

IMPACT OF COMPUTER TECHNOLOGY
AT McNEEL MIDDLE SCHOOL

By

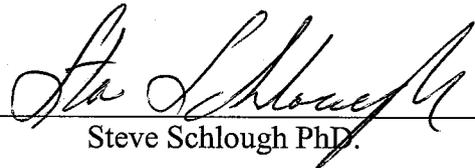
Mark Light

Plan B Research Paper

Submitted in Partial Fulfillment of the
Requirements for the Master of Science Degree
With a Major in

Industrial/Technology Education

Approved: 2 Semester Credits



Steve Schlough PhD.

The Graduate College
University of Wisconsin - Stout
July, 2004

Abstract

This paper is an investigation report into the current impact and effect that computer technology has had on education at McNeel Middle School in Beloit, Wisconsin. Data has been collected and analyzed resulting in known patterns of computer usage among staff and students. Issues involving guidelines set by federal, state and district levels are addressed, refined, and utilized to arrive at recommendations designed to assist in the development of staff in-services, Ongoing improvements in hardware availability and reliability, software issues, hardware maintenance, hardware replacement, and better utilization of the available technology at McNeel Middle School are also addressed. It is hoped that the data provided by this work may be used to improve access to existing computer technology, focus delivery of existing software within curricular areas, and identify needed change leading to the potential availability of technology for all McNeel learning community members.

Table of Contents

Chapter	Page
Abstract	ii
I. Introduction	5
<i>Background of community</i>	5
<i>Statement of the Problem</i>	6
<i>Purpose of the Study</i>	6
II. Review of Literature	7
<i>Intentions of Technology in Education</i>	8
<i>Research on Technology in Education</i>	9
III. Methodology	15
<i>Support of technology at McNeel Middle School</i>	16
<i>An overview of existing technology available at McNeel Middle School</i>	16
<i>Use of technology by staff</i>	17
<i>Use of technology by students</i>	17
<i>Surveys of technology in the district</i>	19
IV. Results	21
<i>Technology Survey Results section</i>	21
<i>How staff uses technology section</i>	22
<i>Technology resources, section</i>	22
<i>General Information, section</i>	22
<i>Technology training, section</i>	23
V. Recommendations	24
<i>Recommendations for technology improvement</i>	24
References	22
Bibliography	26
Appendixes	27
A: Computer Usage	28
B: Transitioning through Technology Models	29
C: Combined Technology Survey Results numbers 1-14	30
D: How Staff Use Technology	31

E: Technology Resources 1-10	32
F: Technology Resources 1-10 courses	33
G: Technology Training 1-20 courses	34

Chapter I

Introduction

Background of community

The Beloit, Wisconsin census of 2000 lists the current population of the city at 35,775, comprised of 47.9 percent male and 52.1 percent female, median age of 32.7 years, median household income of \$36,414, and a median house value of \$68,200. Compared to Wisconsin state average, Beloit is below median house value, above state unemployment, above in minority populations, and below average in percentage of inhabitants with a bachelor's degree or higher education. Other statistics of particular background are available online at www.city-data.com/city/Beloit-Wisconsin.html.

McNeel Middle School, on the far west side of Beloit, is in a city geographically divided by the Rock River. The school is physically isolated from the community by a man-made holding pond and further separated and inconvenienced by a very long, one-way street as its only access.

The school district is comprised of 12 neighborhood elementary schools feeding into 2 East and West side middle schools, 1 centrally located high school, along with a central office administration that also houses an alternative school and a new charter program called Synectics. Synectics is a newly formed initiative supported by a grant with a limited enrollment of 28-students, based on a highly supported use of technology within the classroom curriculum.

McNeel Middle School has a student population of 857 composed of 52 % male, 48% female, 45% economically disadvantaged and 22% EEN. There are 82 staff members with a licensed teacher to student ratio of 1 to 19, 1 Principal, 1 Assistant Principal, 1 Dean of Students and a district supported half-time Student Relations Officer.

McNeel Middle School's February of 2001, Wisconsin Knowledge and Comprehension test score results are Reading at 63, Language 48, Math 30, Science 57 and Social Studies 77. All scores show improvement, at this time. (School District of Beloit, Research and Accountability, Website: <http://www.sdb.k12.wi.us/research/mcneel.html>)

Statement of the Problem

The following issues will be addressed in this report.

- Technology's intended place in the public school setting
- Current national research on the use and impact of technology in the public school
- Support of technology at McNeel Middle School
- Assessment of current use of technology at McNeel Middle School
- Surveys of technology within the district
- Recommendations for technology improvement supported by this study

Purpose of the Study

The purpose of this study is to improve access to existing computer technology, focus delivery of existing software within curricular areas, and identify needed change leading to the potential availability of technology for all McNeel learning community members.

Chapter II

Review of Literature

Intentions of Technology in Education

It was President Bill Clinton, in his State of the Union address of January 23rd, 1996, that formally identified the need for technology investment in the classroom.

Our ... challenge is to provide Americans with the educational opportunities we'll all need for [the 21st] century. In our schools, every classroom in America must be connected to the information superhighway with computers and good software and well-trained teachers. We are working with the telecommunications industry, educators, and parent to connect ... every classroom and every library in the entire United States by the year 2000. I ask Congress to support this educational technology initiative so that we can make sure this national partnership succeeds.

The germ for this initiative was further refined and then identified by the United States Department of Education, in a document later to be known as the National Technology Plan: *Getting America's students ready for the 21st century: Meeting the technology literacy challenge* (U.S. Department of Education, 1996). This initiative established guidance and structural support for technology improvements in our schools with plans for implementation of studies to be directed at the state level. Some of the initial federal guidelines included an Internet capable computer for 1 out of every 5 students in the classroom by the year 2000. There was a strong commitment by congress to supply \$2 billion dollars over 5 years in support of the formation of state technology initiative plans known as the Technology Literacy Challenge Fund. The Elementary and Secondary Education Act, and the No Child Left Behind Act, respectively

known as ESEA and NCLB, further guarantees uniform access by every student and equity of buildings within our school systems.

Wisconsin's technology initiative response resulted in standards specifying that technology should be integrated with the curriculum along with standards used to further student achievement. To ensure that all schools meet this standard, all eighth grade students must meet technology standards by the year 2006. The assessment and testing tool have yet to be designed. It should also be noted that Wisconsin Teach Grant was a major state-level grant source that initially helped support our schools with technology but has recently been eliminated by state budget cuts and vetoes of our governor, Jim Doyle.

The School District of Beloit's response to technology initiatives at the federal and state level is, "To ensure that everyone in the District is informed of federal and state level requirements and to support the needs of those requirements according to the District Technology Plan".

Research on Technology in Education

There continues to be ongoing and active research in determining the impact of technology on student achievement. There are literally thousands of editorials and research studies encountered when listing the results of any search engine inquires on this topic. After extensive searching and reading, the writer selected the following example as one of the better sources due to its unbiased approach in drawing its conclusions and the wide-scale of the study's coverage

The Milken Family Foundation has had over two decades of research and support in the fields of medicine and education. It continues to recognize and financially awarded outstanding educators for "...furthering excellence in education through quality teaching, professional

leadership, engagement with families and community, and their potential for even greater contribution to the healthy development of children.”

One of the Milken Foundations’s supported authors on technology and student achievement is Ph.D. John Schacter who is listed with the Milken Exchange on Education Technology. He is currently Vice President for Research Projects at the Milken Foundation. His article, “The impact of education technology on student achievement: What the most current research has to say,” is a meta-analysis of seven large-scale studies. All of the studies were selected for scope, comprehensive samples, and the ability to be generalized to local, state, and national audiences.

1. **Meta-Analysis** by James Kulik (1994). This is a study of over 500 individual research studies on computer-based instruction. Computer-based instructional software consists of tutorial, drill and practice, and more recently the use of integrated learning systems.
 - Positive Findings
 - On average, students who used computer-based instruction scored at the 64th percentile on tests of standard achievement compared to students in the control conditions without computers who scored at the 50th percentile.
 - Students learn more in less time when they receive computer-based instruction.
 - Students like their classes more and develop more positive attitudes when their classes include computer-based instruction.
 - Negative findings
 - Computers did not have positive effects in every area in which studied

2. Review of the Research by Jay Sivin-Kachala (1998), selected 219 research studies conducted from 1990 to 1997 across learning domains and all ages of learners. His findings are as follows.

- Positive Findings
 - Students in technology rich environments experienced positive effects on achievement in all major subject areas.
 - Students in technology rich environments showed increased achievement in preschool through higher education levels for both regular and special needs children.
 - Students' attitudes toward learning and their own self-concept improved consistently when computers were used for classroom instruction.
- Inconclusive findings
 - The specific student population, the software design, the educator's role, and the level of student access to the technology influence the level of effectiveness of educational technology.

3. Apple Classrooms of Tomorrow (ACOT) was co-authored by the team of Baker, Gearhart, and Herman (1994) to assess the impact of interactive technologies on teaching and learning in five school sites across the country. Over five year, comparisons were made of:

- a) Student basic skills performance as compared to national norms
 - b) Student progress and achievement over time
 - c) Teacher teaching practices.
- Positive findings

- The ACOT experience appeared to result in new learning experiences requiring higher level reasoning and problem solving
- ACOT did have appositive impact on student attitudes and did have an impact on changing teacher teaching practices toward more cooperative group work and less teacher stand-up lecturing.
- Negative findings
 - On standardized tests, including vocabulary, reading comprehension, mathematics concepts, and work-study, ACOT students performed no better than comparison groups or nationally reported norms who did not have access to computers o the teaching and learning reforms implemented in ACOT schools.

4. **West Virginia's Basic Skills/Computer Education (BS/CE) Statewide Initiative**, written by Dale Mann (1999) was data collected from 950 fifth grade students and 290 teachers showing the influence of technology on learning.

- Positive findings
 - The more students that participated in the BS/CE, the more the student test scores rose on Stanford 9
 - Consistent student access to the technology, positive attitudes towards the technology and teacher training led to the greatest student achievement gains. All student test scores rose with lower achieving student scores raising the most.
 - Half of the teachers in the sample thought technology had helped reach instructional goals and objectives.

- Although relative disadvantage of girls is a regularity of the technology literature, girls and boys did not differ in achievement, access, or use of computers in the study.
- BS/CE was more cost effective in improving student achievement than
 - Class size reduction from 35 to 20 students
 - Increasing instructional time
 - Cross age tutoring programs

5. National Study of Technology's Impact on Mathematics Achievement by Harold

Wenglinsky (1998) – A national sample of 6,227 fourth graders and 7,146 eighth graders mathematics achievement on the National Assessment of Education Progress was given allowing for socioeconomic status, class size, and teacher characteristics with the results as follows:

- Positive findings
 - Eighth grade students who used simulation and higher order thinking software showed gains in math scores of up to 15 weeks above grade level as measured by NAEP
 - Eighth grade students whose teachers received professional development on computers showed gains of up to 13 weeks above grade level
 - Higher order uses of computers and professional development were positively related to student's academic achievement in mathematics for both fourth and eighth grade students.
- Negative findings

- Fourth grade students who used technology to play learning games and develop higher order thinking performed only 3 to 5 weeks ahead of students who did not use technology
- Both fourth and eighth grade students who used drill and practice technologies performed worse on NAEP than students who did not use drill and practice technology

6. Computer Supported Intentional Learning Environment (CSILE) Studies Marlene

Scardamalia and Carl Bereiter's (1996) CSILE, the most widely studied collaborative computer application in schools today, had entire classrooms of children conceive, respond to, and reframe what is said and written over time on computers. Eight years of research on CSILE demonstrates that:

- CSILE students surpass students in control classrooms on measures of depth of understanding, reflection, and also on standardized reading, language, and vocabulary tests.
- CSILE maximizes student reflection and encourages progressive thought, taking multiple perspectives, and independent thinking.

7. The Learning and Epistemology Group at MIT by Seymour Papert, Mitchel Resnick, Yasmin Kafai and Idit Harel. This study utilized the process of children learning through design activities by programming computers to create applications that other children use and learn from. Findings were:

- Students who designed fraction software for other students using Logo learned fractions better than students taught fractions using conventional methods.

- Students who used Logo to design software learned Logo better than students who received Logo programming instruction only.

Conclusion on Impact and Effectiveness

- Computer assisted instruction, or
- Integrated learning systems technology, or
- Simulations and software that teaches higher order thinking, or
- Collaborative networked technologies, or
- Design and programming technologies,

Show positive gains in achievement on researcher constructed tests, standardized tests, and national tests.

Chapter III

Methodology

Support of technology at McNeel Middle School

The initial implementation background for the Beloit Public School system dates back approximately fourteen years to the 1988-1989 school year and the formation of a Technology Steering Committee. All stakeholders were involved with recommendations concluding in a request for school board referendum in 1990 for \$300,000. The referendum passed before the U.S. Department of Education's National Technology Plan formulated President Clinton's idea. The district's foresight was shallow by comparison to the task and goals set by those ideals. The district plan was found to be limiting in scope necessary to fulfill the mandates identified. A phase-in of technology was then drafted and adopted from elementary school levels to secondary schools to help alleviate the shortsightedness. As stated before, Wisconsin Teach Grant funding allowed for initial installation of Internet capability in all buildings with continued maintenance of existing hardware, until the fall of 2003.

The availability of technology in our school has been linked to an ongoing process of constant change regarding detailed justification and consideration of many educational issues. Personal computers have gone from a luxury item of the early 1980's to a commonplace expectation even within our elementary student homes. Hardware platforms, software development, upgrade potential, curriculum adaptability, teacher training, and available budget only name the most prominent of these available. Many committees have been established and heard from along with their goals and visions. Since the late 1970's., the computing industry continues to develop at an accelerated half-life since undertaking the modernization of our school. Technology changes have occurred with regards to the speed, storage, networks,

compatibility, and availability issues that have been given constant chase by technicians and supervisors whose job it is to keep a synchronous flow of data streaming from that technology. Issues of system upgrade, software appropriateness, site licensing, support personnel, teacher in-service training, and grant writing have seen so many changes within the last decade that very few people currently run the decision process in order to speed up the potential for change. The question that drives this investigation or examination for the current status has been, "How is technology being used to effectively enhance student achievement at McNeel Middle School?"

A critical issue dealing with district-level budgeting along with computer technology available to our school has been an annual district deficit necessitating a \$1 million dollar cut at the end of each educational year for the last decade. This continuing problem has resulted in further erosion to our school building departmental budgets, reduced software and curriculum allocations along with a reduction in audio/visual equipment repairs, replacements, and updates that would normally allow for necessary changes to take place in synchronization with technology advancement. There is a curriculum adoption cycle that rotates every 7 years. The length of time required to justify, implement, and utilize is too short-term for planning and too long-term for implementation effectively. The latest cut to technology was the loss of one of two teacher addendum contracts that supports other teacher needs by way of personal assistance to classroom problems.

An overview of existing technology available at McNeel Middle School

The writer gained permission to do a room-by-room inventory of all classroom areas for computer technology from the administration at McNeel Middle School. The inventory of the technology was for the purpose of analyzing computer platforms and determining potential use of the existing equipment for both students and teachers. Pictures of each classroom identified by

room number and assigned teacher were taken to maintain a factual record that could be referred to over time. The resulting spreadsheet given in appendix A will become a supporting document for needed change. A synopsis of that artifact follows.

There are currently 199 PC's or personal computers within the building. It would seem that this number meets the National Technology Plan. Upon thorough investigation of hardware available, there are many problematic areas to be found.

There are relatively equal amounts of IBM PC compatible units to Macintosh. There are a few Apple IIe's are still in useful classroom operation from the early 1980's. There are 2 stationery computer labs. McNeel has a 25-unit IBM PC lab with LCD projector and a 29-unit Macintosh lab with a classroom LCD projector. There is one mobile library LCD projector for the building. There is a T1 line supporting our building Internet access along with 2 bays of Hewlett Packard switching networks capable of 96 ports. The T1 line is maintained by our school district. Each teaching station/classroom has access to an Internet capable computer for the purposes of taking attendance and grade issuance.

There is an identifiable and standardized level of computer implementation that is determined by the National Technology Plan. McNeel's apparent technology level can be assessed by comparison to a diagram provided by the U. S. Department of Education figure on page 5, exhibit 1, appendix B. At least one workstation per room and multiple computer laboratories identify the current level of technology present. McNeel is just above level three out of seven possible levels.

The age and operating system of a working personal computer in the classroom are the primary factors when determining the usefulness of any hardware. Software cannot be effectively used or upgraded if limitations occur because of size of memory, overall speed of the

machine, limited storage capacity, or lack of quantity per classroom. Site license agreements are needed to accomplish multiple copies within each class or building level. The current Microsoft operating systems range from Windows 95 to Windows XP with the predominant system being Windows 98. The current Apple systems range from systems that go back more than 20 years to current MacOs X (Macintosh Operating System) software with a predominance of MacOs 8.1. There is continued inconsistency in CPU (computer processing Unit) delegation throughout the building that has resulted in mixed platforms, platforms that are incompatible with subject area needs, platforms that don't match the teacher need, and outmoded units that remain unplugged in the classroom.

Use of technology by staff

All staff members are required to enter attendance, progress reports, and grade reports via Internet browsers. The two computer labs are available for sign out use four periods per day. Access to individual student data is available with personal information at multiple restricted levels district wide. Access to sharable disciplinary issues per pupil is restricted to the guidance department and office personnel. All staff has district email accounts and can receive intranet messages from any browser with password codes in place. All teaching staff members have access to grading programs in addition to the Skyward attendance and grade report sites. Staff is encouraged by our district to take computer courses offered after school and on line by our district for individual improvement. The main types of programs used most often are word processing and spreadsheet applications.

Use of technology by students

All students have had keyboarding exposure at the elementary school level and are required to take a personal computing course in sixth grade. Additional courses are offered as

electives in seventh and eighth grade levels. The students have limited access to a small number of library machines with a pass from a teacher. They can also use the computer labs after school with a staff member present until 4:00 P. M. There are currently 13 of 55 classrooms that have multiple computers available. There is usually one Internet capable machine with a few non-internet capable units present.

Surveys of technology in the district

A technology survey was designed and web-administered by the school district in 1998 for students and staff establishing a basis of needed feedback for improvement. Students and staff took the EnGuage survey in 2001 that established measurable benchmarks used as comparisons on a nationwide basis. Though the results of the surveys are obtainable, the problem with using them as useful tools for comparison is not directly possible due to the difference in the design and intent of each survey. It became apparent to this writer that a third survey was needed to get any tangible evidence that could benefit by a comparison. An identical paper copy of the 1998 survey was made and requested of members of the Site Level Team, guidance department and representatives of the foreign language department. These people represent members of sixth grade, seventh grade, eighth grade, and enrichment/encore course members that were elected to their positions providing a wide perspective for a case study approach. Additional questions were designed to bring some insight into focus on current technology needs not present or obvious in 1998. There were 23 surveys in all resulting in 19 tallied responses. A comparison of the results is available in appendices C through G. Interpretation of the survey results is subject to individual interpretation as the initial conditions are not identical. It is the writer's belief that large differences of statistical opinion on the data shown are likely to be more credible and worthy of further study in the future. Perhaps the district technology committee

should consider the merits of re-administration of the 1998 survey to gain credible insight and the potential direct comparison value provided by the resulting data.

Chapter IV

Analysis of Results

The following survey responses were most notable to the writer and indicate a noticeable shift that merits further investigation. Writer comments are starred with an asterisk.

Technology Survey Results section 1, (1-14) 1998 and 2003

1. The staff shows a marked decrease in comfort and effective use of computers.

* The lack of adequate computer hardware and software for the classroom, as indicated in appendix A, shows a higher level of teacher frustration for the staff member.

5. The staff consults less with state and district level standards when planning instruction.

* The circumstances of inadequate levels of technology available leaves staff efforts unsupported, once more.

6. The staff works more with other staff in technology integration.

* The staff shows a great level of commitment to the need for technology integration.

11. The staff feels that the district provides less support in professional development opportunities.

* This is directly attributable to continued district staff development emphasis on reading, writing, and support of core areas leading to improvement of WKCE scores.

14. The staff has increased use of personalized district email accounts.

* The use of intranet mail and announcements posted to our addresses by administration has helped elevate the need for daily use.

How staff uses technology section 2, (1-20) 1998 and 2003

Responses to how staff uses technology both professionally and personally indicate that the use or need of graphic applications is less important while all other areas show increases. Areas

exhibiting marked improvements were: database, desktop publishing, email, instructional software, multimedia, presentation, spreadsheet, word processing and worldwide web use.

Technology resources, section 3(1-10) 2003

- | | |
|--|---------------------|
| 1. I have a computer in my classroom. | 94.7% responded yes |
| 2. The computer in my classroom is reliable | 68.4% responded yes |
| 3. I have adequate building budget to purchase software... | 89.5% responded no |
| 4. The computer lab is available for my teaching. | 47.4% responded no |
| 5. I have need for more computers for student use. | 73.7% responded yes |
| 6. Staff in-service is adequate on use of computers | 52.6% responded no |
| 7. I prefer an IBM computer vs. Macintosh for classroom... | 63.2% responded yes |
| 8. I use the computer in the classroom. | 78.9% responded yes |
| 9. My students have adequate use of the computers... | 57.9% responded no |
| 10. Technology is infused in my curriculum | 63.2% responded yes |

General Information, section 3 (1-4) 2003

1. My teaching content area:

* Noticeable lack of representation by mathematics is of greatest concern. Though teachers that took the survey teach that content area in grade levels, they don't consider themselves math oriented.

2. What type of computer do you use at school?

* IBM compatible or Windows machines were prevalent at 57.9% because the district provides 1 Internet capable unit per teaching station that is an IBM compatible.

3. What type of computer do you use at home?

* Once again, IBM compatible was noticeably higher at 47.4%. Most teachers will keep consistent with respect to the advantages of having computer systems that are directly compatible at school and home.

4. Years in education:

* If the statistics were added, 0 to 10 years represented only 10.5% of the participants that shows the veteran staff. 68.5% of the staff has taught for 15 or more years. This indicates a staff that will turn over in the near future due to retirements.

Technology training, section 4 (1-20) 2003

The question in this sample area were given the choice of taken or would like to take courses offered by the district. The most noteworthy overall characteristic was the consistency of no response at all to all of the questions. This would indicate an inconsistent result not anticipated in the survey sample given which could negate its usefulness. It could also be interpreted to indicate that the person had not taken and was not interested in taking the course, even if it were offered by the district. The largest responses given are most likely the most useful with this questionable outcome. PowerPoint presentations, multimedia, email, word processing, and spreadsheets were the most requested courses. It is interesting to note that no one indicated that they had taken any coursework on word processing which is arguably the most used application that is also taken for granted.

Chapter V

Recommendations

It must be recognized that no request for assistance within our community will be possible immediately without addressing the need for improvement of our school's image. The physical isolation of the school is not a changeable item. We must involve the community in establishing our school as a center for community involvement. The writer recommends that the Site Level Team is the best place to address the issues in improving school image and community relations while addressing technology improvements. It should be noted that current Site Level Plan has ten committees that are actively involved in recognizing and promoting the positive aspects of our student body. It is essential that we establish good school and student relationships with parents, community and business relationships. The school will need to identify and publicize large-scale events that can involve the community. Suggestions have been received recently from the multicultural committee for a "Taste of Beloit" to celebrate our backgrounds and cultural awareness. A community health fair in conjunction with parent teacher conferences could bring in city services and medical health checkups for a part of the community that is less able to know of these benefits offered by our community. The school must celebrate student achievements and positive growth potentials in our local media and newsletters home.

Recommendations for technology improvement

- The Site Level Team offers the only consistent platform for change over a 5 to 7 year period. The blended representation offered by the Site Level Team must be utilized to develop a technology vision for all stakeholders.
- An accurate assessment of current technology problems should be considered such as the Apple Technology Guide templates for assessment.

- All decisions should meet or exceed national, state, and district guidelines for student achievement.
- Evaluation and documented progress with measurable and scheduled outcomes
- Establish desirable technology goals such as:
 - Minimum hardware and software requirements per room
 - Hardware and software guidelines plan for adoption, addition, and replacement
 - A third technology lab available for other classes
 - Addition of mobile technology labs
 - Staff development based upon student need and staff input
 - Utilization of EXCEL program additions to include courses on
 - Building computers
 - Community computer lab time
 - Grant writing promoted among staff
 - Departmental and coursework web page promoted among staff
 - Establish contacts and relationships with schools of higher learning such as Blackhawk Technical College and University of Wisconsin-Rock County campus
 - Community technology outreach initiatives to:
 - Parents
 - Businesses
 - Nursing home and assisted living residents

References

Schacter, J. Ph. D. The impact of education technology on student achievement:

What the most current research has to say. Retrieved May 12, 2003,

from, www.milkenexchange.org

School District of Beloit website at <http://www.sdb.k12.wi.us>

U. S. Department of Education. (1997). Investing in school technology: Strategies to meet the funding challenge–1997. Chapter 2: “Designing and costing the technology plan”. Retrieved

September 30, 2003, from <http://www.ed.gov/index.html>

U.S. Department of Education. (1996). National technology plan. Getting America’s students ready for the 21st century: Meeting the technology literacy challenge.

Bibliography

Apple Education Technology Planning Guide. Retrieved April 29, 2003, from

<http://apple.com/education/planning/>

Apple Leadership in K-12 Education . ACOT History Apple classrooms of tomorrow.

Retrieved October 12, 2003, from

<http://www.apple.com/education/k12/leadership/acot/history.html>

Apple Professional Development. Maximizing technology's impact on achievement.

Retrieved October 4, 2003, from <http://www.apple.com/education/apd/>

Barrett, H. C. Ph. D. University of Alaska electronic portfolios and standards

The George Lucas Educational Foundation – Edutopia Grant Information. Retrieved

April 17, 2003, from <http://glef.org/grant.html>

Benson, J. T. Wisconsin's model academic standards for information and technology literacy.

Wisconsin Department of Public Instruction.

ISTE-International Society for Technology in Education National Educational

Technology Standards - Electronic portfolio templates retrieved September

27, 2003, from <http://electroincporfolioios.org/nets.html>

North Central Regional Educational Laboratory Computer Based Technology and

Learning retrieved October 12, 2003, from www.ncrel.org/tplan/cbti/execsum.htm

Research Findings on Technology's Impact in the Classroom. The impact of

technology on student achievement. Retrieved October 12, 2003, from

<http://www.apple.com/education/research/>

School District of Beloit District Technology Plan available at

<http://www.sbd.k12.wi.us/techplan>

Appendixes

Appendix A: Computer Usage

Appendix B: Transitioning through the Technology Models

Appendix C: Combined Technology Survey Results numbers 1-14

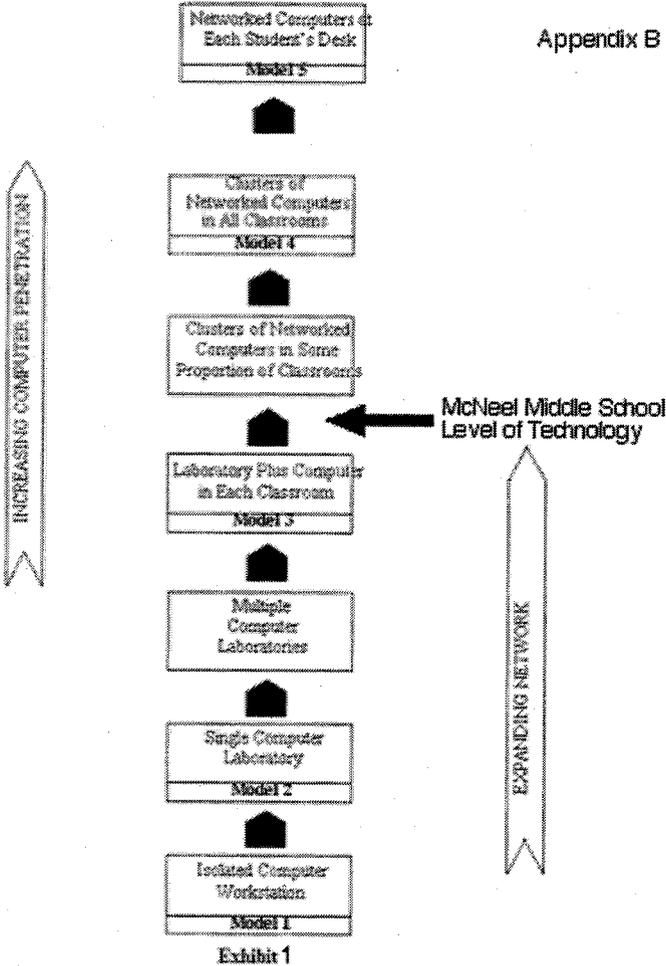
Appendix D: How Staff Use Technology

Appendix E: Technology Resources 1-10

Appendix F: Technology Resources 1-10 courses

Appendix G: Technology Training

Appendix B



Transitioning Through the Technology Models

McNeel Middle School Combined Technology Survey Results, numbers 1-14

Appendix C

Years of Survey, 1998 or 2003

Question	'98 '03				'98 '03				'98 '03				'98 '03							
	N/A				Strongly Agree				Agree				Disagree		Strongly Disagree					
	N	N	%	%	N	N	%	%	N	N	%	%	N	N	%	%				
1 I am comfortable with computers and use them effectively.	1	0	1.7%	0.0%	14	0	23.7%	0.0%	33	8	55.9%	34.8%	10	8	16.9%	34.8%	1	3	1.7%	13.0%
	change in percent (1.7%)				(23.7%)				(21.1%)				17.9%							
2 I am comfortable volunteering support to others in troubleshooting hardware and software problems.	3	0	5.1%	0.0%	11	2	18.6%	8.7%	5	5	8.5%	21.7%	20	7	33.9%	30.4%	20	5	33.9%	21.7%
	change in percent (5.1%)				(8.9%)				13.2%				(3.5%)							
3 I use technology effectively as an instructional tool with my students (e.g., videos, educ. TV, software, word processing).	7	0	11.9%	0.0%	15	6	25.4%	26.1%	24	7	40.7%	30.4%	10	3	16.9%	13.0%	3	3	5.1%	13.0%
	change in percent (11.9%)				0.7%				(10.3%)				(3.9%)							
4 I design and develop student learning activities that integrate computing and technology across the curriculum.	7	0	11.9%	0.0%	8	2	13.6%	8.7%	22	7	37.3%	30.4%	13	7	22.0%	30.4%	9	3	15.3%	13.0%
	change in percent (11.9%)				(4.9%)				(6.9%)				5.4%							
5 I consult district and state Technology & Information Literacy Standards when planning instruction.	9	0	15.3%	0.0%	4	1	6.8%	4.3%	9	3	15.3%	13.0%	23	13	39.0%	56.5%	14	3	23.7%	13.0%
	change in percent (15.3%)				(2.5%)				(2.3%)				17.5%							
6 I work with fellow staff members to facilitate the integration of instructional technology across curriculum.	5	0	8.5%	0.0%	7	2	11.9%	8.7%	19	11	32.2%	47.8%	18	5	30.5%	21.7%	10	1	16.9%	4.3%
	change in percent (8.5%)				(3.2%)				15.6%				(8.8%)							
7 I regularly utilize technology to collaborate with colleagues in lesson design.	9	1	15.3%	4.3%	4	1	6.8%	4.3%	16	7	27.1%	30.4%	18	10	30.5%	43.5%	12	0	20.3%	0.0%
	change in percent (11.0%)				(2.5%)				3.3%				13.0%							
8 I can articulate the advantages/disadvantages of the uses of technology across the curriculum.	5	0	8.5%	0.0%	6	4	10.2%	17.4%	26	9	47.5%	39.1%	14	5	23.7%	21.7%	6	1	10.2%	4.3%
	change in percent (8.5%)				7.2%				(8.4%)				(2.0%)							
9 I participate in workshops/seminars and other ongoing technology professional development activities.	5	1	8.8%	4.3%	8	1	14.0%	4.3%	23	9	43.9%	39.1%	13	7	22.8%	30.4%	6	1	10.5%	4.3%
	change in percent (4.5%)				(9.7%)				(4.8%)				7.6%							
10 The school district addresses the needs of staff in its design of professional dev. programs in the area of technology.	1	0	1.7%	0.0%	8	1	13.8%	4.3%	32	9	55.2%	39.1%	12	7	20.7%	30.4%	5	2	8.6%	8.7%
	change in percent (1.7%)				(9.5%)				(16.1%)				9.7%							
11 The district provides technology professional development programs and follow-up training at times convenient to me.	2	0	3.4%	0.0%	9	0	15.5%	0.0%	33	9	56.9%	39.1%	10	8	17.2%	34.8%	4	2	6.9%	8.7%
	change in percent (3.4%)				(15.5%)				(17.8%)				17.6%							
12 The school district provides levels of support appropriate to my needs.	3	0	5.1%	0.0%	8	3	13.6%	13.0%	36	11	61.0%	47.8%	8	4	13.6%	17.4%	4	1	6.8%	4.3%
	change in percent (5.1%)				(8.6%)				(13.2%)				3.8%							
13 Equipment and other technology resources are readily available in my building.	1	0	1.7%	0.0%	5	2	8.6%	8.7%	20	8	34.5%	26.1%	20	6	34.5%	26.1%	12	5	20.7%	21.7%
	change in percent (1.7%)				0.1%				(8.4%)				(8.4%)							
14 I regularly use my district e-mail account.	6	0	10.2%	0.0%	7	6	11.9%	26.1%	8	10	13.6%	43.5%	16	3	27.1%	13.0%	22	0	37.3%	0.0%
	change in percent (10.2%)				14.2%				29.9%				(14.1%)							

McNeel Middle School Combined Surveys

How Teaching Staff Use Technology, numbers 1-20

Appendix D

Years of Survey, 1998 or 2003		1998	2003	1998	2003	1998	2003	1998	2003	2003	2003
Question	I use the following applications/resources for professional purposes:	No	No	%	%	Yes	Yes	%	%	No	Response
		N	N			N	N			%	%
1	database	34	7	57.6%	36.8%	25	12	42.4%	63.2%		
	change in percent				(20.8%)				20.8%		
2	desktop publishing	34	9	57.6%	47.4%	25	10	42.4%	52.6%		
	change in percent				(10.3%)				10.3%		
3	email	37	2	62.7%	10.5%	55	17	93.2%	89.5%		
	change in percent				(52.2%)				(3.7%)		
4	graphics (Kid Pix, PhotoShop, etc.)	37	9	62.7%	47.4%	55	10	93.2%	52.6%		
	change in percent				(15.3%)				(40.6%)		
5	instructional software	25	9	42.4%	47.4%	34	10	57.6%	52.6%		
	change in percent				5.0%				(5.0%)		
6	multimedia (HyperStudio, etc.)	51	12	86.4%	63.2%	8	7	13.6%	36.8%		
	change in percent				(23.3%)				23.3%		
7	presentation (Powerpoint, etc.)	50	9	84.7%	47.4%	9	10	15.3%	52.6%		
	change in percent				(37.4%)				37.4%		
8	spreadsheet	34	1	57.6%	5.3%	25	17	42.4%	89.5%	1	5.3%
	change in percent				(52.4%)				47.1%		
9	word processing	9	1	15.3%	5.3%	50	17	84.7%	89.5%	1	5.3%
	change in percent				(10.0%)				4.7%		
10	World Wide Web	26	0	44.1%	0.0%	33	18	55.9%	94.7%	1	5.3%
	change in percent				(44.1%)				38.0%		
Question I use the following applications/resources for personal purposes:											
11	database	41	7	69.5%	36.8%	18	11	30.5%	63.2%	1	5.3%
	change in percent				(32.6%)				27.4%		
12	desktop publishing	42	8	71.2%	42.1%	17	10	28.8%	52.6%	1	5.3%
	change in percent				(29.1%)				23.8%		
13	email	23	2	39.0%	10.5%	36	17	61.0%	89.5%		
	change in percent				(28.5%)				28.5%		
14	graphics (Kid Pix, PhotoShop, etc.)	44	7	74.8%	36.8%	15	12	25.4%	63.2%		
	change in percent				(37.7%)				37.7%		
15	instructional software	48	12	81.4%	63.2%	11	7	18.6%	36.8%		
	change in percent				(18.2%)				18.2%		
16	multimedia (HyperStudio, etc.)	54	14	91.5%	73.7%	5	5	8.5%	26.3%		
	change in percent				(17.8%)				17.8%		
17	presentation (Powerpoint, etc.)	54	12	91.5%	63.2%	5	7	8.5%	36.8%		
	change in percent				(28.4%)				26.4%		
18	spreadsheet	46	6	76.0%	31.6%	13	13	22.0%	68.4%		
	change in percent				(46.4%)				46.4%		
19	word processing	21	0	35.6%	0.0%	38	19	64.4%	100.0%		
	change in percent				(35.6%)				35.6%		
20	World Wide Web	26	0	44.1%	0.0%	33	19	55.9%	100.0%		
	change in percent				(44.1%)				44.1%		

McNeel Middle School Combined Surveys
Technology Resources, numbers 1-10

Appendix E

Survey Year	2003	2003	2003	2003	2003	2003
Question	No		Yes		No Response	
	N	%	N	%	N	%
1 I have a computer in my classroom for attendance.	1	5.3%	18	94.7%	0	0.0%
2 The computer hardware available to my classroom is reliable.	6	31.6%	13	68.4%	0	0.0%
3 I have adequate building budget to purchase software needed for my teaching.	17	89.5%	2	10.5%	0	0.0%
4 Computer use is adequately made available for my student needed for my teaching.	9	47.4%	8	42.1%	2	10.5%
5 I have need of more computers for student use.	3	15.8%	14	73.7%	2	10.5%
6 Staff in-service on use of computers in the classroom is adequate for my teaching needs.	10	52.6%	9	47.4%	0	0.0%
7 I prefer an IBM computer vs. Macintosh for my classroom use.	5	31.6%	12	63.2%	1	5.3%
8 I use the computer in the classroom.	4	21.1%	15	78.9%	0	0.0%
9 My students have adequate use of the computers in my classroom.	11	57.9%	5	26.3%	3	15.8%
10 Technology is infused within my curriculum.	6	31.6%	12	63.2%	1	5.3%
General Information						
1 My teaching content area:	N	%				
Natural Science	1	5.3%				
Mathematics	0	0.0%				
Social Sciences	5	26.3%				
Language/Humanities	2	10.5%				
Fine Arts	2	10.5%				
Special Education	2	10.5%				
Other	7	36.1%				
2 What type of computer do you use at school?						
Windows	11	57.9%				
Macintosh	3	15.8%				
Apple	0	0.0%				
Pda	0	0.0%				
none	0	0.0%				
Windows and Macintosh	2	10.5%				
Windows and PDA	1	5.3%				
Windows, Macintosh and PDA	2	10.5%				
3 What type of computer do you use at home?						
Windows	9	47.4%				
Macintosh	3	15.8%				
Apple	0	0.0%				
Pda	1	5.3%				
none	2	10.5%				
Windows and Macintosh	1	5.3%				
Windows and PDA	2	10.5%				
Windows, Macintosh and PDA	1	5.3%				
4 Years in education:						
less than 5	1	5.3%				
5-9 years	2	10.5%				
10-14 years	3	15.8%				
15-20 years	1	5.3%				
20 years or more	12	63.2%				

McNeel Middle School Combined Surveys

Technology Resources, numbers 1-10

Appendix F

Years of Survey, 1998 or 2003		2003	2003	2003	2003	2003	2003
Question I have taken/would like to take the following training courses that have been offered by the district:							
		taken		would like		No Response	
		N	%	N	%	N	%
1	database	10	52.6%	6	31.6%	3	15.8%
2	desktop publishing	9	47.4%	5	26.3%	5	26.3%
3	email	9	47.4%	4	21.1%	6	31.6%
4	graphics (Kid Pix, PhotoShop, etc.)	9	47.4%	5	26.3%	5	26.3%
5	instructional software	10	52.6%	6	31.6%	3	15.8%
6	multimedia (HyperStudio, etc.)	6	31.6%	11	57.9%	2	10.5%
7	presentation (Powerpoint, etc.)	3	15.8%	14	73.7%	2	10.5%
8	spreadsheet	11	57.9%	4	21.1%	4	21.1%
9	word processing	8	42.1%	4	21.1%	7	36.8%
10	World Wide Web	6	31.6%	8	42.1%	5	26.3%
11	database	5	26.3%	7	36.8%	7	36.8%
12	desktop publishing	5	26.3%	9	47.4%	5	26.3%
13	email	1	5.3%	10	52.6%	8	42.1%
14	graphics (Kid Pix, PhotoShop, etc.)	5	26.3%	9	47.4%	5	26.3%
15	instructional software	6	31.6%	4	21.1%	9	47.4%
16	multimedia (HyperStudio, etc.)	9	47.4%	8	42.1%	2	10.5%
17	presentation (Powerpoint, etc.)	7	36.8%	9	47.4%	7	36.8%
18	spreadsheet	3	15.8%	10	52.6%	6	31.6%
19	word processing	0	0.0%	10	52.6%	9	47.4%
20	World Wide Web	10	52.6%	3	15.8%	6	31.6%

McNeel Middle School Combined Surveys

Technology Training, numbers 1-20

Appendix G

Years of Survey, 1998 or 2003		2003	2003	2003	2003	2003	2003
Question	I have taken/would like to take the following training courses that have been offered by the district:	taken		would like		No Response	
		N	%	N	%	N	%
1	database	10	52.6%	6	31.6%	3	15.8%
2	desktop publishing	9	47.4%	5	26.3%	5	26.3%
3	email	9	47.4%	4	21.1%	6	31.6%
4	graphics (Kid Pix, PhotoShop, etc.)	9	47.4%	5	26.3%	5	26.3%
5	instructional software	10	52.6%	6	31.6%	3	15.8%
6	multimedia (HyperStudio, etc.)	6	31.6%	11	57.9%	2	10.5%
7	presentation (Powerpoint, etc.)	3	15.8%	14	73.7%	2	10.5%
8	spreadsheet	11	57.9%	4	21.1%	4	21.1%
9	word processing	8	42.1%	4	21.1%	7	36.8%
10	World Wide Web	6	31.6%	8	42.1%	5	26.3%
11	database	5	26.3%	7	36.8%	7	36.8%
12	desktop publishing	5	26.3%	9	47.4%	5	26.3%
13	email	1	5.3%	10	52.6%	8	42.1%
14	graphics (Kid Pix, PhotoShop, etc.)	5	26.3%	9	47.4%	5	26.3%
15	instructional software	6	31.6%	4	21.1%	9	47.4%
16	multimedia (HyperStudio, etc.)	9	47.4%	8	42.1%	2	10.5%
17	presentation (Powerpoint, etc.)	7	36.8%	5	26.3%	7	36.8%
18	spreadsheet	3	15.8%	10	52.6%	6	31.6%
19	word processing	0	0.0%	10	52.6%	9	47.4%
20	World Wide Web	10	52.6%	3	15.8%	6	31.6%