

Information Security—Impact on the Efforts and Responsibilities of Professional Educators

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Abstract

Many teachers, educators, and researchers believe that technology integration provides various student learning benefits. Yet, educators are not succeeding at achieving technology integration on a broad-scale. Most research is seeking to understand how issues such as time, strategies, and pedagogy impact teachers use of technology for learning. Yet, teachers are still challenged by the lack of foundational computer management skills. As technologies progress, teachers are presented with new issues related to Information Security. In fact there are many Information Security questions and issues that educational researchers have not asked. This study investigates Information Security issues as they relates to technology integration and the role and responsibility of educators.

Research Goals

The main goal for this research is to better understand the issues of Information Security as it relates to educational technologies and integration. How is it relating to integration? How is there knowledge of security integration effecting their integration? How do the various issues associated with information securities impact your role as an educator?

Impact

With this understanding, we can continue to create safe learning environments that will support students' development of higher-order thinking skills. Further our understanding will support future course design and development projects.

Research Phase—Pre-Course Survey

The purpose of this survey was to determine how in-service teacher's dealings with Information Security. Three general areas were assessed: awareness, experience, and impact on responsibility are related to Information Security. For each area, teachers responded to specific topics including:

- Information Security
- Passwords
- Acceptable Use Policies
- Cyber Ethics
- Encryption
- Filters
- Classroom Management
- Classroom Technology Guidelines
- Website Credibility/Evaluation
- Searching the WWW
- Guiding Student on the WWW
- Copyright
- Basic Network Protection
- Malicious Code: Viruses/Worms

Pre-Course Survey Findings

1. Prior Awareness—Before this course, I was **AWARE** of the following issues related to information security. (n=11)

2. Prior Use—Before this course, I have **USED** the following issues related information security in my job as a professional educator. (n=11)

	AWARE Average	AWARE SD	USED Average	USED SD
Choice:	3.07	1.14	2.92	1.13
1-Strongly Disagree				
2-Disagree				
3-Neutral/Undecided				
4-Agree				
5-Strongly Agree				

3. Prior Impact—Before this course, the following information security issues had WHAT LEVEL of **IMPACT** on my responsibilities as a professional educator?

	IMPACT Average	IMPACT SD
Choice:	2.48	0.75
1-Very Positive		
2-Positive		
3-Neutral		
4-Negative		
5-Very Negative		

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Background/Problem

- Setting K-12 Education
- Common belief—technology integration provides learning benefits
- Minimal success achieving technology integration
- With integration programs, teachers still challenged by (1) lack of skills, (2) barriers
- Integration research—typically investigates impact of time, strategies, and pedagogy on teachers use of technology
- New technologies—create new issues (related to Information Security)
- Need to understand the issues of Information Security as they relate to educational technologies and integration

Solution

Graduate Level Foundation Course

- Developed to provide technical and Information Security training to in-service teachers
- Promoting Information Security in education—course participants will pass basic InfoSec concepts on to students and fellow teachers

Exploratory Research

- Investigates Information Security issues as they relate to technology integration and the role and responsibility of educators

Impact

- Create safe learning environments that will support students' development of higher-order thinking skills.

Research Methods

Goal

- Explore—identify and understand— Information Security issues that relate to educational technologies and integration

Participants

- K-12 in-service teachers

- Small number of participants

Questions

- How do these issues impact teaching and learning in an educational setting?
- How do Information Security issues affect the integration of technology?
- What are the recommended protocols for dealing with the key issues?
- How does learning from this course impact subsequent technology usage and integration?

Data Collection

- Three Phase Study—using qualitative/quantitative techniques
- Phase One—Pre-Course—establish baseline
- Phase Two—End of Course
- Phase Three—Post-Course

Findings—Phase One Pre-Course

Prior Awareness—Before this course, I was **AWARE** of the following issues related to information security. (n=11)

Prior Use—Before this course, I have **USED** the following issues related information security in my job as a professional educator. (n=11)

	AWARE Average	AWARE SD	USED Average	USED SD
1. Passwords	3.64	0.88	3.36	1.15
2. Acceptable Use Policies (AUPs)	3.45	1.23	3.36	1.15
3. Cyber Ethics	2.73	1.21	2.64	0.98
4. Encryption	2.36	1.15	1.73	0.75
5. Management of Computers in the Classroom	3.45	0.99	3.45	1.16
6. Computer Technology Guidelines	3.00	0.95	2.91	1.08
7. Website Credibility/Evaluation	2.73	1.21	2.36	1.23
8. Searching the WWW	3.27	1.29	3.55	0.99
9. Guiding Students on the WWW	3.18	1.11	3.27	1.14
10. Copyright	2.91	1.24	2.82	1.40
11. Basic Network Protection	2.73	1.21	2.64	1.37
12. Malicious Code: Viruses/Worms	2.73	1.29	2.55	1.23
13. File Management	3.73	1.05	3.27	1.05
OVERALL	3.07	1.14	2.92	1.13

Choice:	1-	2-	3-	4-Agree	5-
	Strongly Disagree	Disagree	Neutral/Undecided		Strongly Agree

Prior Impact—Before this course, the following information security issues had WHAT LEVEL of **IMPACT** on my responsibilities as a professional educator?

	IMPACT Average	IMPACT SD	n=	Not applicable responses
1. Passwords	2.55	0.99	11	0
2. Acceptable Use Policies (AUPs)	2.27	0.96	11	0
3. Cyber Ethics	3.00	0.94	10	1
4. Encryption	3.00	0.00	10	1
5. Management of Computers in the Classroom	2.30	0.64	10	1
6. Computer Technology Guidelines	2.44	0.83	09	2
7. Website Credibility/Evaluation	2.25	0.83	09	2
8. Searching the WWW	2.09	0.67	11	0
9. Guiding Students on the WWW	2.10	0.83	10	1
10. Copyright	2.40	0.92	10	1
11. Basic Network Protection	2.70	0.78	10	1
12. Malicious Code: Viruses/Worms	2.90	0.83	10	1
13. File Management	2.18	0.57	11	0
OVERALL	2.48	0.75		

Choice: 1-Very Positive 2-Positive 3-Neutral 4-Negative 5-Very Negative

Before this course, did information security issues impact your efforts as a professional educator? If so, how? (n=10)

No response—5 Total

General Reason

Not aware of InfoSec issues.
Not applicable
Not applicable

Participant Response

I didn't think of any of [the listed issues] as being Information Security.
I used the computer for word processing mainly. I keep my grades and my IEP's but have worried about security issues.
I am not available to use the labs with a class. I feel that it is too difficult for me to check AUP's for every student that I see. Therefore, I am not willing to try to take a class through computer work while they are in my room.

Yes response—5 Total

General Reason

Technology Administration
Support Services
Undefined
Viruses and AUP'S
E-mail

Participant Response

Information security issues did impact me. I am the director of technology at my corporation and I had to be aware of these issues. I have slowly learned over the years about these issues. I am sure there is much more to learn.
They had an impact because I am responsible for maintaining all users passwords and logins.
I was probably not as careful with information security issues as I should have been.
Viruses and AUP'S were the only thing that really concerned me.
E-mail was used the last two years. Because of this, I was aware of the security issues.

Is there any information that you feel is important to about your experiences with information security issues prior to your involvement with EDCI 591A?

General Reason

AUP, Filters, Backup

Appropriate Internet Use

Copyright, Password, WWW
Searching

Non-Educational

Non-Educational

Non-Educational

Participant Response

Yes, I was very aware of AUPs and trying to safe guard the students without having a commercial filter. I was also aware of the amount of work that was needed to reconfigure machines that were messed with by students who were curious or who thought they knew more than they actually did.

Some of our students parents have shared a concern about their child's inappropriate use of the internet at home. I feel I need to know more about computers and safety issues.

Copyright and password protection, searching the WWW

My only real concern was with credit card safety on the internet.

I am scared of someone stealing my credit card number.

Prior to the course, I begin to use my credit card with Amazon.com. I learned some of how this company secures my card number. I still feel a little uneasy.