

Technology in Education



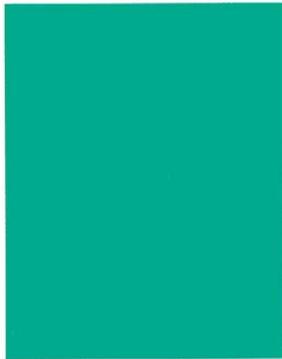
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# TECHNOLOGY IMPLEMENTATION

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## Uncovering Teachers' Perceptions of the Internet

By Al Byers

In a typical school, one can always find the teachers who do not readily accept the use of technology in their classrooms, no matter how complacent they may be towards the infusion of education technologies into the academic setting.

The real question, though, should not be who does and who does not use technology to help students learn. Instead, the question should address who actually implements the use of computers, graphing calculators, and the Internet in effective ways in the classroom.

Administrators at the school and district level must seek ways to train its teachers in the effective use of technology, not just the mechanics of using it.

As any good trainer knows, it is imperative to first conduct a needs analysis before outlining any training goals and objectives in order to address the specific needs of those being trained.

In this article, a brief overview of teachers' use of the Internet is presented, followed by a list of questions that technology implementation specialists at all levels would be wise to consider before they develop training materials. The questions could be reoriented for technology use in general.

As pervasive as technology and the Internet appear today, the College Board has uncovered some troubling revelations. While computers may appear ubiquitous, not all students have computers or Internet access and many do not have the competency skills to utilize the technology (Gladieux & Swail, 1999). It would seem apparent that if students are going to be technology literate, they need to be adept at using computers and the Internet.

Given these startling statistics it becomes imperative that we examine teacher perceptions of the Internet and the effective methods in which they utilize it in the classroom. Ultimately,

teachers provide the primary instruction that children need to acquire Internet technology competencies.

Hopefully by uncovering insights into how effective teachers, administrators and specialists perceive the value of technology, and documenting effective examples of Internet use, like individuals may be able to ponder similar issues as they engage in Internet-related educational endeavors.

This article examines the recent literature regarding the use of technology and the Internet in the classroom and suggests ways that future research should be conducted.

The following questions have been generated as an overarching guide for this paper:

- What are teacher perceptions about the value or lack thereof regarding the use of the Internet in learning?
- What factors influence teachers in their use of the Internet in the classroom?
- How do school teachers in a school regarded as technologically superior use the Internet?
- Given these areas of research, what does the literature say regarding the importance of technology and existing perceptions behind teachers' use of it?

## What's the Big Deal about Technology?

Many educational institutions are currently failing to capitalize on the myriad of learning possibilities that technology provides (Jarrett, 1998). This poses a challenge to educators who, with limited time, resources and training, are attempting to appropriately infuse technology enhanced learning materials into the curriculum (Manouchehri & Goodman, 1998).

While there may be many potential impediments to implementing Internet-assisted education, there also appear to be many potential benefits of computers and the Internet for the classroom. Interaction permitted via technology may enable students to develop strengths like problem solving persistence and initiative (Jarrett, 1998).

There are many teachers that feel the effective integration of technology and the Internet may support the use of problem-based scenarios and foster the development of critical thinking and communication skills (AAAS, 1993; Council, 1996).

Multiple research studies have been conducted that provide repeated evidence that the use of technology and the Internet may improve writing skills, cooperative learning and motivation (Jarrett, 1998).

Additionally, technology implementation has also been shown to increase self-efficacy of students by instilling more success in the learning environment and in allowing students to take more control of their own learning (Means & Olson, 1997).

National technology mandates have been established by such organizations as the National Science Teacher's Association, the National Council for Teacher's of Mathematics, the National Council of Geographic Education, and the International Society for Technology in Education (ISTE). The standards, along with the rollout of e-rate Internet connectivity for the K-12 classroom (Gladieux & Swail, 1999), indicate the necessity of teacher training to properly infuse technology/Internet competencies into the curriculum (Hurley & Mundy 1997).

Only by having the access, time, and training for these technology tools can teachers implement them within a learning context, using the technology for authentic solutions in a performance-based environment (Warner & Akins, 1999).

Given the need for technology-enhanced education, and the plethora of resources and dissemination channels available, how do we effectively harness this enabling mechanism?

Teachers have been found to employ three strategies with respect to their interactions with technology: (a) avoidance, (b) integration, and (c) technical specialization (Evans-Andris, 1995).

In an ethnographic study of elementary school teachers, Evans-Andris (1995) found that

though the majority of teachers provided their students with opportunities to use the computer, 62 percent distanced themselves from computers. Why would 62 percent of the teachers in this study distance themselves from technology?

Some purport that learning to teach effectively with technology involves a significant learning curve for many teachers and that most teachers take at least five years to become proficient (Jarrett, 1998).

This may in part account for the 62 percent total mentioned above. Consequently, during the early stages of technology use there may be significant technical hurdles to overcome. Effective training and appropriate ongoing support seem essential for technology/Internet integration into the classroom.

Additionally, administrative support is also needed to buttress teachers' efforts and to provide encouragement to sustain educators throughout their demanding teaching schedule (Manouchehri & Goodman 1998). Research needs to be done to discover what effective administrative support and training protocols have been provided to teachers in existing nationally recognized schools that have effectively used the Internet for learning.

Additionally, which teacher attitudes and perceptions of technology and the Internet encourage its use? Is there a way to shape or mold these attitudes for the better? Research has shown that teachers' attitudes and perceptions about technology are tied to their work environment, but may change with proper staff development and administrative support (Chin & Hortin, 1993).

Even if access and training is provided on how to use the Internet, the effective integration of this technology will be determined by how teachers value the benefit of the Internet in facilitating learning and how their technology skills are practiced and supported in the context of their daily profession.

Accordingly, it would seem essential that future research in this area use formal and informal semi-structured interviews as well as observations and artifact analysis (Merriam, 1998) to gather insight into teacher perceptions and uses of the Internet in various schools.

There appear to be five factors hindering teachers' use of technology in K-12 education:

1. Resistance from the potential learning curve

- required to use the Internet
- 2. Negative personal perceptions about the value of the Internet as a learning tool
- 3. Inadequate administrative support for teachers in the use of the Internet
- 4. Inadequate teacher training in the proficient use of technologies related to the Internet
- 5. Teachers' access to and use of modern technology and the Internet

Keeping these research areas (access, perceptions, and support) in mind, and accounting for the value that interviewing teachers would provide, the next portion of this article is an example of an interview guide that one might use to develop a needs assessment tool before developing training. The interview begins with close-ended questions that are easily answered and put the teacher at ease. As the interview progresses, open-ended exploratory questions are asked and examples of effective use of the Internet are requested.

Please note that the example guide has been abbreviated, but an extended version can be obtained by contacting the author.

## Example Interview Guide

Reassure the interviewees that:

- Interviews are voluntary and can be stopped at any time
- Interviews will be kept anonymous
- Any information they give about others will be kept private
- They do not have to answer any question(s) they choose not to.

### Personal Background Questions

- 1 How long have you been a teacher?
2. What subjects do you teach?
3. What is the largest and smallest class size you traditionally have?
4. What classes do you teach? How long do they last?
5. Did you choose to teach your classes, or were they assigned to you?
6. Do you have a planning period?

7. What is your educational background (looking to see highest degree completed)?

### Access Questions

1. Do you have Internet access in your home?

Follow Up: If the teacher answers yes, ask, "How do you use the Internet at home?" Suggest various ways if teacher is not excessively responsive: email, downloading lesson plans or software, research content to be used with an existing topic, create overhead transparencies or PowerPoint slides that include Internet content (images, text, audio, video).

2. If the surveyor is unfamiliar with the school system, he/she should ask, "how do you get access to computers and the Internet in your school? How many computers with Internet connections can you access at one time?"

Follow Up: If the teacher says they use a computer lab, ask, "how difficult is it to schedule the lab for your classroom use? To what extent do you think having to move your class to the lab for work impedes your use of it, if at all? Can all the computers connect to the Internet simultaneously?"

Follow Up: If the teacher says he/she has several computers in the classroom, ask, "are the classroom computers able to simultaneously access to the Internet? Is it difficult to have only a few computers for classroom Internet use? How are these computers adequate for the way you use them when connected to the Internet? Can you provide examples?"

3. When you're using the Internet, do you connect at a reasonable connection speed for classroom instruction (explain further if needed, if using a 56K modem, do you feel you usually have to wait an extended time for pages to load; do you connect only between 28.0 and 33.6 kbs)?
4. If there were unlimited funding and space available, how would you design your access to and use of the Internet-ready computers for teaching?

## Teacher Support Questions

1. How much have you received related to the use of the Internet? This can be either from while you were in college and/or since becoming a classroom teacher. Follow Up: "How valuable did you perceive this training? How many hours of training would you estimate that you receive per year? Did it translate into classroom practice?"
2. If you could have your way, how often and in what capacity would you like your technology/Internet training to occur?
3. Do you think your principal supports your use of the Internet as an educational tool in the classroom? Think back to a specific instance and describe it.
4. If you have a district or county cognate specialist (science, mathematics, English, etc.), how does he/she help or demonstrate the use of the Internet in the classroom? Can you provide an example that you regard as valuable? How about an example that you thought was not very effective?
5. How do you get assistance on technical questions or difficulties about using the Net while on location in your school? What ongoing training, like teacher in-services, is provided for you regarding computer Internet use?
6. Do you collaborate with any other teachers in the school as partners in using the Internet? If so, how is this done?
7. If you could have the exact type and amount of on-site technical support, equipment and connectivity you desired, describe what that would be.

## Internet Use in the Classroom and Teacher Perceptions

1. Describe how you use the Internet in your classroom.

Follow Up: "If the teacher talks more about student use of the Internet ask: how do you use the Internet to assist you in the development of lesson plans, if at all?"

Follow Up: "If the teacher does not mention collaborative distance learning as an Internet tool ask: how, if ever, have you used the Internet to collaborate with other students or professionals? If so, can you describe this event and your perceived effectiveness of this experience for students?"

2. Reflect back on a specific project or unit you did in which you used the Internet in some capacity. Relate something about this experience (what worked, what did not work, etc.)
3. What professional requirements, if any, prompt you to use the Internet as a classroom tool?
4. How do you personally view the value of using the Internet as a classroom tool?
5. Some would say the Internet is nothing more than electronic textbook; instead of turning the pages of the book, one just clicks on a link for more information. How would you respond to this assertion?
6. Think back to an educational experience you've had or witnessed involving the use of the Internet, either personally or professionally. Recount this experience.  
  
Follow Up: "If the participant provides an example, ask why he/she shared that particular example. Was it the first thing that came to mind, or was it very memorable?"
7. Are there any other educational experiences using the Internet that you'd like to describe?
8. If you were conducting this interview, what other questions would you pose to the participants?

Always remember to thank your participants for their time and effort in providing their valuable insights into the use of the Internet in the classroom. Tell them that their answers will help ensure a more productive training atmosphere for everyone.

## Conclusion

The purpose of this article was to review the literature concerning the value of technology /Internet use in learning, and to examine the teacher

perceptions affecting its use in the classroom.

Access, administrator support, teacher training, and teacher perceptions are key issues affecting teachers' use of technology and the Internet.

Because teachers are the primary mechanism for facilitating a student's acquisition of technology competencies, it behooves us to look at the perceptions of how teachers perceive their use of technology and the Internet in the classroom.

This article did not discuss the methods of recording, transcribing, or analyzing the guide included herein. How one captures and analyzes the data are paramount for validity and reliability.

There are also protocols regarding how to obtain the permission to conduct interviews (informed consent) and in securing approval from an appropriate institutional review board (Seidman, 1998) which were not discussed. Refer to the Seidman (1998) and Merriam (1998) references for more information in these key areas.

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