

Technology Plan



St. Mary-Basha Catholic Elementary School

Chandler, Arizona

**December 15, 2004
Initial Release V1.0**

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1.0 Overview

1.1 Vision

To educate and empower administrators, teachers, and students to become self-directed, continuous learners, and ethical, responsible citizens prepared to meet the increasing challenges of a global, technological society.

1.2 Mission

Enable administrators, teachers, and students to be as fluent and comfortable with technology as they are with textbooks, pencils, and numbers. They will know when and how to utilize technology to express ideas, solve problems, formulate inquiries, navigate knowledge, and collaborate with others. Establish and achieve technology goals through collaboration with parents, administrators, teachers, students, and the Diocese.

1.3 Goals

Current technology goals are as follows:

- a. Provide adequate access to a reliable computer network so that computer skills can be taught, planned curricula integration projects can be completed, and “ad hoc” use is encouraged for student learning, teacher personal productivity, and administrative tasks including process improvement. Networked computers will be available in the Computer Lab, the Library, the Multi-Media Room, classrooms, Nurses Office, and Administrative Offices.
- b. Provide robust networking infrastructure that enables students to access work in progress, the Internet, printing, and key school wide network based applications from any computer in the school
- c. Provide access to media capture and creation facilities to enable students to express their thoughts and ideas in a variety of linear and hyper-media formats (text, graphics, photographic images, animation, sound, video).
- d. Provide mechanisms that support communication and collaboration among students, teachers, parents, administrators, and the community to improve these skills, create a safe and effective learning environment, provide access to key information, and to promote the image of the school and Diocese.
- e. Provide for the assessment, procurement/development, implementation, and operational support of the system that automate key learning, library, and administrative processes.

- f. Provide the infrastructure and operational process and resources needed to support all of the above in a manner that is accessible, reliable, responsive, and effective.

1.4 Guiding Principles

The school's technology program shall promote and support the following guiding principles:

- a. Personal responsibility for appropriate and ethical use of computer technology and software.
- b. Learning of computing at the conceptual level (not just specific procedures, platforms, and tools).
- c. The integration of computer-based teaching strategies into the other curricula areas.
- d. The development of higher order thinking skills (problem solving, inquiry, communication, etc).
- e. The use of home computers and home-oriented software to complete school projects.
- f. The judicious use of automation in a minimally supported school environment.

2.0 Technology Committee

2.1 Community Input

This plan was created in collaboration with parents, administrators, and teachers. It will be maintained via an annual review process initiated and overseen by the Technology Committee Chairperson. Twice a year (Fall and Spring), a Technology Committee meeting shall be held that is open to parents, administrators, and teachers. It will be adequately publicized to achieve maximum participation. The plan will be reviewed, progress reported, and input/feedback solicited. Changes will be proposed, discussed, and agreed upon. Any revisions to the plan will be presented to the Principal for approval. Changes will be presented to the School Advisory Council by the principal and/or the Technology Committee Chairperson.

The core Technology Committee is currently made up of the following people:

Chairperson – John St. Peter (parent volunteer)
Technology Coordinator – Diane Meza (staff)
Director of Development – Ellen Harrington (staff)
Principal – Sister Mary Norbert (staff)
Permanent Parent Members (also known as the Implementation Team) - Jim McNaughton, Lynn Coomer, David Smith, and Bryan Metoyer

Permanent Parent Members are critical to insure that parental representation is always achieved. Other parents are encouraged and do attend the meetings, but their participation is typically not on a consistent basis.

2.2 Building Input

Projects can be proposed by anyone at the school, including parents, and should be brought to either the Technology Coordinator or Technology Committee Chairperson. The projects will then be brought before the Technology Committee for review and to assess the risks, benefits, and impact of the project. Outside expertise may be brought into this process. If considered worthwhile and feasible, the principal's approval will be solicited and a project plan will be developed and executed. Projects requiring funding beyond what has been designated in the annual budget must also receive the School Advisory Council's approval.

2.3 Roles and Responsibilities

The roles and responsibilities of the core Technology Committee members are as follows:

Principal – Sets priorities for the use of technology at the school. Determines use of budgeted funds and fund raising proceeds. Approves projects and ensures due diligence has been done on technology recommendations.

Technology Coordinator – Develops and teaches computer curriculum. Runs computer and multi-media labs. Coordinates site support of computing infrastructure. Conducts routine network domain administration. Works with teachers on curriculum integration. Conducts/coordinates staff training. Acts as technology liaison with Diocese. Reviews technology related projects and recommendations to insure consistency with instructional, faculty, and administrative needs.

Technology Committee Chairperson – Author and owner of the Technology Plan. Updates plan as appropriate. Leads overall implementation of the plan. Coordinates Technology Committee meetings. Informs School Advisory Council of progress, new projects, and funding use. Works closely with Principal, Technology Coordinator, and Technology Team to insure that technology decisions reflect the spirit of the Technology Plan and meet the needs of the school. Insures timely and successful completion of technology projects.

Implementation Team - Three to five parent volunteers knowledgeable in applicable technology areas who are responsible for operational and implementation tasks associated with running, maintaining, and improving the school's technology. Conduct source analysis and selection for products and services needed to complete projects.

School Advisory Council – Provides oversight of technology focus. Provides forum for parent involvement in school decisions. Insures that technology funding and activities are appropriately balanced with other school needs.

Diocese – Provides high level guidelines for technology use in the schools

3.0 Needs Assessment

3.1 Instructional

The school needs to develop strategies for both teaching technology related skills and for incorporating those skills and the associated technologies into the rest of the curricula. Five instructional strategies have been identified to achieve these goals. Infrastructure, staff training, and cultural changes will be driven from these needs:

- a. **Conceptual Computer Skills Instruction** – Focuses on computer literacy from a conceptual perspective. Rather than learning a particular tool (e.g. Word, Excel), the emphasis will be on conceptual learning (eg. Word processing, math computation tools). This type of learning will give students a much deeper understanding of the technology and will prepare them to learn specific tools more easily. This is critical because they will encounter different tools as they progress to other educational institutions and more importantly as they enter the workforce. These are best taught in the lab and in conjunction with other curriculum lessons to provide some context and to make more efficient use of limited overall teaching time.
- b. **Specific Computer Skills Instruction** – Focuses on particular tools for the purpose of an immediate need, for example, if local high schools test on specific software use. Keeping this type of instruction separate from conceptual skills instruction will allow the school to quickly address changes in the technology focus of testing standards without having to change the fundamental computer skills curriculum. These are best taught in the lab in a context similar to the associated immediate need.
- c. **Higher Order Skill Instruction** – Focuses on augmenting higher order thinking skills (expression, inquiry, dynamic exploration, problem solving, collaboration) using technology. Students must learn to identify for themselves when certain tools and technologies can help them address a particular situation. This use of technology must be associated with a more exploratory mode of learning. Students must be able to collaborate with others, experiment with approaches, multi-task, and freely engage the technology as its use become apparent in the problem solving process. These skills are best taught in the classroom with technology readily accessible in an “ad hoc” fashion.
- d. **Curriculum Content Enrichment** – Focuses on the more traditional lecture-oriented approach to teaching by providing a means for the teacher to incorporate technology tools (Internet, CD-ROM, and custom created) and video content into existing curriculum areas. This capability should be accessible in the classroom since the focus is on enhancing the presentation effectiveness of the other classroom oriented subject areas. The infrastructure for supporting this use of technology can also be used by students to present completed media rich assignments to an audience.

- e. Remediation or Progression – Focuses on providing self directed activities for students either needing more assistance with specific subjects (usually via drill and practice multimedia titles) or need greater challenges (usually via constructivist or exploratory assignments). These are probably best done in the classroom to alleviate alienation of targeted students from the rest of their class.

3.2 Administrative

Although the focus is on the use of technology for the direct improvement of the learning environment, many administrative uses of technology indirectly support this focus by streamlining processes and freeing up time so that teachers and administrators have more time to spend with students. Technology can also be used to improve communications, to provide a safer environment, insure better understanding between the school and family, and enhance image in the community. These are the administrative needs that have been identified:

- a. Two-way communication between classroom and the office. Improved teacher accessibility and teacher access to phones.
- b. Easy access to school information. Improve school to family communications and provide information to those interested in the school.
- c. Improved collection, tracking, and access to grades, attendance, immunization, and volunteer hours. Solutions must include administration, ongoing support, and maintenance.
- d. Library administration (card catalog, check in/out, etc)
- e. Computing infrastructure administration. Provide virus and adware/spyware control, power and data backup, reporting, software upgrades, lab management, etc.

4.0 Learning with Technology

4.1 Curriculum Integration Plan

The integration of technology into the curricula will be driven on two fronts:

- a. Curriculum Integration. All teachers will develop annual plans and schedule computer lab time for incorporating computer-based teaching strategies into their other curricula (language arts, science, etc.). Students learn computer skills (word processing, spreadsheets, etc.) in the context of solving a diverse range of non-computer problems (writing poems, tabulating data from an experiment, etc.). This is the primary way that our students learn to use computers.
- b. Computer Skills Training. Specific objectives have been established for K-3, 4-6, and 7-8 (see Appendix A – Diocesan Computer Curriculum). Although these skills are typically taught by incorporating computer-based teaching strategies into other (non-computer) curricula, the computer teacher tracks and insures that all students have developed competency in these computer skills and teaches computer specific lessons to address any shortfall (keyboarding, ethics, etc.). This approach will also be used to prepare junior high students for local high school entrance requirements.

4.2 Staff Development Plan

Faculty will be provided with formal training semi-annually and will attend personal enrichment training as time and resources allow. Utilization of in-service opportunities shall be maximized. Training delivery will be determined based on needs and internal capability. For example, the Technology Coordinator, a knowledgeable parent, a peer, third party or vendor, or a community college may conduct training. Subject areas will include:

- a. Classroom strategies for integrating computers and higher order thinking:
 - Identifying curricula integration opportunities.
 - Designing collaborative and/or constructivist learning environments.
 - Designing technology based activities that engage higher order thinking.
- b. Enriching the non-computer curriculum with technology enhanced content:
 - Setting up video equipment for videotape and/or computer generated content.
 - Searching the Internet and presenting material for classroom display.
 - Building multi-media slide shows for classroom content presentation.
- c. Faculty use of the computer for person productivity:
 - Effective use of email.
 - Document and multi-media capture/authoring.

- Grade book Software
 - Database and spreadsheet utilization.
 - School applications.
- d. Creating self-directed activities for remediation or progression:
- Evaluating CD-ROM titles for self-directed learning.
 - Setting up self-directed learning environments.
- e. Management of the computer in the classroom:
- Basic networked computer operation and basic troubleshooting of common problems.
 - Implementing teaching strategies that utilize both lab and classroom computers.
 - Managing and structuring activities for shared computer use.

New staff will meet with the Technology Coordinator in August for a 2-hour overview of the school's technology program. They will participate in staff development throughout the year. A buddy teacher will be assigned to assist with the technology. Appropriate computer classes will be recommended through the Chandler Public Schools.

5.0 Technology Infrastructure

5.1 Current Environment

Significant progress has been made in the school's technology program over the last five years thanks to administrative focus, adequate funding, and parental involvement.

5.1.1 Network

- a) 100 Base-T full duplex switched backbone throughout the entire school, including recently added science and art classrooms.
- b) At least 4 physical network connections in each classroom and administrative area. When additional connectivity is required, small network hubs are deployed.
- c) T1 circuit to the Diocese for Internet access.
- d) Client-Server architecture.

5.1.2 Network Servers

- a. File Server – file storage and retrieval possible from any computer on campus.
- b. Print Server – print from any computer on campus to any one of ten black laser printers and one color laser printer.
- c. Application server – hosts school administrative and education applications and databases.
- d. Servers on conditioned battery back up power system.
- e. Automated data backup via tape library.

5.1.3 Network Applications

- a. Accelerated Reader
- b. KidPix
- c. Mavis Beacon
- d. Library Automation System
- e. Norton Anti-Virus
- f. WebRoot Anti-Spyware/Adware

5.1.4 Personal Computers

- a. Over 100 computers on campus, all on the school network with Internet access.
- b. Each classroom has 2-8 computers, all Pentium II class or higher.
- c. Library has 10 computers for student and administrative access.
- d. 30 seat Computer Lab.
- e. Multi-media Lab.
- f. Nurses Office
- g. Administrative Offices
- h. All computers are on electrical surge suppressors for power protection.

5.1.5 Video/Multimedia

- a. Each classroom has a computer capable 35" video TV/Monitor with VCR.
- b. Multimedia lab has PCs and Macintosh computers with scanners, digital video, and digital camera capability.
- c. Computer Lab is equipped with LCD projection display.

5.1.6 Voice/Telephone

- a. Multi-line service in office with voice mailbox
- b. Classroom telephones
- c. Intercom

5.1.7 School Web Site

- a. Hosted offsite using a third party named Verio. The web site link is as follows: <http://www.stmarybashacatholic.org/>
- b. The web site is full of information for school families as well as potential new families. It is an excellent communication and marketing tool.
- c. A new feature was recently added that allows teachers to upload and download files to/from the web site. This allows them to more easily transfer files between home and school.

5.2 Future Plans

The Technology Committee, utilizing the collaborative process described previously, has identified several items that are being considered to enhance and/or maintain technology in support of the school's needs. They are as follows:

- a. Implement a total School Management System. Selection will be a vigorous process and will include benchmarking existing school systems. Users will get first hand experience and will buy in before acquisition.
- b. Purchase new computers for the Computer Lab. Deploy the existing lab computers to the classrooms. Retire out of date computers. This is part of our Technology Refresh Program (see below). The plan is to do this every 3-4 years to be sure that appropriate refresh is achieved.
- c. Change out Computer Lab CRT monitors to flat panel LCD displays. This will free up lab space and more importantly reduce the amount of heat generated in the room. Current AC system is not large enough to keep the room cool, resulting in constant running and frequent freeze ups.
- d. Assess feasibility of continued use of Windows 98 Operating System on classroom computers. It will take two cycles of the Technology Refresh Program (see below) before all classroom computers are upgraded. May have to go to newer operating system in the interim.

- e. Assess feasibility of continued use of Windows NT on File and Print Servers and/or replacement of these servers.
- f. Install infrastructure expansion for the new science and art rooms.
- g. Acquire/install new science and art room computers.
- h. Deploy DVD players in all classrooms. VCRs are getting out of date.
- i. Assess feasibility, pilot, and if appropriate implement a student laptop program. Benchmark utilization at other schools. Initial deployment would be to the 8th grade, then 7th grade, and then 6th grade.
- j. Assess feasibility, pilot, and if appropriate implement a PDA/handheld program. This will be closely coordinated with the laptop program. Benchmark utilization at other schools. Phased deployment.
- k. Deploy campus-wide wireless network connectivity. Highly dependent on laptop/PDA programs.
- l. Develop Language Lab. Utilize computer multi-media tools to assist with foreign language instruction. Focus on remediation and progression.
- m. Deploy a math improvement system (like Accelerated Math) to create focus on math skills development.
- n. Provide remote network access. Allows administrators and teachers to access school network resources from home. May require implementation of Virtual Private Network (VPN) technology.
- o. Acquire digital video camera and enhance digital video editing capability in multi-media lab.

5.3 Technology Refresh

Now that the school has established a solid technology program to build upon, a new emphasis will be placed on Technology Refresh. The time and investment required to achieve current results has been significant. It is critical that the school stays on or ahead of the technology curve or it will be right back where it started five years ago. The principles the school will utilize to guide technology refresh are as follows:

- a. Technology requirements will be dictated by learning and administrative needs assessment, not by the desire to have new or exciting technology.
- b. Technology purchases will be done with longevity as a priority. Purchases will entail careful evaluation, including benchmarking where appropriate.
- c. Software will be adopted based on learning and administrative needs assessment and not industry popularity. Early adoption of technology is not necessarily the best approach because we are trying to achieve a stable reliable network. Minimal network administration is key.
- d. Continue to deploy enterprise versions of currently utilized stand-alone school and administrative applications.
- e. Product selection shall focus on whole school and home school interoperability.
- f. Special purpose software will be required in certain circumstances and its deployment will be limited to minimal computers (e.g. multi-media lab).

- g. At least 50% of funds raised for technology (annual golf tournament) shall be banked every year so that every 3-4 years new computers for the Computer Lab may be purchased. The older machines in the Computer lab will then be deployed to the classrooms, and the out of date computers retired. Retired computers will be offered to students or other schools/organizations. This will insure that we refresh computer technology across the entire campus on a timely basis.
- h. Standardization of server platforms, operating systems, PC configurations, and PC applications is a priority to minimize maintenance.
- i. Donations of equipment shall be accepted only with the approval of the Technology Committee. The school does not want to deploy and maintain old and/or non-standard equipment. If donation does not meet Technology Plan goals, or it does not conform to standards established, the school will not accept such donation. Refused donations will be directed to other schools/organizations.

6.0 Evaluation Strategies

6.1 Student Performance

Focus of lower grade level (K-4) evaluations will be on the student's ability to grasp the basic skills. Students will be given assignments during Computer Lab time that test their ability to utilize the skills being taught in the computer curriculum (e.g. format text, make a chart, etc.). Integration starts in Kindergarten. Assignments will be reviewed regularly by the computer teacher and a computer grade given to each student each trimester.

Focus on middle grade level (5-6) evaluation will be on the student's ability to use the computer tools fluently and creatively in more open-ended assignments. Ideas will be captured and organized into complete documents (e.g. create a travel brochure, design a spreadsheet). Assignments will be reviewed regularly by the computer teacher and a computer grade given to each student each trimester.

Focus of upper grade level (7-8) evaluation will be on the student's ability to score well on the high school entrance exams. Assignments will be based on typical exam questions and will be collected and graded. A mock exam will be administered each year at both the beginning and end of the school year. The exam will include a timed keyboarding test. Students will be required to type at least at 35 words per minute with 95% accuracy. Assignments will be reviewed regularly by the computer teacher and a computer grade given to each student each trimester. Full integration will be assessed through major project such as architectural plan for a church or Civil War Newspaper.

Completion of the Diocesan Computer Curriculum objectives will be tracked for each student annually and over the course of the entire elementary school career.

Higher order thinking skills are always more difficult to evaluate. It is early in our implementation to have a clear strategy for doing this type of evaluation. Once specific projects are identified and attempted, some combination of observed approach to the problems and subjective assessments of the quality of the resulting solution will be used to evaluate the student's deep understanding of the effective use of technology. Current rubrics may be modified and/or new ones created. There are publicly available rubric templates and rubric creation tools that may be employed. Benchmarking will be utilized to identify potential techniques.

6.2 Process Evaluation

Results of the student evaluations coupled with actual results from high school entrance tests will be an indicator as to whether the school's approach to teaching technology is effective.

The school will also determine if the computing infrastructure is providing the capabilities that teachers feel they need to integrate technology into the learning process. This determination will be based on an annual faculty survey, review of the site support trouble log, and assessment of the faculty fluency level.

The school will assess whether the technology planning and implementation process is working properly. Feedback will be obtained during Technology Committee meetings (twice per school year). This will provide a review of any written or anecdotal feedback from administration, teachers, and parents over the course of the school year. Feedback will be discussed during the meeting and action plans created. Any applicable updates will be incorporated into the Technology Plan and required approval obtained.

**Appendix A – Diocese Computer Competency Skills
Matrix K-8**