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Developing a K-12 district technology plan

Greg Reese
University of Northern Iowa

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Developing a K-12 district technology plan

Abstract

Educational Technologies and technology integration into the curriculum have become hot topics in educational institutions and legislature across the country. Schools are scrambling to buy computers, install networks, buy software, and connect to the Internet. This interest in technology is rooted in various places: pressure from the state legislature and federal government, the business community, and parents in the district who see technology as necessary for their child's success (Lockwood, 1999).

DEVELOPING A K-12 DISTRICTY TECHNOLOGY PLAN

A Graduate Project

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Division of Educational Technology

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in Partial Fulfillment

of the Requirements for the Degree

Master of Arts

UNIVERSITY OF NORTHERN IOWA

by

Greg Reese

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R. Muffoletto
Graduate Faculty Reader

June 21, 2002
Date Approved

Sharon E. Smaldino
Graduate Faculty Reader

7-31-98
Date Approved

R. Muffoletto
Head, Department of
Curriculum and Instruction

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Chapter One

Introduction

Educational Technologies and technology integration into the curriculum have become hot topics in educational institutions and legislature across the country. Schools are scrambling to buy computers, install networks, buy software, and connect to the Internet. This interest in technology is rooted in various places: pressure from the state legislature and federal government, the business community, and parents in the district who see technology as necessary for their child's success (Lockwood, 1999).

Technology in schools has also taken a top priority at the White House. The President of the United States commissioned blue ribbon committees to create reports about technology in education (President's Committee of Advisors on Science and Technology, 1997) and promised to increase funding through grants such as Star Schools, Goals 2000, Technology Literacy Challenge Grant, and the adoption of the Universal Service Fund (USF) to assist schools in buying new technology and training staff to use educational technologies. On the state level, state legislatures have set aside millions of dollars to assist schools in bringing new technology into the schools (Iowa Legislature-Technology Fund created in the 1997 Schools Appropriations Bill). In short, there are many forces at work to insure that technology becomes a part of a child's educational experience.

Union Community School District (UCSD), a K-12 School district of 1200 students located in La Porte City and Dysart, Iowa, is no different than other schools in the state and country since it is investing a large sum of money into educational technologies and training.

The one difference between UCSD and other school districts is that UCSD has been focusing on bringing technology into the district for the past ten years. Over this period, the district has invested in computers, televisions, videocassette recorders, film projectors, laserdisc players, slide projectors, and other educational technologies. A problem facing UCSD, like similar districts, is that the district never developed a comprehensive district technology plan. As a result, the district had not developed a vision on how technology could improve the learning of its students. The purpose of this project was to assist UCSD in developing and implementing a comprehensive district technology plan.

The plan includes a 1) definition page, 2) a brief review of literature used as reference material in creating the technology plan, 3) two approaches of technology planning, 4) creating the district technology plan, 5) an analysis and evaluation of the technology plan created through this project, 6) an analysis of the effectiveness of this project, and 7) conclusions and recommendations.

This author's role in this project was to lead the District Technology Committee in developing this plan by doing research, teaching the committee members about technology in education, and assisting them in understanding and developing a vision for using technology; a use that is more than just buying equipment and putting it in the classroom.

Definitions

In order to understand who was involved in this project, what roles different people played and to insure that the readers of this paper understand terms, this section will contain a list of definitions of terms used throughout the paper.

Building Technology Committee – A committee at the building level that is to be comprised of teachers and staff from that building and parents of students who attend classes at the building. The duties of the building are as follows: 1) determine building technology needs by conducting needs assessments twice a year, keep staff informed about available technology and software and offer assistance, if needed, in using technology, 2) facilitate planning and evaluation of technology utilization, staff development, acquisition of technology at the building level, and assist in determining hardware and software needs.

Comprehensive Technology Plan – This type of technology plan includes information about acquisition of new equipment, training old staff, disposal of old equipment, standards for donated equipment, needs assessments of staff, students and the community, professional development, inventory of current equipment, assessment of how the current technology is being used, how to assess student achievement, a vision for the district, and how technology is improving student learning.

District Technology Committee – A committee at the district level that is to be comprised of two teachers from each building, three-four students from the high school, two middle school students, two administrators, one-two school board members, four-six community members and one non-teaching staff member.

This committee will 1) develop a district technology acceptable use policy, 2) develop an Internet acceptable use policy, 3) develop, maintain, and administer the District's Technology Policy, 4) serve as educational technology resource for other district committees, 5) serve as liaisons to/from the building technology committees, 6) assess district technology needs and allocating funds, when available, to meet those needs.

District Technology Coordinator – A person hired by UCSD to maintain computers, setup servers, serve as the chair of the District Technology Committee, assist teachers in integration of technology into the curriculum, and act as a consultant to the district as far as technology purchases are concerned.

E-Rate - Another name for the Universal Service Fund.

Goals 2000 – Grants developed by the Federal Government to assist school in planning curriculum and improving the learning environment.

Iowa Technology Fund – Funds set aside by the Iowa State Legislature to fund technology projects in K-12 schools. These funds are a line item and the amounts schools receive are based on the school district's enrollment.

LAN-Local Area Network – A group of computers and/or peripherals connected together within a building.

Laserdisc Player – Video hardware developed by Pioneer that plays laserdiscs that contain video, audio and data.

Plan – District Technology Plan

Staff – All employees of the district. It includes teachers and support staff.

Standards and Benchmarks – These are used to evaluate how students are progressing in the classroom and district and the curriculum to insure students are prepared for the next level of education. Set by teachers in the district as part of the Goals 2000 grant received by UCSD.

Teachers – Employees who hold an Iowa State Teacher’s License and work in the classroom with students.

Technology Literacy Challenge Grant – A Federal Grant available to K-12 school districts to assist in the acquisition of equipment and training of staff.

WAN-Wide Area Network – Two or more LANs tied together. It is typically done by companies to share resources.

“Wish List” Technology Plan – This type of technology plan is based on receiving “wish lists” from staff about what type of technology they want to buy. There is normally no district vision and this type of plan is primarily based on how much money the district has to spend on technology.

Chapter Two

Review of Literature

In creating any plan whether it be for a building or integrating technology into the curriculum it is important to survey literature focusing on similar activities. Reviewing the literature serves two purposes: to study the history and current practices within educational technologies and to review the reports on current initiatives.

It is important to look at the history of the integration of technology into education so mistakes of the past are not repeated. Two references that offered good insight into the history of integrating technology into education were Teachers and machines since 1920 by Cuban (1985) and Stay Tuned: A concise history of American broadcasting by Sterling and Kittros (1990). In any technology plan, whether it be for a school building or for the integration of technology into the learning environment, it is important to learn from what has been attempted in the past. Fortunately, approaches for integrating educational technologies into the curriculum have been around since before radio (Heinich, Molenda, Russell, and Smaldino, 1999).

One of the first big technological advancement in education in the 20th Century was the creation of educational radio. When it was created, radio executives, school administrators, and educational technology leaders said it was going to revolutionize education. It was said by broadcasting pioneers that the general public was going to be able to take college classes at home so there would be no need to build big college campuses (Sterling and Kittros, 1990). Students would be able to receive classes from remote sites so

K-12 districts did not need to spend a lot of money on staff and buildings. Educational radio programs were produced but unfortunately, due to the expensive equipment, staff training that did not occur, and very few schools that had formulated plans on how to implement radio into daily activities (Cuban, 1985); radio never reached the level hoped by executives and school administrators. Schools that could afford some radio receivers did have a few teachers who used them. These teachers though were innovators and normally tried new educational techniques whether it is technology or new methods of instruction.

The next big innovation in educational technologies was educational television. The same statements made about radio's impact on education also were made about television. The belief was that television would work better than radio because television offered pictures as well as sound. Television never did take off as expected for the same reasons radio did not: very little training of educators, television sets were expensive, and very few districts had plans on how to implement new technologies. There were two exceptions concerning implementing educational television, a school district in Ohio and the Island of Guam school system (Cuban, 1985).

For example, the Guam school system had a number of problems in their educational system and decided that televised classes would be the best solution to fix them (Cuban, 1985). Officials in the Guam school trained their staff on to use television and worked with television producers, program providers, and class materials publishers on what the school wanted in terms of programming and materials (Cuban, 1985). There were some political problems because everything was run by American institutions, but these problems were not

specifically related to the technology. As far as the integration of the technology into the classroom, there were very few problems because a lot of planning and staff training was completed before the televisions were brought into the classroom. The work done in Guam was a good example of how a technology plan could assist in the integration of technology into the classroom.

With the fast paced changes being made in educational technology, it is also important to review more recent literature to include some core ideas on how to make integration of technology into education successful. The literature described how important a good technology plan is to the success of integrating technology (Lockwood, 1999). It was suggested that plan include sections about teacher training on new technology, professional development, assessment of students, assessment of the learning environment, and the inclusion of the community. Jones, Valdz, Nowakowski, and Rasmussen (1995), Lockwood (1999), and Oppenheimer (1997) provided insight and assistance. By looking at educational technologies from different points of view and they offered solutions, ideas, and references concerning the integration of technology into the curriculum.

Two Approaches of Technology Planning

Good planning is very important when it comes to the purchasing and integrating technologies into the educational learning environment because technology is expensive, schools normally have limited budgets, and the federal and state governments require modern technology plans to be in place before funds can be received by a school (Iowa Department of Education, 1996). There has been a lot written on the subject of technology plans for K-12

schools, and there are different views concerning what makes a good plan. One idea for creating a technology plan is to buy equipment and software and teachers will use it to change the way they teach (Lockwood 1999). This type of plan is more of a “wish list” than a plan. The other is that educational technologies are part of teaching and any plan will include not only sections about hardware and software acquisition, but also about training teachers and evaluation of impact (Lockwood, 1999).

Wish List Plan

The “wish list” plan normally is created by asking staff “what” they want but not “why” they need it. This approach is primarily based on how many dollars the district has to spend on educational technologies. This type of plan will help those teachers who are already familiar with technology and tend to be innovators. It leaves out those teachers who have not formed a vision for technology and need training and assistance in using technology in the classroom. This approach also does not take into account the learning needs of the students, the curriculum, and how technology may enhance the learning environment. A good analogy to demonstrate how the “wish list” plan would work is to look at the construction of a building. If the “wish list” approach were used to build a building there would be a lot of construction workers asking for money to build his or her part of the building the way he/she thinks best. All types of building materials would be used and there is a good chance the building would not be inhabitable. There might be a few parts of the building that are in good shape and look good but overall the building will not meet the needs of the group. Constructing a building this way would be costly and not a good use of limited resources.

Comprehensive Plan

Different from the “wish list” approach, the “comprehensive plan” includes information about acquisition of new equipment, training of staff, disposal of old equipment, standards for donated equipment, needs assessments of staff, students and the community, professional development on teaching, inventory of current equipment, evaluation of how the current technology is being used, how to assess student achievement, a vision for the district, and how technology is improving student learning (Lockwood, 1999). Developing a comprehensive plan assists the district to do its job of educating the public. The comprehensive plan assists the district in having one technology vision and meeting the needs of more students, teachers, and staff than the “wish list” approach. The building analogy is a good way to explain the comprehensive plan and point out the differences between it and the “wish list” approach. When a building is going to be built using the comprehensive approach, architects will perform a needs assessment of the people who want the building built, look at the physical area on which the building will be built and look at future uses of the building. Using these and other factors, architects will draw up plans showing how the building will be cooled and heated, what materials will be used to construct the building, and how space will be optimized. What the architects are doing is creating a vision of how the building will look and be maintained when it is finished. The plans created by the architects will be given to a contractor who will use these plans to lead the construction workers and sub-contractors in creating the vision the architects created. The contractor will also have comprehensive plans on where to buy materials, how many workers will be needed to complete the job, what tools

will be needed, what training the workers will need, and how to dispose of used materials.

During the construction of the building there may need to be changes made to the plan but the overall vision normally stays in place. By using the comprehensive approach in constructing the building, the final product will look like the architects' vision, meet the needs of the owners, have plans in place to maintain it, and normally meet the budget limitations upon it. As demonstrated by the analogy used, it is easy to see the comprehensive approach allows for better use of funds, ensures the final product will meet the needs of the users, and assists people in integrating technology into the school better than the "wish list" approach.

Creating The UCSD Technology Plan

Creating a technology plan for the UCSD district was not easy. A number of stumbling blocks occurred during this project: 1) the technology committee could only meet once a month for two hours, 2) personal agendas of staff who could only see their needs not the overall district's students need, 3) the committee needed to learn to see beyond the hardware and software, and 4) assisting the committee members to think on the district level and see the "big picture." Once the committee was reorganized with students, staff, faculty, and community members many of the problems listed disappeared. It also becomes possible for the author to become more of a facilitator than a chairman. Another problem was the district had invested in bringing computers, laserdiscs, VCRs, and TVs to each building and into the classroom but there was no reason for buying the new software and hardware except that it was what a teacher wanted. UCSD had no technology plan which resulted in problems with the district's technology investments. Laserdiscs, televisions, and presentation systems

went unused. The computer networks were crashing and there was a “hodge-podge” of software and hardware throughout the district. Technology at UCSD was not seen as a way to change the classroom, the way teachers taught, or to enhance the students learning environment but as stand-alone pieces of equipment. There was also a problem with equitable distribution of equipment and software. The previous District Technology Coordinator made a lot of the decisions on who would receive what and how the distribution of technology would take place. He controlled almost all of the access to software and resources. The previous District Technology Coordinator had allowed only a few teachers to take control of the purchasing of technology. These people tended to make sure they got what they wanted but did not look at the larger picture of what is best for the students and the whole district. Another problem that existed was the blind loyalty to a particular computer platform. The past District Technology Coordinator did not look for “the right tool for the right job” but blindly bought what the computer sales representatives suggested. This led to the purchase of bad equipment, poor networking, and equipment quickly becoming obsolete.

The first step in creating the plan was to re-organize the technology committee so there would be a better representation of teachers, staff, students and the community. The old committee consisted of only administrators and lead technology teachers and did not work well as a committee because everybody seemed to have their own agenda and the presence of all the administrators intimidated the teachers. The new committee consists of four members from the community, two teachers from each building (representing different disciplines), two administrators, three high school students and two middle school students.

The next step was to perform data collection. A need analysis of the staff, students and community, and an inventory of current technology, how technology is being used, technology training of staff, and the building surveys done were collected. This data would be very beneficial in creating the new plan.

The third step covered research. Articles and books concerning educational technologies were collected and handed out to members of the committee to read. It was the responsibility of the individuals to read certain articles and then share their findings with the group.

Finally, it was time to start creating the plan. An initial plan was created to meet the Iowa Department of Education's guidelines so the district could receive its state technology and E-Rate funding. A lot of the work listed above was used to create this plan. The plan was created by breaking the committee up into three different workgroups and assigning each workgroup to create a different piece of the plan. The committee then met as a whole and each group's part was added to create the overall plan. The plan was then reviewed by the committee and modified until it met the groups' approval. The finished plan was then presented to the UCSD School Board with the understanding this plan was only a beginning and was far from being complete.

Analysis and Evaluation Of The UCSD Technology Plan

The first plan was completed and implemented in July, 1997. It was used to guide the district's implementation of educational technologies. Technology money received from the state and each building's technology money were spent as per the guidelines of the plan. One major accomplishment of the creation of the plan was that the public and students would have the opportunity to be more involved in future planning.

After evaluating the plan, using criteria from the reference material and a technology rubric acquired from Area Education Agency Seven, it was the consensus of the District Technology Committee that the plan created was inadequate and needed to be redone. The Committee did agree there were benefits from creating the most recent version of the plan. It did give the committee members experience in learning to work as a team and on creating a technology plan.

The committee started to create a new district technology plan using the concept of developing a vision of the optimal learning environment for the district and then building the plan from that vision. Each member had three scenarios from which to choose to identify what was important concerning technology in the district. The committee was then split into two groups and each group had to create its own vision of the perfect learning environment from their work on the scenarios and personal experiences. The visions had to meet the district's goals and educational mission statement. The visions were not to be based on technology but of the view of the optimal learning environment. After each group created a vision, it was presented to the entire committee. The two visions were combined into one that

would serve as the district technology vision. From this vision, the district's technology standards and benchmarks, and the committee's action plans were created. Other considerations that were included in the creation of the new plan were the district's curriculum standards and benchmarks, parent technology surveys, and student improvement surveys.

The district technology committee also decided in order for any technology plan to be successful and to help teachers with lesson planning a district scope-and-sequence of technology skills needed to be completed. The district has no written scope-and-sequence so teachers do not know what technology skills students have attained. Teachers spend valuable time re-teaching skills students already have and/or testing the skill level of the students. Another reason for doing a scope-and-sequence is to ensure the "have-nots" of the district have the proper technology skills to help them be successful in the district and in life.

Chapter Three

The Effectiveness Of the Project

The project has been successful. The District Technology Committee now has good representation from the staff, community, and students. Teachers are not just asking for “things,” but are basing what they request on the standards and benchmarks created as part of a Goals 2000 Grant. The teachers are starting to see that technology is just one tool of teaching and not a stand-alone piece of equipment. There are still a few teachers who feel technology will do everything or is a waste of time, but surveys of staff completed at the building level have shown the negative attitudes toward technology in the classroom have started to dwindle. An increase in the use of technology in the district has been seen through observations, an increase in requests for educational software, a great increase in requests for computer lab time for classes, an increase of Internet usage time, and LCD projector checkouts. Teachers are starting to use technology as part of their regular classroom work and there are more requests from staff for training on technology and how it can be used in the classroom.

There is still a long way to go because a lot of changes concerning technology are based on the actions of the current District Technology Coordinator and a few teachers, but since the adoption of the plan there have been more requests for release time to attend technology seminars and training. More teachers are becoming mini-experts on various areas concerning technology and are willing to volunteer time to attend training.

UCSD is far ahead of other schools in its planning, hiring of support staff and training of teachers, but it still has a long way to go. Fortunately, there are people in the community, staff, and students willing to put forth the time and effort to help the in the adoption of educational technologies into the curriculum.

Chapter Four

Conclusions and Recommendations

Creating the plan required being able to look at curriculum, instructional design, communicate ideas, look at the negatives of educational technology as well as the positives. Teachers' experiences, workshops, and the district's standards and benchmarks helped with the development of ideas and theories to explore while doing this project.

It is nearly impossible for a committee that can only meet once a month for two hours to develop a comprehensive technology plan and continue to update that plan as technology and curriculum change. There may be no answer to this problem but some recommendations are that: 1) the State Department of Education offer more direction so technology plans have more uniformity. Currently, the state gives very little guidance so each school is starting from the beginning and taking valuable time to create a framework from which to begin, 2) more staff at the building level are freed up to work with educational technologies and assist other teachers in integrating it into the curriculum because it is nearly impossible for one or two people to maintain hardware, work with the Director of Curriculum Services on integration of technology into the curriculum, provide help desk support, research new technologies, serve as an administrator of technology services, and work with teachers 3) to have a group of teachers whose primary committee involvement is to develop and maintain the district technology plan to insure the changing needs of the District are met, and 4) that appropriate support staff be hired to maintain equipment so equipment will be working when teachers and

students need it and the District Technology Coordinator is freed to assist teachers in integrating technology in the classroom.

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