

Executive Summary

The current five-year Technology Plan for Northland Pioneer College was developed over the past year and a half with input from a variety of college sources and focuses on developing, implementing and managing technology for teaching/learning activities, student services, institutional data management and communication. Primary planning activities for academic years 1999-2000 through 2000-2005 include: (1) implementation of six to eight new T1 circuits within the College WAN, replacement of multiple T1 circuits connecting Campuses on the WAN with single data circuits capable of accommodating a greater degree of network traffic, upgrading the two 56 kilobytes per second data circuits providing connectivity to the Internet with two or more T1 circuits, and development of alternative solutions to WAN ground lines for connecting rural sites that lack sufficient public telecommunication services; (2) increasing the number of network users with Internet access by 30 to 40 per semester and upgrading or replacing client PC's to meet College standard specifications by approximately 30-40 per semester; (3) improving interactive video system components by providing computer hardware and software for teaching/learning and presentation activities at all sites; (4) extending the telephony system to reach additional Northland sites and improving the process for analyzing telephone usage; (5) improving resources and services for supporting faculty in developing and implementing instructional media; (6) enhancing technology training programs for staff and students; (7) establishment a new facility for housing of all network servers and central switching equipment within a single building on one NPC Campus; (8) improving the method for collection, documentation and analysis of network usage patterns to schedule more effective use of network bandwidth; (9) completion of the College Y2K plan (appendix x). Outcome assessment studies for evaluating planning activities will be determined through student and staff surveys, Information Services performance and reliability statistics, and other routine technology systems studies. Participants charged with directing implementation, modification and assessment of technology planning initiatives include: Presidents' Staff, Management Council, Instructional Technology Action Group, and outside evaluators associated with technology grants.

Past planning efforts leading up to the current plan began in 1986 with the preparation of a Title III grant for developing a College-wide technology infrastructure. During academic years 1989-90 through 1994-95, the College completed major planning activities including: completion of a wide area microwave network for delivery of distance learning through audio and video transmission; establishment of a college-wide telephony system; development of computer labs; and implementation of a centralized mainframe administrative system. Outcome assessments conducted at the close of this planning period identified the following achievements: (1) ability for students throughout the service area to attend NPC classes in locations remote from the instructor's Campus/Center; (2) expansion of the scope and level of curriculum available to students; (3) reduction in travel time for instructor's enabling more effective use of professional service; (4) more efficient use of administrative staff in date entry, retrieval and record keeping by decreasing the number of manual print-based activities; (5) improvement in College-wide communication for staff connected through the telephony system. While planning initiatives led to the establishment of the first College-wide technology infrastructure, the final 1989-90 through 1994-95 planning assessment study identified critical issues to be resolved. These issues included: (1) the need to improve the quality, reliability and functionality of the primary systems -- distance learning technology, telephony, and data transfer -- to meet emerging academic and industry technical standards; (2)) the need to further extend the infrastructure to strategic areas throughout the service area; (3) the need to establish a formal set of college-wide technology standards to ensure that students and staff from all locations have comprehensive access to resources and services; (4) the need to develop and implement new forms of instructional delivery including online courses and computer-assisted instruction.

Based on the needs, recommendations and observations from the previous planning period, the College established two critical activities to be undertaken during the first part of the technology plan for academic years 1994-95 through 1995-2000: (1) the College would employ consultants with expertise in developing instructional and telecommunication technology to assist in re-engineering Northlands networking, systems, hardware and software applications; and (2) the College would actively pursue additional funding through grants and bond proposal to complete technology planning activities.

The Current Technology Plan is organized as follows: overall planning objectives in relationship to NPC's mission and purposes; overview of NPC's technology infrastructure; planning vision and goals; strategies for achieving goals;

methods for evaluating progress; issues, concerns and recommendations. To implement NPC's technology vision and goals, five main areas will be addressed: (1) the College network infrastructure; (2) curriculum technologies; (3) administrative services; (4) student services; and (5) partnership with the wider community.

In order to provide a background for the current technology plan, the following section summarizes planning goals, strategies, implementation outcomes, and issues for the previous two planning periods, Academic Year 1989/1990 through Academic Year 1994/1995 and Academic Year 1995/1996 through Academic Year 1999/2000).

1990-1995

Background – Title III Grant, College Operating and Capital Budget

goals develop a distance learning system(audio/video), stand-alone computer labs, administrative system for registration, computer service division.

1995-1999

background – Bond Passage, College Operating and Capital Budget

develop a infrastructure to support interactive video, audio, voice and data transferred over single medium (ATM), convert from microwave to land lines, bonding grounding, improve reliability and performance of data transfer.

1999-2003

background – Title III Grant, FISPE Grant, College Operating and Capital Budget

enhance/expand the infrastructure to support interactive video, audio, voice, and Internet instruction; increase and improve digital resources and services; expand Internet services and increase LAN, WAN and Internet bandwidth;

Current Plan

Goal 1

To provide a quality learning environment:

Students must be able to use information technology to locate, evaluate and use learning resources, and to communicate with academic and administrative staff. Ensuring success for every student means that adequate services and environments must be provided for students at all service area locations.

Goal 2

To promote excellence in all aspects of student learning:

Teaching must include a variety of strategies and technologies, actively involve students and fully support them in achieving academic objectives.

Goal 3

To support quality teaching and professional development in all learning areas:

Technology resources and services must enable staff to advance their own computer skills to develop new teaching and learning methodologies; develop and distribute distance learning .

Goal 4

To improve institutional communication, record keeping, reporting and student service through technology:

The creation of a positive work environment which promotes staff effectiveness, creativity, and improved productivity.

The Bendigo Senior Secondary College seeks to:

convert staff paperwork to computer processes that simplify processes associated with:

- absentee recording,
- interim and semester reports,
- student reporting and monitoring.

Goal 5

To involve the wider educational community and general community in the College:

Strong, productive partnerships with parents, community, business and staff promotes initiatives to assist students to succeed.

NPC seeks to provide: a vehicle for collaborative partnerships with tertiary, community, business, government agencies and industries in accordance with the Governments Industry development strategy; greater interaction and collaboration between parents and schools; maximum access to information by networking the College with other institutions and sources of information.

To implement the vision five main areas will be addressed:

1. College and District-wide Computer Network

A comprehensive computer and telecommunications network to link users with quality information is vital for tapping the potential of educational technology. A computer network communications strategy will be implemented within the College and between other schools, homes and businesses to provide the infrastructure necessary for electronic communication.

2. Curriculum Technologies

To accelerate the implementation of curriculum use of information technologies within the College, all teachers and learning areas will be provided with a baseline of equipment and software.

3. Teaching and Administration Productivity

The integration of teaching and administration uses of technologies is a priority for streamlining the many manual data bases and communication and information methods. A comprehensive administration package for the College to manage student interim and semester reports, absentee reporting, and other administrative aspects to complement CASES. This will greatly assist with productivity incentives and greater understanding of student outcomes as a priority.

4. Partnerships with the Wider Community

The development of partnerships with the business community are central to wider access to information technologies. The ability to share resources, expertise and collaborate on new technologies and directions are of strategic importance to the future learning outcomes of students in this College and the wider community.

5. Student, Staff and Community Education

Year-round training and support will be provided to ensure teaching and office staff have the necessary competencies to use technologies effectively. Students will receive additional support and services. Students, parents and members of the wider community will have access to training and the resources available within the College.

Produce commercial curriculum materials:

Curriculum materials will be developed by the College and disseminated through professional development activities, publications, and online access in conjunction with the other Colleges.

Generate quality multimedia products.

Produce educational software:

Reporting and monitoring software packages will be developed

and marketed to other schools and these schools will provide feedback for further development.

Produce and deliver remote learning packages.

Provide Internet access to others.

Deliver professional development:

- Through International conferences in the College.
- Contribution to statewide conferences associated with cross-curriculum education as presenters in relation to the goals of
- constructivist teaching and learning methods across all learning areas, using technologies,
- multimedia development,
- business tools.

Provide consultancy on:

- turnkey computer networks (LAN/WAN),
- multimedia production,
- facility design,
- resources to implement learning areas.

Provide innovative community support:

The technology enhanced district will provide access to reference materials, online connections, coordinated curriculum programs and student academic progress and monitoring through programs such as KIDMAP over the wide area network (WAN).

Recommendations:

To establish a comprehensive Local Area Network (LAN) computer infrastructure throughout the College.

To make every classroom in the College state-of-the-art by:

- interconnecting them all to the computer network;
- ensuring the network can support the simultaneous integration of audio, video, data and graphical information and communicate it anywhere within the College.

To install computer file servers and administration software for specific tasks for:

- student file and software access;
- automatic administration of students;
- Internet Host support of individual e-mail address, local and global information.

To provide network solutions that support the two major computer platforms by:

- ensuring both Apple Macintosh and IBM compatible computers are supported over the network through use of the same software types on all machines.

To provide a comprehensive local and global communications network by:

- ensuring all electronic-based library information such as CD-ROM databases are available throughout the College's facilities;
- providing access to all relevant student administration information to classrooms;
- providing the Internet and other online services to every classroom;
- providing instant e-mail and fax services to any room via a computer.

To establish a Wide Area Network (WAN) to interconnect the College, other schools, institutions and the wider community.

through the use of software such as KIDMAP and related to the new Curriculum and Standards Framework.

To provide comprehensive communication and information services to the College community by:

- providing 24 hour staff access to all College administration and general information;
- providing 24 hour access to the Internet;
- providing a district-wide information bulletin board and e-mail service.

That library information be computerised and distributed throughout the College and wider community.

To upgrade and computerise where ever possible the existing library computer system by:

- replacing the existing file server, desktop units and networking software;
- providing the necessary technology for digitising and cataloging widely used resources such as extracts. Liaison with copyright experts will be ongoing.

To establish a comprehensive CD-ROM multimedia reference library to assist all Learning Areas by:

- providing a centralised CD-ROM multiple drive jukebox;
- establishing an extensive, user licenced, CD-ROM software library.

To provide College-wide access to the library catalog by:

- locating computers strategically throughout the College.

To establish online communications by:

- providing online electronic information services training for teachers and students in accessing information.

That extensive local and global communications and online services be provided to support the whole College.

To provide telecomputing services to teachers, students and the wider College community through:

- Internet Access - local and global communication and information sourcing;
- NEXUS - access to AAP news services;
- SOLAS - VCE course materials and work examples;
- I*EARN - global collaboration on researching and writing projects;
- Global Lab - collaboration on investigative science projects;
- a local bulletin board to facilitate e-mail connections and curriculum material transfer.

That a comprehensive computer program be established for classroom use.

To provide state-of-the-art Science, Technology Studies and

Technical Graphics computer resources for:

- manipulating computer control, data acquisition, pneumatics and other high-tech equipment,
- undertaking technical designing associated with Technology Studies.

To trial a class set of laptop computers by:

- providing a class set of laptop computers for teachers and students,
- establishing teams of teachers to undertake action research on their best educational applications.
- establishing a loan system where they can:
 - use the computers during the day if available,
 - take the computers home at night during the week.

That specialised high technology Science, Technology and other learning area equipment other than computers be provided to improve teaching methodologies and learning outcomes.

To provide state-of-the-art Science, Technology Studies and Technical Graphics equipment in addition to computers to develop learning outcomes that will be essential in an increasingly technological world.

For example:

- materials testing equipment,
- computer controlled equipment,
- pneumatics,
- data logging,
- video microscope,
- atomic absorption spectrometers,
- laser test equipment.

To provide high technology equipment other than computers for other learning areas.

For example:

- media equipment,
- graphing calculators.

That every staff member of the College has access to a computer and appropriate software at school and at home in order to have more productive administration methods and to promote more effective curriculum development and delivery.

Research has clearly indicated that professional and technical skills of teachers must be strongly supported if real and sustained changes to occur. This is particularly relevant and pertinent to new using technologies.

To ensure every teacher has access to a computer when they need one by:

- providing a laptop or desktop computer to every teacher to use for more productive student administration and curriculum development.

To ensure teachers have access to curriculum and administration software by:

- providing administration and curriculum software that is standardised throughout the College.

That a multimedia learning centre be established for students to have uninterrupted access to state-of-the-art learning technologies.

To provide software learning packages and modules that can be used by the students and community members for developing competency skills.

To establish a facility which can be used by students for developing quality reports and work requirements and for teachers to develop.

To allow delivery of interactive multimedia programs such as SuccessMaker.

That specialist Information Technology laboratories be established incorporating a learning environment which supports leading edge technology and software applications.

Information Technology is an important part of the CSF and is a highly motivating aspect of Technology.

To enable TAFE dual recognition programs to be established.

To provide Information Technology classrooms which give students the maximum opportunities to learn about and through technologies by providing industry standard hardware and software.

To establish a learning environment which will give students the opportunity to extend the possibilities of the VCE by:

- providing innovative software and hardware to engage students in meaningful learning and encouraging creative application of learning skills for all students through using multimedia applications.

That all learning areas in the College have access to presentation technologies for successfully implementing new learning strategies.

To enable teachers to create learning environments in their own classrooms by:

- providing the necessary specialist software that is required for all learning areas;
- providing specialist technologies for their learning areas, for example science using computer measurement and control equipment in their investigations.

To ensure that computer screen graphics can be displayed in the classroom by:

- providing overhead, computer image projection facilities that can be shared between learning areas;
- providing high definition TV screens for lower resolution, more cost effective, image projection;
- providing portable CD-ROM disk drives for specialist classroom applications.

That a database be developed to provide an integrated method for productively managing all of the student reporting and administration functions.

To ensure teaching administration tasks can be undertaken more productively by:

- developing a single student achievement, monitoring and reporting software package for streamlining all internal administration functions. Automatic extraction of CASES database information will be included to maximise efficiency. Both Apple and IBM type computers will be supported;
- performing automated student absentee functions through the use of a computer in each classroom throughout the College to collect absentee data.

That available technologies be used to streamline the daily administration of the College by greatly reducing repetition of tasks and providing instant access to information and better communication within the College and the wider College community.

To ensure staff have easy access to telecommunications services by:

- providing all fax services via the computer network;
- providing e-mail and bulletin board services between all staff within the College;
- providing enhanced telephone communications;
- placing all common data such as student photos on computer centrally;
- providing a computerised student administration system for recording all future student records onto CD-ROM.

To develop district-wide administration strategies and resource sharing by:

- providing the communication, software and hardware infrastructure to support cooperative ventures including; common event diaries, relief teacher contacts, common student databases, e-mail, College community information and expertise registers.

That leaders and teams throughout the College be established and provided with sufficient ongoing professional development to gain the necessary basic and higher level skills to manage and understand the change process associated with using technology for teaching and learning and general student administration.

To provide a whole-College approach to basic, educational applications and specialist computer uses by:

- appointing Instructional Technology Coaches from within the staff to assist other teachers with professional development in:
 - basic computer skills,
 - applications of educational technologies,
 - specialist skills,
 - basic technical trouble shooting skills,
 - productivity and creativity skills.
- appointing all staff to teams under an Instructional Technology Coach to promote ongoing technology leadership and professional development.

To develop expert teams for achieving long term Bendigo

Senior Secondary College Navigator School program

goals by:

- appointing leaders to coordinate teams for overseeing and development of:

- college and district-wide educational technologies infrastructure,

- curriculum technologies in the classroom,

- teaching and administration productivity,

- student, staff and community education,

- partnerships with the wider community.

The College makes a commitment to:

- maximise internal resources to professionally develop our own staff - see financial plan.

- investigate and implement innovative professional development models such as work shadowing and professional development programs for other teachers and business.

- ten teaching staff are currently undertaking Master Degrees.

Seven staff have secured 0.2 study leave release in 1995.

Fourteen applications were lodged to the Directorate of School Education for study leave.

That a Community Education Centre be established in conjunction with private enterprise to cater for the ongoing technology needs of students, parents, teachers and the wider College community.

To assist with maximising the potential use of the College resources before, during and after College hours by:

- calling for expressions of interest from outside educational professionals to:

- develop a business plan and run the Centre at a profit,

- coordinate professional development needs of the College and the wider community,

- coordinate the use of the available technologies with other district schools,

- identifying and addressing the technology needs of the wider community.

- offering a 12 month advertised program to the wider College community with the assistance of the private enterprise partner(s).

Collaboration with Other Navigator Schools.

The professional development plan will be delivered and administered in conjunction with the Directorate of School Education in collaboration with the other Navigator Schools.

To establish a partnership with businesses to provide state-of-the-art interactive multimedia content.

To establish programs which would be available locally, nationally and internationally via CD-ROM, cable TV networks and other services:

- students from across the curriculum working in conjunction with business and other schools will produce interactive multimedia CD-ROM materials.

- content materials for use in the new cable TV networks will be

developed in conjunction with all learning areas.

- links with local business will be established to provide experience in multimedia production techniques as well as employment opportunities for students.

That a partnership with the Government, telecommunications companies, hardware and software producers and the College be established to investigate the use of cable TV networks.

To investigate the following possibilities:

- provision of learning programs, revision programs and information services into homes.
- the use of broadband services between schools and the wider community.