

Instructional Technology: Status in Middle and High School Social Studies

H. Jurgen Combs

Abstract: There is much speculation about the use of technology in schools and whether the money spent on technology is bearing any fruit. This study investigated the use of technology by teachers and students in a large school system. Middle and high school social studies teachers were asked to complete a paper and pencil survey which addressed their use of technology. The results suggest that the use of instructional technology in social studies classes is still limited; teachers tend to use the technology for their own uses, such as test development and communication with parents. Novice teachers report using technology more than experienced teachers. There was no significant difference in technology use among teachers with undergraduate and graduate degrees. Finally, non-traditional prepared teachers appear to use technology less than traditionally prepared teachers.

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Education, technology, social studies

Background

Twitter. Texting. Facebook. Social Bookmarks. Podcasting. Ipads. Ipods. The technology is all around us and contrary to the belief of some, it will not go away. As educators, we need to help students use this technology to enhance their own learning. But, how well are we doing in using technology in the instructional process?.

In an attempt to gauge the use of technology use in social studies classes in a large school division, one hundred fifteen surveys were distributed for completion at middle and high school Social Studies/History department meetings; seventy-eight were returned for a return rate of 67.8%. The surveys were completed using non-computer forms since it was helpful to get a picture of use by all teachers and not just those attuned to technology.

Demographics

Much has been written about career switchers and others entering the profession through other than the traditional route. In this study, career switchers (referred to as non-traditional teachers) in social studies made up approximately 14% of the 6-12 classroom teachers; five of the career switchers worked at middle schools and six worked in high schools; the majority of non-traditional teachers (72%) were male). While all teachers were licensed, six of the middle school teachers and three high school teachers did not have a history/social studies license. The social studies teachers were typical of teachers in most schools in that the majority of high school teachers (61%) were male, while females made up the majority (55%) of social studies teachers in the middle schools. (see Table 1

	License other than social studies	Non-traditional entry	Male	Female	Ethnicity					
					Asian	Black	Native American/ other	Caucasian	Hispanic	Other
Middle School	31%	27%	39%	55%	0%	1%	0%	98%	0% *	0% *
High School	10%	32%	61%	45%	2%	9%	2%	88%	0% *	0% *
Age & Race Characteristics of County					5%	7%	5%	78%	6%	5%

Table 1 – Age and Characteristics of County and Teachers

*None identified themselves as Hispanic or other; totals do not add up to 100% due to rounding

Nationwide the ethnic make-up of teachers has basically remained the same; the biggest change is an increase to 5.6% from 2.9% of teachers who identified themselves as being of Hispanic origin. (Table 10) On the other hand, the ethnicity of students has changed significantly; the white student population has decreased by slightly less than 10% while the Hispanic and Asian/Pacific Islander population has almost doubled, with the Black and

American Indian or Alaskan Native increasing slightly.

Thirty percent of traditionally licensed teachers are not licensed in social studies while 33% of the non-traditionally are unlicensed in social studies. (Table 2) At the middle school level, a higher percentage of students were taught by teachers without a major or minor in social studies and licensure in the area they are teaching while at the

high school level a higher percentage of social studies teachers were licensed in the content area. The increasing emphasis on content at the secondary

level is the probable reason for the higher percent of social studies teachers licensed at the secondary level.

*Table 2 – Teaching Social Studies but **not** licensed in Social Studies*

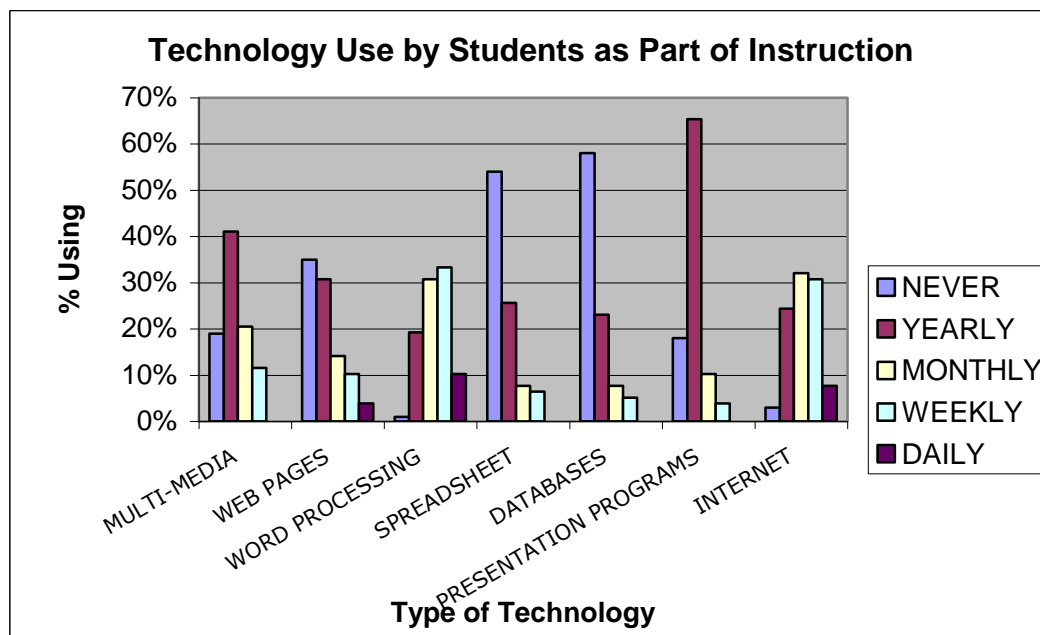
	SCHOOL DIVISION IN STUDY		NATIONAL *	
	TRADITIONAL	NON-TRADITIONAL	1987-1988	1999-2000
Middle School	30%	33%	61%	51%
High School	10%	13%	41%	39%

* Seastrom and Gruber (2002)

The results of the survey given to teachers in this study seem to match national data. (Table 3) The survey asked teachers to respond to the use of technology, including word processing, multi-media, databases and internet, web presence and other uses (digital camera, etc). Spreadsheets, databases, and web pages were the least used while the Internet, followed by word processing and presentation programs being the most used of the traditional technologies.

Teacher web presence is not high; 23.7% of the teachers reported having a web presence with the majority using the county based web site to post assignments. Nationally, according to Pea (1998), 20% of the teachers use technology on a regular basis and 50% do not use it at all, with the remainder using it more sporadically. The results of the survey show that about 45% of the teachers report using technology on a regular basis.

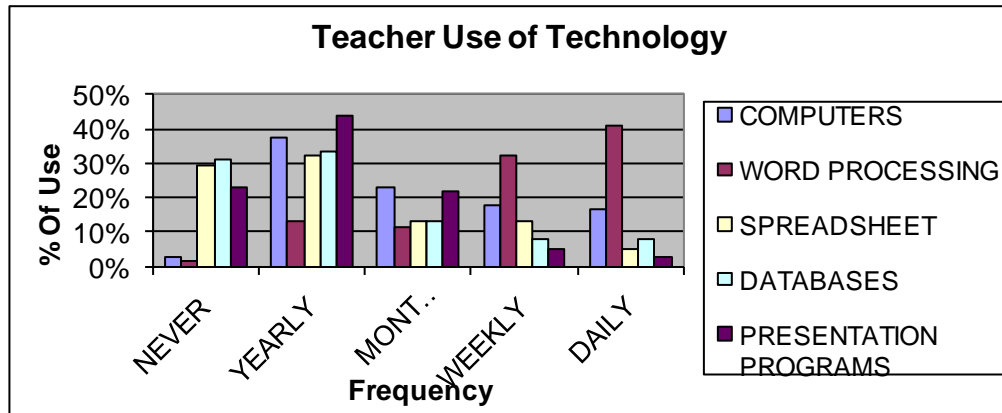
Table 3 – Technology Use by Students as Part of Instruction



When we look at teacher use (Table 4), we see that technology is used more for personal use as well as for preparing for instruction than it is used for actual instruction. Teachers report using spreadsheets, databases, word processing, and presentation programs at

similar rates. The most common use of technology is word processing; interviews with teachers indicated that they use this tool primarily to develop lesson plans and worksheets for their classes.

Table 4 – Teacher use of Technology



We can also look at teacher use of technology and experience in teaching. (Table 5) Approximately 50% of beginning teachers used technology either daily or weekly while 22.5% of teachers with seven to nine years of experience used technology weekly or daily. The survey in the division also indicates that all of the teachers with less than seven years of experience use technology at least once a year or more frequently, while more than half of the teachers with seven years of experience or more never use technology. Some experienced teachers may feel reluctant to use the “new” technology; they have mastered the other teaching methods and may fear failure with a new method. For some teachers, introducing technology into their methodology may be similar to

some of the insecurities they faced their first year of teaching.

Eighty six percent of the teachers reported having passed the technology competency requirements for the division, a state requirement, while 13.2% have not passed the competencies. Almost 70% of the teachers who have not passed the competencies have four or fewer years of experience, suggesting that they have not yet had time to address this requirement; several of these newer teachers has a provisional license which allowed them three years to meet licensure requirements. Their lack of having passed the competencies however does not indicate a lower amount of use in their instruction

Table 5 – Years of Teaching Experience and Technology Use

Years of Experience	0-3	4-6	7-9	10-12	13-15	16+
Frequency of Use						
Never	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%
Yearly	24.1%	24.1%	10.3%	0.0%	0.0%	41.4%
Monthly	22.2%	33.3%	22.2%	0.0%	0.0%	22.2%
Weekly	42.9%	35.7%	7.1%	0.0%	0.0%	7.1%
Daily	7.7%	30.8%	15.4%	7.7%	7.7%	30.8%

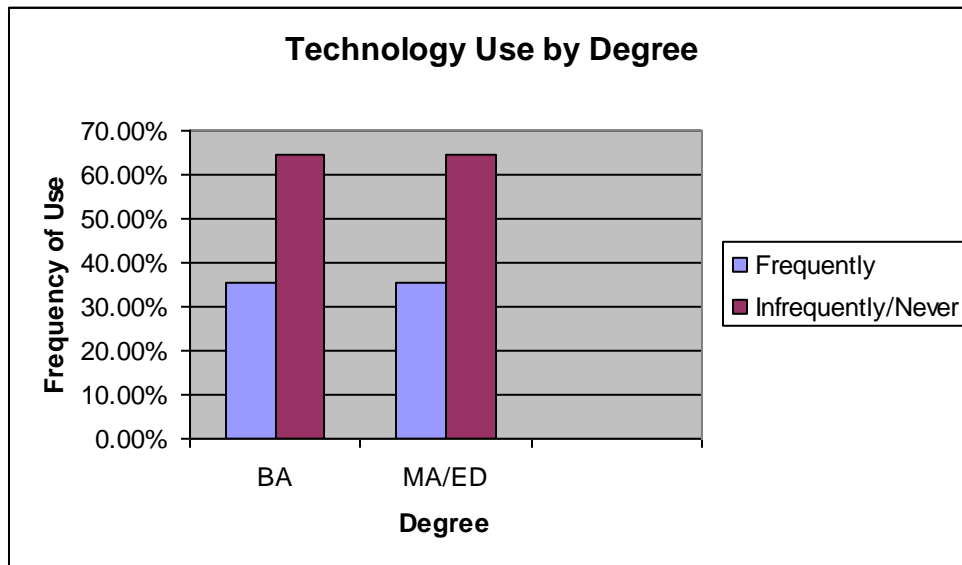
Totals do not add up to 100% due to rounding.

There is a large turnover of teachers and the demand for teachers is exceptionally high. As we see significantly large numbers of “new” teachers entering the field, we have an opportunity to provide the needed support for these new teachers to change the methods of instruction that have been in place for decades. We don’t want to necessarily assume that age is the primary factor in determining the use, or lack of use, of instructional technology in instruction, although we do see the trend of more experienced teachers using

less technology. Additionally, there needs to be the support of administration in the use of instructional technology..

Some studies indicated that teachers with advanced degrees tend to use technology more frequently; in this study, there was no significant difference in the use of technology by teachers with a bachelor’s degree and those with advanced degrees. (Table 6) This lack of difference could be, in part, accounted for the higher number of teachers with advanced degrees..

Table 6 – Degree and Technology Use



Totals do not add up to 100% due to rounding.

We also wanted to consider any differences in technology use between traditional and nontraditional teachers. While the percentage of teachers who

use technology daily or weekly is similar, it was interesting to note that the percentage of non-traditional teachers who use technology monthly or yearly

and who never use it, was higher than

the use reported by traditional teachers.

Table 7 – Traditional/nontraditional teachers – Frequency of Technology use

	Daily/weekly	Monthly/yearly	Never
Traditional	35%	64%	0%
Non-traditional	36%	45%	18%

Why is it that teachers use technology so sparingly? In this study, teachers cited malfunctioning or lack of hardware as the primary reason for not using technology more; the traditionally trained teachers reported lack of appropriate/functioning hardware as the primary reason for not using it more. (Table 8) It is interesting note that both traditional and non-traditional teachers cite lack of hardware as a major problem; what is of particular interest is that more than half of the teachers who entered teaching through the non-

traditional route cited this as a major factor. While the study did not try to determine the reason for this, one might assume since most of these non-traditional teachers came from private industry or government, they were more used to working hardware being readily available. Because of equity issues with technology availability in school divisions, the success of instructional technology really depends on significant access to the hardware and software that is appropriate to the content being taught

Table 8 – Traditional/Non-traditional Teacher Use of Technology

<i>Category of teacher</i>	<i>Lack internet access</i>	<i>Lack software</i>	<i>Lack sufficient knowledge</i>	<i>Lack administrative support</i>	<i>Lack good hardware</i>	<i>Lack student interest</i>	<i>Lack knowledge of software</i>	<i>Lack support of colleagues</i>
Traditional	20%	20%	18%	2%	27%	4%	4%	4%
Untraditional	30%	0	0	0	60%	10%	0	0

Totals do not add up to 100% due to rounding.

Other reasons cited for lack of increased technology use include lack of time, lack of equipment, specifically overhead projectors attached to computers, issues related to Mac/PC, slow servers, and lack of money. Another significant factor is the lack of Internet access, cited by both groups of teachers. Restrictions imposed on Internet access in schools has also discouraged some from using more technology; for example, *You Tube* is not available in many schools and tools like *Twitter* are not permitted to be used.

The time factor is another reason often cited for lack of technology use; through discussions with teachers and interns, there is the feeling that everything needs to be done at once; sometimes teachers will see the PowerPoint presentations that more tech proficient teachers are using and the novice teachers do not seem to realize that these teachers have may have been working on these projects for a number of years. A suggestion for teachers is to do a good tech lesson for each class for each unit in one year and then expand to

provide additional tech lessons to avoid the feeling of being overwhelmed.

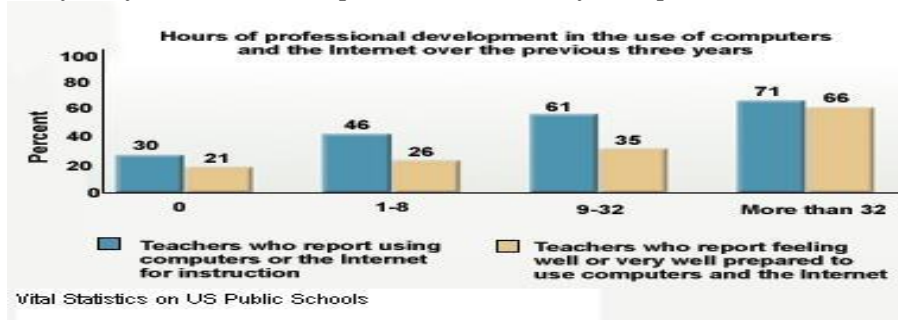
Some teachers feel that they have to re-invent the wheels. There are numerous sites on the Internet which offer lessons plans and other suggestions for teachers; *Links for Educators* (Combs, 2010) is one such site. Teachers can be encouraged to use these sample lesson plans and suggestions as a starting point and modify them to fit their own particular curriculum or standards that the state may have.

There are some teachers who feel that it takes too much time to convert already existing material to include technology. While this may be true, once the information is in an appropriate technological format, future use is much easier. For example, many teachers have numerous transparencies; frequently information on these transparencies changes. A teacher may have a transparency showing detailed data about world conflicts; as time passes, these data have to be changed. If the information is on a transparency, it will be time consuming to make those changes. However, if the information is on a PowerPoint slide, information can be easily changed. It could even be argued that the use of technology in Social Studies can make the content more current since it will be even easier to update information.

Eighty-six percent of the teachers reported having passed the technology competency requirements for the county. Interestingly, 91 percent of the non-traditional teachers reported having passed the competencies while 86 percent of the traditional teachers reported having passed the test. The school division has spent considerable money for hardware and training, acknowledging the important role that training serves in getting teachers to use technology more. Table 9 below demonstrates the direct relationship between technology training and technology use for teachers.

Valdez, McNabb, Foertsch, Anderson, Hawkes, Raack (2000) report that the students of teachers who had ten or more hours of training in instructional technology use **significantly outperform** students whose teachers had less training. Similarly, Van Vossen (1999) reported that the comfort level in using instructional technology was a significant factor in the technology being actually used. Certainly, there is a connection (Table 9) between the comfort level in using technology and the use of this technology. It would be beneficial, then, to provide sufficient training to teachers to increase their comfort level with the technology.

Table 9 – Hours of Professional Development in the Use of Computers



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The technology infrastructure has grown more rapidly than teachers have incorporated this technology into their instruction. Change is difficult for most people; it has been said that the only person who likes change is a wet baby. This may also be true when encouraging teachers to change; in fairness, in the past decade, teachers have had to assume many additional responsibilities from drug to sex education, before and after school programs, and some of the social responsibilities that used to be carried by other institutions, such as the church or family.

What does the Research Say About the Impact of Technology?

As with any instructional approach it is important that the teacher carefully consider the best method to use for teaching the specific concept or content. There is some content that may be best suited to teach with technology while other content may be best suited to use alternative methods. Instructional technology is an excellent tool but only when used appropriately. Cuban (1998) writes (1998), "The obligation is for educators, practitioners, and educational policymakers to think about what they

are after. Only with clear goals can educators be intelligent about how much they want to spend for what purpose and under what conditions." While we can use technology for word processing and databases, information technology should be viewed more broadly to include the effective use of digital information to extend human capabilities. (Moursund, 1999) In social studies, this is of particular importance. It is important to remember, as the APA reported in the *Learner Centered Psychological Principles* (1997) position paper that, "Technologies and instructional practices must be appropriate for learners' level of prior knowledge, cognitive abilities, and their learning and thinking strategies." The ability to accomplish this requires knowledge of pedagogical principles.

While social Studies classes do indeed provide a good opportunity for technology integration, including some of the more basic uses, such as word processing, databases, spreadsheets and the Internet, Yet, White (1997) writes that "... social studies teachers are the least likely to use computer based instruction." While these uses may be basic, we should not underestimate their potential.

Teachers stress writing as a process – writing, editing and rewriting – as a way to help students become more proficient writers; what better way to improve writing skills than with the use of a word processor. The ability to edit, copy, edit, and move text, for example, makes the process much less “painful.” Students can actually concentrate on the quality of the content since the formatting can be easily done with the word processor.

White further suggests that technology content be used to help students make “... the complexity of a discipline more manageable.” (p. 2) We can use, for example, an on-line encyclopedia, interactive CD, or other educational software to help students modify their own understanding of the content. An interesting piece of software, *Inspiration*, allows students to set up visual representations and connection of various concepts through concept mapping; this can also be done using the word processor, although this will be somewhat limited in capability. How interesting and helpful it would be for students to engage in concept mapping – social studies would be an excellent choice of content since it involves such a diversity of examples including, for example, art, architecture, geography, music, and people.

Valdez (2000), et al. write that we must view technology inclusion as being “... more dependent on human and contextual factors than on hardware and software.” (p. 2) All too often, we introduce the technology and expect teachers to use it without considering how it impacts on them. While we recognize the contribution that technology can play in instruction, it also important to consider how it affects teachers. For example, in addition to

needing training in how to use this technology, they may also need training in going from large group instruction to the use of smaller or cooperative groups.

The problem then becomes how do we help teachers overcome the obstacles so they will use technology more to enhance the instructional program? One thing we can do it be certain that teachers understand how technology can not only benefit students, but how it can also helps teachers. For example, through the use of technology, the material that teachers present can be made much more interesting causing students to become much more active learners than they tend to be in a traditional classroom.

Students often report that they feel disconnected from school; part of the reason is that they see little relevance in the curriculum. Many educators support the constructivist approach to teaching which allows students to “construct” their own understanding of the content based on their experiences. According to constructivists, “... knowledge cannot be *transmitted* directly from the teacher to the learner, but is *constructed by the learner* and, later, *reconstructed* as new information becomes available.” (Ryan & Cooper, 2004,p. 286)

We have learned that a significant problem with education is the lack of integration of subjects; students often do not understand how content from one class relates to another class. At the simplest level, students sometimes are dismayed when a social studies teacher insists that students use proper English; for some students, proper grammar is required only in English classes. We may be making a similar mistake with technology; in

many schools (including higher learning) where, Moursund writes, the instruction for many college students in the use of instructional technology is not clearly related to "...curriculum, methods, field experiences, or practice teaching." (1999, p. 8) Students at both levels need to clearly understand how technology can and should be integrated into the curriculum, rather than viewing it as separate entity. Not only is it important for K-12 students to see the use of technology modeled, it is also important for pre-service teachers to see their professors model the appropriate use of technology. Unfortunately, "Moving most IT instruction to an integrated model would constitute a substantial change in pedagogy and course structure for many institutions and instructors." (Moursund, p. 23)

Eggen and Kauchak (2001) note that the impact of technology is most strongly felt in the area of student motivation. Students have more control over their activities than they do in the traditional, teacher centered classroom; this increased power helps motivate students. As students became more familiar with technology, rather than the novelty wearing off, students used it more frequently and imaginatively as they became more familiar with the technology and became more competent. (Dwyer, 1994)

Schools are becoming increasingly diverse; this diversity has increased the already challenging task that teachers face. Along with the increasing diversity comes a wider range of abilities. O'Connor and Brie (p. 27) found that technology can serve to level the playing field, writing that "... the worst student was capable, through the use of technology, if developing products that were equal to those of the

best students." (p. 29) The technology helped students focus more on data analysis and helped students with poor handwriting to produce word processed reports; the grammar and spell checker in word processors also helped to produce higher quality work. Rather than grade the paper based on handwriting skills, the teacher can now focus more on the content of the paper.

Means, Blando, Olson, Middleton (1993) write, "Used well, technology applications can support higher-order thinking by engaging students in authentic, complex tasks within collaborative learning contexts." Educators sometimes seem to believe that advanced skills are not acquired through learning facts; instead students must truly interact with the content. This constructivist approach calls for students learning authentically, modeling thought processes and collaboration to expand student potential. As tasks become more meaningful, they tend to become more complex, encouraging students to use higher level cognitive skills and instructional technology is well suited to assist in this process.

Means & Olson (1997) quote a teacher, saying "Students gain a sense of empowerment from learning to control the computer and to use it in ways they associate with the real world. ... When they use technology, they are able to amplify the effects of their own actions to turn their schoolwork into real products." (p. 13) School curricula are so broken into discrete skills which do not have an apparent connection to things students do outside of schools; technology can certainly help to bridge this gap.

According to Honey, McMillan, Carrigg (1999) one particular study they

completed in Union City showed that “writing is one area where deep and sustained access to technology has made a difference.” (p. 4) Since there is even greater emphasis on writing, particularly the writing process, word processing can be used to encourage students to write more and, more importantly, revise as needed.

We know that at times it is difficult to adjust to new technologies. Waxman, Connell and Gray (2002) completed a synthesis of the research on the effects of instructional technology on teaching and learning. Overall, they reported, their analysis shows that “... teaching and learning with technology has a small, positive, significant effect on student outcomes when compared to traditional instruction.” (p. 2) Further they found a positive, significant effect on students’ affective outcomes; however, they reported a small, negative effect on student behavioral outcomes. They feel that their results can be generalized across student, school and study characteristics.

If we want teachers to use technology we must consider “... the balance between ... the ‘technology support and’ and software and hardware.” (Mandefrot. (2001, p. 4). Many teachers are reluctant to use technology because of a fear of failure; most teachers have been successful in the classroom; we are now asking them to do something new. There is the fear that they will not be as successful with the “new” as they were with the traditional methods. In order to allay some of these concerns, Mandefrot (2001), citing research by Lewis,

suggests that we demystify the computer, start with the basics, attempt to ascertain the learner’s worst fears, recount our own personal experiences as a beginning computer user, and avoiding jargon. We need to understand that adult learners “learn” differently than young students; placing more emphasis on teachers’ past learning, for example, will encourage them to try something new. Sometimes we introduce learners to complex tasks before they even understand what the instructional technology can do for them; so, starting with the basics and familiarizing them with the technology before expecting implementation will make them more willing to try the technology.

In social studies, we place significant emphasis on students using primary source material; we encourage students to keep returning to primary material as they progress and compare and contrast current information with information they learned previously. Kelly (2000) found that students go back to original source material much more readily since links are so easy to follow. Kelly concludes that, “... it is likely that students encountering sources via the web will experience an increased awareness of continuity and change over time as they attempt to make connections between the sources they read earlier in the semester and those they are working with toward the end of the term.”

Further, Means, et. al (1993) suggest that we can use technology effectively but if we use this new technology in a traditional way, the impact will be lessened.

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