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## Usage of Instructional Technology in Teaching Middle School Social Studies

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### Abstract

The International Society of Technology in Education (ISTE) and the National Council for the Accreditation of Teacher Education (NCATE) has developed standards for the application of technology in instruction. This study gathered data on the usage of instructional technology by middle school social studies teachers in Missouri.

Findings indicate that technology was not a factor in planning social studies curriculum. Seventy-three percent of the social studies classrooms used at least one form of computer-based instructional strategy on a regular basis. 53.9 % of the survey respondents stated the Internet was the favored form of technology integrated into classroom instruction. Middle school teachers were interviewed about the instructional strategies used when integrating technology into their social studies curriculum. Middle level students were interviewed to offer insights into the usage of technology into their social studies education. The article closes with the implications for implementing ISTE's technology in instruction standard.



### Introduction

"Educational technologies offer new pathways to learning, encourage the emergence of higher-order thinking skills, and enable teachers and students to

interact with real world resources in unprecedented ways" (National Middle School Association, 1995, p. 25).

The position paper, *This We Believe* (1995), reported on the educational value of the establishment of middle schools and stated the importance of computer-based instruction at the middle school level of education. The National Middle School Association envisions technology as an important and viable instructional strategy for middle school education. As a result of such position papers, middle school educators need to ask about the use of computer/technology resources in instruction.

## **SURVEY OF THE LITERATURE**

### **The National Standards**

In 1994, the International Society of Technology in Education (ISTE) and the National Council for the Accreditation of Teacher Education (NCATE) developed national standards for technology in education. The foundation standards for all teachers includes basic computer skills, personal and professional skills, and application of technology in instruction. Teachers apply technologies to support instruction in their grade level and subject areas. Teachers plan and deliver instructional units that integrate a variety of software, applications, and learning tools. Lessons reflect effective grouping and assessment strategies for diverse populations. The following list of technology in instruction standards were developed by ISTE.

### **Application of Technology in Instruction**

1. explore, evaluate, and use computer/technology resources including applications, tools, educational software, and associated documentation.
2. describe current instructional principles, research, and appropriate assessment practices as related to the use of computers and technology resources in the curriculum.
3. design, deliver, and assess student learning activities that integrate computers/technology for a variety of student group strategies and for diverse student populations.
4. design student learning activities that foster equitable, ethical, and legal use of technology by students.
5. practice responsible, ethical and legal use of technology, information, and software resources. (International Society of Technology in Education, 1994)

The National School Technology and Readiness (STaR) Assessment conducted a survey on the presence, use, and integration of technology in nearly 80,000 public schools in the American schools. The StaR report found that less than 3% of classrooms have integrated technology into the curriculum. Fifty-nine percent of American schools did not have technology or it was inadequate. Twenty-six percent considered technology as an add on and twelve percent did not devote time to the use of technology. (National StaR, 1997).



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The 1997 *Computers and Classrooms: The Status of Technology in U.S. Schools* survey reported forty percent of eighth grade social studies teachers used computer-based instruction in their classroom. When compared to the 1990 survey results of Northrup and Rooze, this study indicates that computer-based instruction has remained relatively static. Northrup and Rooze found that eighty-four percent of social studies teachers had access to computers, fifty-four percent of the teachers used computer technology during the school year.

### Technology in Middle Schools



The Policy Information Center of Educational Testing Service (ETS) commissioned a national census on computer-based instructional usage in classrooms. The ETS reported that of eighth grade social studies teachers surveyed only thirty-two percent used computer-based instruction (Coley, Cradler, & Engle, 1997). Sherman (1997) notes that successful integration of technology in middle schools will not occur until there is access to equipment and related resources, reliable on-site technical support, and school-wide technology initiatives.

Waxman and Huang observed the extent of technology integration in 200 urban

elementary and middle school classrooms. They observed the implementation of four commonly used computer activities: drill and practice, games, problem solving, and writing activities. However, such activities "were observed only 1% of the time in middle school classrooms."

Rakes, Flowers, Casey, and Santana reported on the use of technology in classrooms. When students used classroom time for computer use, drill and practice software was used 66.4% of the time and 74.7% indicated that their students do not use basic desktop publishing software (e.g., word processing, and spreadsheets). Web publishing and presentation software, on the other hand, composed 70.2% of computer use time. Also, 75.2% surveyed affirmed Internet access in their classrooms with approximately two-thirds indicating that World Wide Web resources were not used on a regular basis.

Jin and Abate (1999) surveyed twenty middle school teachers at urban and suburban middle schools in Northeast Ohio. Data collection, data analysis, visual/written communication, and design were the learning activities central to technology use or non-use. The study found a wide range of technology skills for middle school teachers.

### **Technology in Missouri Schools**

The Missouri Department of Elementary and Secondary Education (1997) commissioned the Missouri School District Computing Census. The survey was to gain information about the extent of Internet access in school districts and in individual school buildings in Missouri. Sixty-one percent of Missouri public schools reported having at least some students using the Internet to research and collect resources. The census showed that fifty percent of Missouri public schools report that at least some of the teachers incorporate Internet accesses in their classrooms as a part of classroom instruction. Within Missouri, on average there are twenty-four students per computer with Internet access. In classrooms where the state average of students per computer was met, thirty-six percent of the instructors report that the Internet was a benefit to instruction.

The review of the literature supports the need for future research on the use of technology in middle school social studies instruction. Technology in middle schools should focus on the following ISTE instruction technology standards: 1. design, deliver, and assess student-learning activities that integrate computers/technology for a variety of student group strategies and for diverse student populations and 2. describe current instructional principles, research, and appropriate assessment practices as related to the use of computers and technology resources in the curriculum (ISTE, 2000).

### **Technology Strategies**

Technology is a tool for teaching social studies. Computer use in social studies can be divided into three categories: instructional software, productive software, and computer-based reference tools (Freiwald, 1997). Instructional software such as tutorials, drill and practice, games, simulation, and exploratory environments are used in social studies. The Internet provides virtual field trips, primary source documents, and telecommunication. Parker and Jarolimek (1997) incorporated the Internet into inquiry learning and reasoning with complex problems. Middle school students use the Internet to find the latest

information on current events (Windschitl & Irby, 1999).

The National Educational Technology Standards for Students (ISTE, 2000) developed performance indicators for technology-literate eighth grade students. For example, students should be able to use social studies technology tools, software, and simulations. Students learn to apply multi-media tools and publish products such as web pages. Technology can facilitate higher order thinking skills when students use telecommunication to investigate social studies problems and issues and use technology to solve problems.

This study will address the use of technology in middle school social studies teachers in Missouri. What technologies do middle school social studies teachers use in their classrooms? What percentages of middle school social studies teachers employ instructional technology strategies? Does the use of instructional technology by middle school social studies teachers change the classroom learning environment and if so, in what way?

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These questions and others are addressed in a study of middle school social studies teachers in Missouri. There are two assumptions to this study. First, instructional technology is a valuable tool for teaching social studies in the middle school. Second, there are particular instructional technology strategies in the study, but there are other instructional applications of technology used in middle school classrooms. Within this study, word processing is not looked at as a separate application of technology and e-mail is accounted for in the Internet applications.

### **Methodology**

The population for this study was the middle school social studies teachers of the five hundred and thirty-seven school districts in the state of Missouri. The Department of Elementary and Secondary Education (DESE) of the state of Missouri provided the names of the social studies teachers used in the study. The list of teachers used to develop the sampling group for the study contained the names of teachers employed in educational institutions labeled as middle schools in Missouri. A simple random sampling technique was used to select the one hundred and twenty middle school social studies teachers who were asked to respond to a questionnaire determining the usage of computer-based applications and software during instruction in their classrooms. The study questionnaire was developed by the researcher based upon information garnered during a review of the literature pertaining to computer-based instruction. One hundred and two middle school teachers or eighty-four percent of the teachers identified in the sample responded to the researcher's survey questionnaire.

The case study component of the study was conducted with five teachers that indicated, on their survey questionnaire, the usage of at least four computer-

based instructional strategies in their middle school social studies classrooms. In particular, the five teachers were asked to expound upon, in an interview with the researcher, survey questions one, two, three, four, and five. Also, the five teachers were asked to designate two to four students to be interviewed by the researcher.

## Findings

The usage of computer-based instructional strategies coupled with the affects of the aforementioned technological teaching methods in Missouri's middle school social studies classrooms is detailed in Table 1 through Table 3. Appendix A is the research study questionnaire. Northrup and Rooze align the ten computer-based instructional strategies in Table II to technology foundation standards of the International Society for Technology in Education (ISTE), gleaned from a national study developed in 1990 and strategies viewed by the researcher in middle school social studies classrooms.

Table 1 reports the frequency and percentage of Missouri Middle School Studies Teachers whom regularly use the computer-based instructional strategies. Table 1 indicates the middle school social studies teachers determined the Internet was the computer-based instructional strategy used most often in classroom instruction. Of the 102 social studies instructors answering the research survey, 53.9 % integrated the Internet into their social studies curriculum. The remaining nine computer-based instructional strategies, listed in the research survey, were employed by less than 30% of the research survey respondents.

**Table 1**

Regular Usage of Ten Computer-Based Instructional Strategies by Missouri Middle School Social Studies Teachers

Computer-Based Instructional Strategies Usage	f	%
Internet	55	53.9
Educational Games	29	28.4
Simulations	23	22.5
Graphics	17	16.7
Problem Solving	15	14.7
Database	15	14.7
Spreadsheets	12	11.8
Drill and Practice	11	10.8
Tutorials	10	9.8
Developing Webpages	3	2.9

N = 102

During an interview with one of the teachers, she stated, "Yes, without a doubt. It [the Internet] is so much better than a textbook and a worksheet thrown at them and me up there giving notes and saying copy this overhead. There is still

a big problem with how to manage a one-computer classroom or a two, in a rare case, three-computer classroom. Anytime it [social studies instruction] is hooked to a computer automatically you got a plus on your side. Now if you don't use that [computer-based instruction], it quickly burns out. So if you don't fan the flames it is not going to work." A student of this teacher stated, "The Internet gives you lots of points of view and there are different things you can clue into. It makes you more interested because so many things to look at than just a summary of the textbook or something. With the Internet you are able to search for the things you want to look for. Computers are fun because it is not formatted, like reading chapters out of a book. With a computer you can get more in depth and you can get the most information."

Within this classroom, iAdventure is used to develop critical thinking skills and develop Internet skills. iAdventures are designed as creative, inquiry-based learning activities, with students working in pairs, each pair using one Internet-connected computer. This creates a need for a group of twelve or more computers in each school where participating teachers wish to use iAdventures (although they could be modified for almost any situation, even a single computer classroom). iAdventures, funded by a Competitive Technology grant from the Missouri Department of Elementary and Secondary Education, supports teachers in their quest to learn a variety of Internet skills, how to use an image-editing program, how to create and modify web pages, and then use these skills to create their own iAdventure, to be used with their students (<http://warrensburg.k12.mo.us/iadventure/overview.html>).

The teacher also used the Internet for her students to communicate and she states the value of KeyPals as a global communication device. "Using KeyPals as the medium, my social studies classes communicate with other schools, other schools in our state, other states, and with students in other countries." By integrating KeyPals in to the social studies curriculum students can "discuss social studies related literature, what we enjoyed about the book, and what we disliked about the book."



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Table 2 represents the frequency and percentage of teachers that believed the integration of computer-based instruction was a major factor in the development of the middle school social studies curriculum in their school district. Seventy-seven % of the respondents to the study indicated that the integration of computer-based instruction was not a major factor in the development of the social studies curriculum in their schools. 21.6% of the study respondents indicated that the integration of computer-based instruction was a determinant when building the social studies curriculum in their schools.

**Table 2**

Integration of Computer-Based Instruction has a Major Factor in the Development of the Middle School Social Studies Curriculum

Computer -Based Integration	f	%
Yes	26	21.6
No	75	77.5
No Response	1	.08

N = 102

Since the conclusion of the original study, an interviewed teacher stated, when asked if technology is a viable part of the middle schools curriculum, "Yes it is. We developed a curriculum guide for technology. The curriculum guide contains procedures on how to integrate the technology into the classroom using such

things as iAdventure, WebQuest, and Keypals. Integration of technology is in the curriculum and we are currently rewriting our technology curriculum and I know each year more technology integration is added to the general curriculum of the school district. There are many opportunities for teachers to receive professional development training in how to integrate technology into their curriculum and that excites me."

Table 3 summarizes the results to the question, does the utilization of computer-based instruction by middle school social studies teachers change the classroom-learning environment. Respondents to the research study, who use one or more forms of computer-based instructional strategies in their middle school social studies classrooms, indicated the classroom-learning environment improves when computer-based instructional strategies are used in social studies instruction. 78.6% of the respondents indicated the classroom-learning environment improved, in some manner, when computer-based instructional strategies were introduced into the social studies classroom.

**Table 3**

Change in Classroom Learning Environment When Using Computer-Based Classroom Instructional Strategies by Missouri Middle School Social Studies Teachers Who Use One or More Computer-based Instructional Strategy

Positive Change in Learning Environment	f	%
Yes	35	46.6
Occasionally	24	32.0
No Noticeable Change	13	21.0
No Response	3	.4

N = 102

A teacher observed in the classroom stated that: "the students enjoy it [the use of computer-based instructional strategies]. They are excited about it. They want to be able to manipulate and handle that technology. To them, that is something neat and something different. They are manipulating, they are doing something, and they are not passively accepting. They are actively participating in learning." The learning environment changed in an unsuspected fashion. A school climate of collaboration or the sharing of information was beginning to grow. As a teacher responded, " I get to learn a lot from them (students) and these kids are incredible. Technologically speaking, they are way past us."

Technology as an educational student motivator is further displayed when technology usage is expected in social studies instruction. "The technological environment in our school increased dramatically when the school district established curricula expectations on teachers to integrate technology into their daily classroom instruction. With this increased usage of technology there is more student excitement when social studies classes go to the computer labs or use computers located in the classrooms. As the number of computers in schools has increased, so has the manner in which they are used to enhance

instruction (Nickell, P. et al, 2001). As a teacher noted as an example of technology usage in her social studies class, "students utilize video productions with a camcorder then take the film back to the computer to edit the tape therefore exhibiting their editing skills. Using technology in this manner is lots of fun for the kids, and the best thing is they are learning. Learning not only their subject matter but also how to use technology whether it be, a computer, scanner, camcorder, editing equipment and applications, learning to use technology and not be afraid of it. Hopefully this will lead to, when they get out of school and into the workplace, the attitude that they are ready to tackle any type of technology they may be exposed to in the future."

### **Implications for Middle School Social Studies Teachers**

This manuscript is focused upon the instructional strategies for teaching in middle schools and is based on the International Society of Technology in Education (ISTE) standard for the application of technology in middle school social studies instruction. The challenge for classroom teachers is to provide a quality program that meets the ISTE standards and have the students develop a technology performance profile. Each teacher must design learning experiences that will prepare students to effectively use technology. Teachers plan and deliver instructional units that integrate a variety of software, applications, and learning tools. After reviewing the data, the researchers considered how the statistical data and the interviews related to the ISTE standards and the implications for instruction.





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### Integration of Technology in Instruction

1. Explore, evaluate, and use computer/technology resources including applications, tools, educational software, and associated documentation (ISTE, 1994).

Exploration, evaluation, and usage of computer/technology resources for middle school social studies teachers continue to be explored. In this study, the majority of the computers in the middle schools were in computer labs, which limited the availability of technology resources to the classroom teacher. The comments on the interviews indicate that it is important for middle school teachers to have computer/technology resources in their classrooms. Classroom teachers must have access to computer/technology resources in order to integrate technology. Yet, a plethora of computer/technology resources in the classroom does not necessarily mean acceptable use of technology. In some cases, we wonder if the lack of computer/technology resources is a reason for not using technology or an excuse for not learning technology.

Middle school social studies teachers are learning about computer/technology resources for the classroom. The computer/technology resource used by most of the teachers in the study was the Internet. The Internet is a resource readily available to teachers in their schools or homes and many are beginning to explore the wide range of diverse resources the Internet has to offer to social studies education. Teachers also need access to other computer/technology resources, such as simulation software or spreadsheet applications for social studies. However, even if teachers have access to the computer/technology resources, do they know how to evaluate them?

2. Describe current instructional principles, research, and appropriate assessment practices as related to the use of computers and technology resources in the curriculum (ISTE, 1994).

Teachers continue to learn the methodologies, instructional principles, and learning processes of the classroom that connect technology and the social studies curriculum. Research continues to look at the pedagogical shifts for teachers when technology resources are used in the curriculum.

Research should be an integral component in discovering what technology to use in the curriculum. As time passes and more teachers use technology in the curriculum, there will be more research published upon which instructional models are best suited for the integrating of computer-based instructional use in the middle school social studies classroom. Classroom teachers can conduct action research on the use of technology in middle school social studies classroom and disseminate it to teaching colleagues.

3. Design, deliver, and assess student-learning activities that integrate computers/technology for a variety of student group strategies and for diverse student populations (ISTE, 1994).

According to the middle school social studies teachers in this study, technology is not a factor in planning the social studies curriculum and may even be a hindrance. Several steps can be taken that support the use of technology in planning and delivering middle school social studies. First, the teaching and learning models can be modified or changed to integrate technology. Secondly, the technological instructional strategies that are appropriate for the students and have a positive effect on the overall learning process can be implemented. Third, the availability of hardware and software in the learning environment can change the learning activities. To implement these steps, the planning and delivery of the learning activities should balance the use of technology with appropriate teaching and learning strategies.

The middle school social studies teachers felt that the learning environment was positively affected by the use of computer-based instructional strategies and student enthusiasm increased when computer-based instructional strategies were deployed in the curriculum. Teachers are beginning to develop ways to use technology that will benefit students in middle school social studies classrooms. Teachers are experimenting with diverse models for grouping students that work when instructional technology is infused into the learning process. The unique technological needs possessed by individuals or groups of students, in the social studies classroom, will affect the dynamics of the learning environment.

When technology is used in the curriculum, the types of assessment of students' work will need to be reviewed. Teachers need to balance the assessment of the students' learning of the social studies content and skills, with assessment on the use of technology. When technology is used, the instructional practice should directly link to assessment practice.

This study addresses the first three of the five ISTE guidelines for the use of

technology in instruction. The researchers did not discover during the data collection for this study or the review of literature, documentation of how teachers address statements four and five regarding the equitable, ethical, and legal use of technology.

The ISTE Standards for the use of technology in middle school social studies has been addressed. The data from this study provide a glimpse into the current state of technology in instruction for middle social studies teachers. The technology profile of the teachers in the study is in the infancy stage because teachers are learning how to use the technology and what instructional strategies can be used when technology is infused into the curriculum. This study only represents the use of instructional technology in teaching middle school studies in the state of Missouri so other states need to be presented in the research and discussion of technology in middle school social studies. Individually and collectively, middle social studies teachers have a daunting task to actively address the five statements about the integration of technology in instruction.

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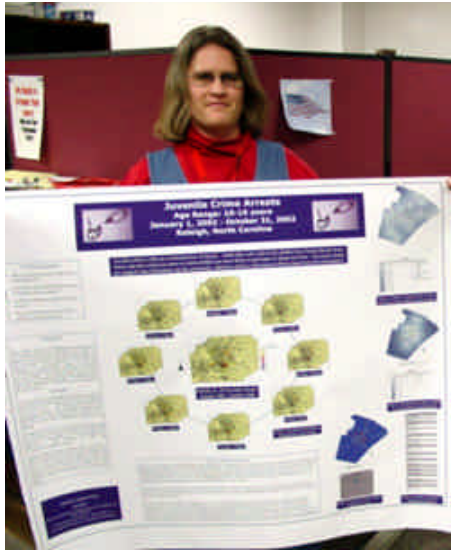
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### Future Research

Instructional technology in middle school instruction has begun to be researched but many questions remain unanswered and a wide array of research continues to be needed. Educators are asking if computers make a difference in the performance of middle school students on standardized assessments. Teachers are asking if instructional technology is the best tool for delivery of the curriculum. Since the Internet is the most cited instructional technology being used to supplement the other instructional tools, how can teachers find, use, and assess the web sites for the classroom. Technology needs to be evaluated when used by diverse populations. The learning environment of a classroom with instructional technology is different than a classroom without technology and the question remains regarding benefits of technology in the classroom. If technology is in the classroom, does that mean that students are actively engaged in learning and that the classroom environment is student centered? If instructional technology is used, are the students using higher order thinking skills and inquiry based learning? The classroom environment, the teaching and learning strategies, the curriculum are all effected by the inclusion of instructional technology so the research will continue to add new information and shape the evolution of instructional technology in the classroom.

### Conclusion

"Traditional educational practices no longer provide students with all the necessary skills for economic survival in today's workplace. Students must apply strategies for solving problems and use appropriate tools for learning,



collaborating, and communicating. Today's learning environments must incorporate strategies and tools that prepare students for their futures" (ISTE National Educational Technology Standards for Students, 2000, p. 7).

The vehicles utilized to develop and construct knowledge, by students and teachers, in middle school social studies classrooms continue to evolve. Computer-based instructional technologies, used as educational strategies to deliver the classroom

curriculum, continue to increase in popularity. The Internet, educational games, and simulations are creating the path for increased technological deployment in the classroom. Directly related to the infusion of computer-based technology into the classroom is an increase in student enthusiasm for the learning of social studies. We are educating our children to embrace their future. "To thrive in today's world and tomorrow's workplace, American students must learn how to learn, learn how to think, and have a solid understanding of how technology works and what it can do" (CEO Forum, School Technology and Readiness Report, 1997).

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### **About the Authors:**

**Dr. Linda Bennett** is an Assistant Professor in the College of Education at the University of Missouri-Columbia. She coordinates social studies education at the university and her research focus is the integration of technology in social studies education.

Email: [lb@missouri.edu](mailto:lb@missouri.edu)

**Dr. Jonathan Pye** is the principal at Bryant Elementary School in Independence Missouri. He teaches online social studies education courses for the university and his professional training is in social studies education.

E mail: [pyej@missouri.edu](mailto:pyej@missouri.edu)



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## Usage of Instructional Technology in Teaching Middle School Social Studies

Linda Bennett and Jonathan Pye

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### Appendix A

Questions from Computer-Based Applications in Instruction Questionnaire

1. What type of computer-based applications do you use on a regular basis in social studies instruction?

- |   |   |                                       |
|---|---|---------------------------------------|
| <input type="checkbox"/> Drill and Practice | <input type="checkbox"/> Games                      | <input type="checkbox"/> Internet     |
| <input type="checkbox"/> Simulation         | <input type="checkbox"/> Graphics                   | <input type="checkbox"/> Spreadsheets |
| <input type="checkbox"/> Tutorial           | <input type="checkbox"/> Developing Class Web pages |                                       |
| <input type="checkbox"/> Database           | <input type="checkbox"/> Problem Solving            |                                       |

2. Is integration of computer-based instruction a major factor in the development of the middle school social studies curriculum?

3. Does the classroom learning environment change when computer-based instruction is used?

- Yes       Occasionally       No

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