewhere.

Technology Components	Evidence Used in **Portfolio**	Evidence Used **Elsewhere**
Used Composer or other web page tool	_____	_____
Image scanned	_____	_____
Image with digital camera	_____	_____
Sound:		
Importing from tape or CD	_____	_____
Using own voice	_____	_____
Video:		
Used short original clip	_____	_____
Used links to part within the portfolio	_____	_____
Used links to other educational web-sites	_____	_____
Multi-media software (1 requried):		
Powerpoint	_____	_____
HyperStudio	_____	_____
Other_____	_____	_____
PDF files	_____	_____
Web resources for your content area	_____	_____

Signature (Program Advisor) _____
Date_____

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Links to Popular VSTE Online Resources:

Current VSTE Board of Directors and Officers:
www.vste.org/communication/board.html

VSTE Electronic Journal Submission Guidelines:
www.vste.org/communication/journal.html

VSTE Membership Information:
www.vste.org/community/membership.html

VSTE's Annual State Technology Conference:
www.vste.org/conference/2002/

VSTE Journal Editorial Board: