

# Learning Lockdown: The Disconnect Between Preservice Preparation and Permissible Technology Practice in Schools

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## **Abstract:**

The authors surveyed technology directors in 7 local school districts to understand the impact of computer security policies on the integration of computer technologies into classroom learning environments. The data suggest that well-intentioned policies and practice may be adversely affecting the ways teachers and students use instructional technologies in local schools. Fear of exposing schools to the ills of the connected age is prompting decision-makers to react, first, to the possibility of threats. Districts must consider carefully the implications of restricted technology practices related to the development of knowledge and skills needed by students in the 21<sup>st</sup> century. Teacher preparation programs must also examine program expectations with respect to district policies and practices for technology integration.

## **Introduction**

Each year, a new crop of teachers leave preparation programs prepared for school settings greatly enriched by the presence of computers – only to find multiple barriers to successful use. The majority of states in the U.S. have requirements detailing what teachers and students are expected to do with computers. However, an increasing number of teachers report barriers to utilizing these computer competencies in meaningful ways in their classrooms. A few years ago, these reports were not surprising. Few schools were prepared for a 21<sup>st</sup> century clientele. But not

today. With well-equipped schools and a growing number of technology-rich preparation programs in place, many of our teachers are ready for the world of digital schooling. So, why are so many still struggling to use computers for instruction in creative and meaningful ways?

What we have found surprised us. Computers are in every school -- and nearly every classroom -- and most are connected to networks and the Internet. Though many schools have invested in technologies, few seem willing to let teachers have much say in how computers are used in classrooms to facilitate learning. To understand how this "learning lockdown" is impacting what teachers and students can do, we surveyed the technology directors in eight surrounding school districts where most of our student teachers and interns are placed for field experiences. We asked them about the policies and practices they use to secure their systems and to provide a safe learning environment for students.

## **Literature review**

Students can acquire greater knowledge through technology (Salomon, 1990; Salomon et al, 1991). Educational technology integrated into the curriculum can improve student achievement when it accounts adequately for 21<sup>st</sup> century skills (CEO Forum, 2001). New technologies can foster collaborative learning. Yet, the typical classroom is ill-equipped to utilize technology toward these goals. Despite transformed workforce and academic skills necessary for success in the 21<sup>st</sup> century, pedagogy has changed little in one hundred years (e.g., Partnership for 21<sup>st</sup> Century Skills, 2002; CEO Forum, 2001). Through a combined effort of federal initiatives, state programs, and school-community partnerships, nearly every classroom not only has a computer (Smerdon et al, 2000) but also is connected to the Internet (Kleiner & Farris, 2002). State educational units have carried forth with training initiatives, curriculum revisions, and a focus on building a technological infrastructure to address students' and teachers' needs. Many states have explicit expectations for teachers and students with regard to technical competencies (NCATE, 1997). Still today, there remains an astonishing gap between the possibilities of technology and the reality of its use in schools.

Questions about integrating technologies into the curriculum are driven by concerns about network and desktop security (e.g., viruses, online predators, plagiarism), personal communications (e.g., email, discussion boards, chats) and copyright infringements. Educational leaders are examining closely what teachers and students may do with the technologies in their schools. For instance, under the Children's Internet Protection Act (1996), schools may not receive rate discounts unless they certify that they are enforcing a policy of Internet safety. Policies may include the use of filtering or blocking. By 2001, 96% of public schools reported using various technologies or procedures to control student access to inappropriate material on the Internet (Kleiner & Ferris, 2002). New federal guidelines now require all schools to have such mechanisms in place.

## **Research Objective**

The purpose of this study was to investigate the impact of local network and computer security policies and procedures on the integration of computer technology competencies and standards in classroom learning environments. Our questions were guided by our desire to know how district level policies impact certain instructional technology practices.

## **Methodology**

A consortium of eight school districts that serve as training sites for pre-service and lateral-entry teachers associated with the Appalachian State University was identified as the sample for this study. Technology directors from each district completed a survey regarding their district's desktop and network security policies and procedures. Seven of the eight districts (88%) completed the questionnaire. Responses were tabulated and analyzed to determine the extent to which students and teachers were able to follow the state mandated technology curriculum. The data is summarized and discussed in the tables below.

All districts update virus protection software daily. All of the districts surveyed assign primary decision-making responsibility for content and traffic admissibility to the Director of Technology -- the same person responsible for the security of networks, workstation, and other instructional computing assets within the districts' schools. Items dealing with Desktop Security are presented in Table 1.

## **Desktop Security**

While each district applied filters, 57 percent controlled access at the server level. All but one district filters Internet content at the district level. A large percentage of the teachers and students are not allowed to save to

the hard drive. Networked printers often need settings changed for optimal performance, yet in more one-quarter of our sample schools only teachers are allowed to do so. In only one of the districts does a technology committee make decisions regarding the permissibility of content.

Access controlled by filters	Allow desktop settings and adjustments	Save to Hard-drive	Adjust resolutions	Change printer settings
100% (57% controlled at the server)	28% Teachers	71%	42%	71% Students 28% Teachers only

**Table 1:** Percentage of LEAs allowing desktop manipulation in schools

### Desktop Applications and Personal Communication Tools

While 71 percent of teachers are allowed to download software to the desktop, only 29% are allowed to install it. Further, wide variations occurred in whether teachers and students can develop, publish and maintain websites. Only 43% of the teachers and 29% of teacher/students are allowed direct access to web servers. Other computer applications typically cited in the literature as useful 21<sup>st</sup> century tools varied in access and support. While 85% of the teachers were allowed to use message boards, only 57% were able to use chat rooms. Web-based video conferencing was available for 85% of the educators but only 71% of teachers were allowed access to streaming media.

Download software to the desktop	Install software on the desktop	Make and maintain a web site	Use message boards	Use chat rooms	Use Streaming media	Use IP video	Use web-based email	Peer to peer file sharing
71%	29%	29% Both teacher and student  43% Teacher only	85%	57%	71%	86%	71%	28%

**Table 2:** Percentage of LEAs allowing personal communications tool usage in schools

### Network Services

Each district varied in which network services and protocols were permitted in schools, though every district customizes their firewall. Most allow email – either SMTP or Web-based. Just over half, however, permit the use of FTP and Telnet. Still fewer (29%) allow peer-to-peer file sharing.

Customized firewall	MP3	Web-based email	SMTP	FTP	Telnet	Peer-to-peer file sharing
100%	100%	71%	86%	57%	57%	29%

**Table 3:** Percentage of LEAs allowing specified network protocols and services in schools

### Conclusion

Well-intentioned policies and practice may be adversely affecting the ways teachers and students use instructional technologies in local schools. A deeply-engrained fear of exposing schools to the ills of the connected age is guiding decision-makers to react, first, to the possibility of threats. As one technology director wrote: “our policy is deny ALL, open only when business need is demonstrated.” Another director commented: “as a rule of thumb, we restrict streaming anything.” Yet, pre-emptive approaches such as these may contradict curricular requirements. For example, standard 5.3.6 in North Carolina’s Computer Technology Course of Study requires

students to “participate in curriculum-based telecommunications projects as a class activity.” Many teachers will find it difficult to achieve this standard in schools where network protocols are limited.

District-level control over permissible technologies threatens teacher autonomy, student inquiry, and the ‘teachable moment.’ When modifications or exceptions to content filtering rules must be made at the central office and not at the school, opportunities to capitalize on the inherent value of instructional technologies are hampered. Network security concerns create barriers for teachers developing interactive lessons for classroom instruction. Some computers are “locked down” to prevent inept users from making changes that might disrupt computer performance. As a result, teachers and students have little control over the tool they are expected to master, as well as unnecessarily long delays when, say, a print job malfunctions but can only be cleared by the technician who locked the computer interface.

Technology integration in some schools is less about what is available to teachers and students and more about what is allowed by policy and control. There is always potential for inappropriate use of technology by those in schools. Parents and educators must discuss potential hazards for misuse with children so all students may learn to become responsible users of the Internet-enabled technologies in schools. However, these data suggest inconsistent patterns among districts are emerging between available technologies in schools and what teachers and students actually can use. Further, these findings suggest a possible disconnect between pre-service training program requirements (based on national and state standards) and permitted practices in local schools. As teacher preparation programs continue to integrate instructional technologies into the coursework of pre-service teachers, they must be mindful of the actual environment into which those students ultimately proceed. Local district policies and state standards must align better with teacher preparation requirements.

Teachers will not and cannot integrate instructional technologies when they are forbidden to do so at the local level. Districts must consider carefully the implications of restricted technology practices related to the development of knowledge and skills needed by students in the 21<sup>st</sup> century. Teacher preparation programs must also examine program expectations with respect to district policies and practices for technology integration. Ultimately, this study reinforces the need for more collaboration between those who make policies and those who must put them into practice.

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