Perceptions and Technology Skills of

Secondary History Students

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Abstract

The following article discusses the technology skills and perceptions of online classes held by secondary-level United States history students. Based on a survey designed to assess computer software and hardware skills as well as student perceptions of online classes, several recommendations are presented to enhance the success of marketing online classes. The following report has been derived from the results of a recently accepted Master's thesis regarding the implementation of online classes. School districts may find this research useful as a starting point for considering how to implement their own online programs.

As secondary-level education begins to implement online classes, it is essential to determine students' technology skill levels and perceptions of online classes. The following article has been derived from the results of a recently accepted Master's thesis in Training and Development at the University of Wisconsin-Stout. Student technology skills and perceptions of online classes are topics of interest as schools develop online classes. The results of the present research will be useful to address potential training needs and marketing concerns as online classes are implemented.

Literature Review

Several issues impact student perceptions of technology and their technology skills. The first factor that must be considered is the availability of technology. Within poor urban centers, technology may not be easily accessible given the high costs of purchasing and maintaining computer systems (Walker, 1997). Technology is an issue the modern worker must confront successfully in order to advance in the future workplace (Walker, 1997). While availability may be variable within many areas, those within the Millennial Generation (those born after 1982) are uniquely suited for high technology (Strauss, 2005). Many in that generation have experience working successfully with computers and higher technology due to lowering computer costs and greater technology integration in the classroom. Concerns have also been raised about the millenials being overly-focused on technology-based multitasking (Wallis, Cole, Steptoe & Sturmon, 2006).

Online classes are often surrounded by both anxiety and misconceptions. Research has indicated that while online classes often begin with anxiety, many students become comfortable with an online learning platform after basic tasks like signing in to the learning management system and posting discussion responses have been mastered (Hughes & Daykin, 2002). Students

new to online classes may also harbor expectations that must be addressed early in order to avoid misunderstandings. Some students may come to class thinking that posting once to a discussion board is acceptable, meeting due dates will not be considered in the final grade, and even that plagiarism is acceptable (Harding & Mainka, n.d.). Students must be made aware that the conventions of an academic environment are the same regardless of format. Teachers may have to remind students that good grammar is mandatory, online courses can be just as difficult as traditional classes, and that online courses do not mean one can more easily carry a heavier academic load (Harding & Mainka, n.d.).

Perhaps one of the greatest factors impacting student perceptions of technology is teachers. Especially as younger teachers from Generations X and Y begin their careers, students and staff will likely share common experiences and excitement for technology in the classroom. Instructors coming from Generation X, having grown up in the digital age, will be accustomed to digital information sources and computer-based professional development (Baum & Dowling, 2007). The newest teachers from Generation Y (born between 1977 and 1989) will often come to class quite knowledgeable about the educational resources the Internet provides, including news sources and social networking sites (Wong & Wong, 2007). Many students and the newest staff will expect technology integration, which is especially important as the workplace has become more technology oriented. Older teachers coming from the Baby Boom generation will also contribute to students' perceptions of technology as convenient applications like e-mail have been embraced by older teachers (Baum & Dowling, 2007). While the oldest teachers coming from the Traditionalist generation (born between 1930 and 1945) may not hold much enthusiasm for technology, younger staff are part of a growing trend that emphasizes high technology utilization (Baum & Dowling, 2007).

Teachers also contribute to student perceptions and technology skill levels by using the technology to foster excellent learning opportunities. Authentic learning is a growing trend in education, which leads students to create deep understandings based on careful research and approach problems in the same fashion that experts do (Woo, Herrington, Agostinho & Reeves, 2007). These sorts of assignments are often ideal for technology-based learning experiences and often create excitement for a student seeking to complete authentic work. Tasks with defined goals that offer many methods of completion provide challenges for students to create knowledge in a constructivist oriented manner (Herrington & Reeves, 2003). Such projects, carefully designed and implemented, can enhance both technology skill levels and perceptions of technology.

Method

Participants

Sophomores at Merrill Senior High taking United States History were identified as an ideal group for analysis. U.S. History is the last year-long class students take before they are eligible for completing an online class. U.S. History students provide two years of useful data that can be used to determine the likelihood of online course participation. The sample included several juniors and seniors who were retaking the course, as well as several special education classes. Specific goals of Merrill Senior High are to include students with special needs, and to encourage all students to have an online experience. Of the 306 U.S. History students, 266 were surveyed.

Materials

Resources used to complete the Technology Skills and Perceptions of Online Classes Survey (see Appendix A) included the UW-Stout online survey tool and the Merrill Senior High computer lab. Scale questions were scored using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Design and Procedure

Student technology skill levels and perceptions of online classes were collected using a survey administered in early September 2008. Upon completion of data collection, several important statistics were collected including mean and standard deviation. In order to act upon the data, the following decision table, adapted from (Lee, 2006), was used to interpret the results of the Technology Skills and Perceptions of Online Classes Survey.

Table 1
Decision Table

Mean	Standard Deviation	Rating	Decision
3.5 – 5.0	≤ 1.0	Low	Not a Training/Perception Concern
3.5 – 5.0	> 1.0	Medium	Possible Training/ Perception Concern
1.0 – 3.49	Any	High	Definite Training/Perception Concern

Questions receiving a "Low" rating ("Not a Training/Perception Concern") will not be pursued further. Those selections with a "Medium" rating will be evaluated depending on the extent of the standard deviation and mean, as well as the importance of the skill or perception to the success of an online class. A "High" rating will be pursued as an issue needing training or a perception needing to be addressed.

Results

The results of the survey have been categorized into hardware and software skills, with the final section focusing on perceptions of online classes (Williams, 2008). Overall, students' reported technology skill levels were greater than their reported perceptions of online classes. While several questions in the perceptions of online classes section have a high mean, the standard deviation for each question are greater than 1, reflecting a low consensus rate among students.

Table 2
Descriptive Statistics of Student Hardware Skills

Question	1	2	3	4	5	6	7	8
Mean	3.06	4.33	3.37	3.06	3.75	4.78	4.37	3.00
Standard Deviation	1.41	0.94	1.37	1.37	1.26	0.66	1.00	1.26

Students reported having difficulty identifying components of a computer (#1), keyboarding without looking at the keys (#3), using scanners (#4) and printers (#5) (Williams, 2008). Many also indicate they do not have adequate troubleshooting resources to handle hardware difficulties (#8). While some difficulties do exist, most students can turn on a computer that is unfamiliar to them (#2), use a mouse to select items on a computer screen (#6), and adjust a monitor to reduce glare on the screen (#7).

Table 3
Descriptive Statistics of Student Software Skills

Question	9	10	11	12	13	14	15
Mean	4.58	3.89	4.37	4.53	4.33	4.75	3.08
Standard Deviation	0.77	1.42	1.24	0.84	0.91	0.70	1.30

Students' software skills were generally quite high. While students reported having some difficulty using PowerPoint (#10), e-mail (#11), and face limited resources for troubleshooting software issues (#15), they are comfortable using a word processor to generate reports (#9) and saving files to specific folders (#12) (Williams, 2008). Students are also capable of using search engines to find information (#14), as well as locating files on a computer (#13).

Table 4
Descriptive Statistics of Student Perceptions of Online Classes

Question	16	17	18	19	20	21	22	23	24
Mean	3.72	3.82	3.54	3.81	3.72	3.57	3.54	2.99	3.97
Standard Deviation	1.15	1.52	1.20	1.27	1.32	1.28	1.18	1.36	1.19

Of all the selections, the one relating to making online classes a required experience for all students (#23) is the only one that must be addressed according to the decision table (Williams, 2008). Other questions relating to perceptions of online courses had high scores on average, but the standard deviations are large enough to illustrate the disparity of student opinion. Internet accessibility, class scheduling, and the freedom to work at one's pace are generally considered attractive; however, students do not seem uniformly excited about taking an online class.

Discussion

Online classes represent a large change for both teachers and students in terms of teaching and learning. Students, being the most immediate recipients of online courses, must have their abilities and opinions carefully assessed in order to make the best online program

possible. The results of the survey indicate students have technology skills with both software and hardware. Most students are comfortable with adjusting a computer monitor to reduce glare, turning on an unfamiliar computer, and using a computer mouse. However, students need training for scanners, printers, basic computer terminology, and access to troubleshooting resources. Without basic hardware support, many students will encounter difficulties with online courses (Williams, 2008).

Of all areas surveyed, students showed the greatest aptitude with software. Students have difficulties with e-mail access and PowerPoint, but are able to effectively write a report on a computer and retrieve & save files to a specific folder. Furthermore, while students have difficulty knowing the parts of a computer, their knowledge is highly functional. Just as a mechanic can change oil but not know fluid dynamics, students know how to Google, but may not be able to point out the central processing unit.

Perhaps the most important part of the survey and certainly the most fascinating is the controversial nature of online courses (Williams, 2008). Students are definitely interested in online courses, as demonstrated by the nearly universally high averages for each question. The problem facing the implementation of online classes is a minority of students who likely have some anxiety about online experiences. Taking advantage of the native technology ability of students to demonstrate that most already have the skills needed to take an online course would be advisable.

The results presented here have several important limitations, but do provide direction for the implementation of online courses. The results of the survey are useful for a high school developing an online program as technology skills and perceptions of online classes were measured; however, the research does not clarify how teaching or learning happens in an online

class. Secondly, the results of this survey are most relevant for secondary level social study

classes and other measures may be needed to assess the abilities and perceptions of students and

staff in other areas. With these limitations understood, the survey can be used to determine the

skills students and staff may need to develop and the marketing concerns involved in

implementing an online course.

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Appendix A

Technology Skills & Perceptions of Online Classes

Using the following scale, please complete the following questions. The results of the survey will be used to help determine the training needs and perceptions of online classes that may need to be addressed as Merrill Senior High School considers the implementation of online courses. Your participation is highly appreciated! 1 Strongly Disagree, 2 Disagree, 3 Unsure, 4 Agree, 5 Strongly Agree.

1. Given a computer, I could point to the central processing unit.

Select One: 1   2   3   4   5

2. I can turn on a computer that is unfamiliar to me.
    Turning on a computer requires turning on the monitor as well as the central processing unit.

Select One: 1   2   3   4   5

3. When typing I don't need to look at the keyboard.

Select One: 1   2   3   4   5

4. I can use a scanner to create a digital image.

Select One: 1   2   3   4   5

5. I can use a printer to make a paper copy of digital information.

Select One: 1   2   3   4   5

6. I can use a mouse to select items on a computer screen.

Select One: 1   2   3   4   5

7. I can adjust the computer monitor to the appropriate height to reduce glare on the screen.

Select One: 1   2   3   4   5

8. If I have trouble with a piece of hardware, I have access to troubleshooting resources to resolve the issue.
    Technical support phone numbers and technical manuals are both troubleshooting resources.

Select One: 1   2   3   4   5

9. I can use a word processor to write a paper.

Select One: 1   2   3   4   5

10. I have created presentations using software like Microsoft PowerPoint using my computer at home.

Select One: 1   2   3   4   5

11. I know how to access my email account.

Select One: 1   2   3   4   5

12. I can save files to a specific folder on a computer.

Select One: 1   2   3   4   5

13. I can find a file I am looking for on a computer.

Select One: 1   2   3   4   5

14. I have used a search engine like Google to find information.

Select One: 1   2   3   4   5

15. I have access to troubleshooting resources if I have problems with software.
Technical support phone numbers and technical manuals are both troubleshooting resources.

Select One: 1   2   3   4   5

16. If I were given the resources to complete class activities, I would not need the physical presence of a teacher.
You would still be able to ask questions and advice from your teacher.

Select One: 1   2   3   4   5

17. I have a computer at home with dependable Internet access.

Select One: 1   2   3   4   5

18. I can learn just as much online as in a traditional class.

Select One: 1   2   3   4   5

19. Having the freedom to work at my own pace would encourage me to take an online class.

Select One: 1   2   3   4   5

20. I would take an online class in order to reduce scheduling conflicts with other classes.

Select One: 1   2   3   4   5

21. I would take an online course if I was given the opportunity.

Select One: 1   2   3   4   5

22. Taking an online course would help me prepare for college.

Select One: 1   2   3   4   5

23. Taking an online course should be a required experience for all students of Merrill Senior High.

Select One: 1   2   3   4   5

24. If I were to take an online course I have dependable Internet access at school.

Select One: 1   2   3   4   5