INNOVATION AND BEST PRACTICE PROJECT

University of Sydney
University of Melbourne
University of Southern Queensland
Edith Cowan University

"The use of the Futurekids Curriculum to promote the use of information and communication technologies in teaching and learning in an R-7 school"

Focus Area: **Information and Communication Technology**

Participants: **Reception – Year 7 Students**

Kerry White B.Ed., Grad.Dip.T (Mult. Cult. Ed), Grad.Dip. Ed (Ed. Admin.), Dip.T.

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Abstract

School of the Nativity, is a Catholic School on the multi-school Aberfoyle Park Primary School Campus in South Australia. Nativity has formed a commercial partnership with Futurekids Australia Pty Ltd, a commercial provider of a communication and information technology curriculum.

The relationship has developed from allowing Futurekids to use the school's computers after school hours for small group instruction for students from various schools in the community in the period 1995-96. The school then trialled the Futurekids curriculum with Nativity classes in the Reception-Year 2 range in 1997. Following a successful experience, the curriculum was fully implemented with all Nativity classes across the Reception-Yr 7 range. The Futurekids curriculum taught at Nativity has had a significant positive impact on the learning of Nativity students. It was found that the Futurekids curriculum engenders authentic learning and student engagement. Students consider their learning authentic, as they are able to connect their work to the real world. Students are engaged as they take responsibility for their own learning, are energized by learning, are strategic in their learning, and they participate in learning activities collaboratively.

The total commitment of the School Board, staff and students to this project has resulted in significant restructuring to accommodate the change. The School Board implemented new financial structures including a technology Levy to facilitate the change. The physical layout of the school has been changed to site the computers on benches running throughout the school. The space lost to these facilities has caused re-organisation of all learning areas. Staff deployment has been altered to facilitate smaller groups of students for Futurekids sessions. Telecommunications, computer hardware, software, furniture, computer network cabling and active equipment have been either established or upgraded to accommodate the change, which accompanies Futurekids. The project has had an impact on teaching methodologies, collaborative teaching and learning, staff professional development and student empowerment.

DESCRIPTION OF THE INNOVATION

School of the Nativity, is a Catholic School on the multi-school Aberfoyle Park Primary School Campus in South Australia. School of the Nativity has formed a commercial partnership with Futurekids Australia Pty Ltd. Futurekids provides a multi-level theme–based curriculum and support for the Nativity staff implementing the program

Nativity purchases a new theme-based curriculum from Futurekids each year and contracts with Futurekids to undertake the professional development of staff at the school. Futurekids trains the teachers at Nativity in the applications of communication and information technology. In turn the teachers train the students of each class at Nativity.

The innovation has three dimensions:

1. Nativity's **commercial partnership** with Futurekids. This involves the school purchasing the curriculum from Futurekids and contracting the company to facilitate the training and development of the teachers in communication and information technology.The partnership with Futurekids is in the tradition of other successful partnerships with Satisfac Direct Credit Union and Power Computer S.A. Pty Ltd.

2. Futurekids promotion of **authentic, engaged learning** among Nativity students.

3. The **re-structuring** of the school which has occurred as a result of the use of the Futurekids curriculum. This includes the process of developing a policy and implementation plan for C & IT supported by a Technology Levy. This was a major change in direction for the school.

The following description of the Futurekids curriculum provided by a teacher at Nativity describes the distinctive features of the innovation and conveys the ownership typical of the staff regarding the project.

- "motivational – theme based topics which are relevant to the interests of the children (child centred)
- progressive development of skills throughout a unit
- Purposeful – each unit develops skills which are relevant to the child and can be used outside the Futurekids sessions – which leads to empowerment
- The themes enable the children to feel they are really a part of what they are doing and that it is necessary i.e,: researching, inventing, investigating
- Curriculum is able to be adapted to suit the needs of the teacher and the children
- Cooperative learning/teaching – The program allows children to make choices, share, consider each others' ideas, to talk to and to teach each other. Teachers also need to work in a team situation to teach the lessons although this differs from group to group depending on the preferred methods of teaching. Staff also acquire skills from each other and use each other as a support in implementing the program.
- Whole school approach – children progress through the three curricula learning similar skills which are gradually built in. The whole school approach means that the children, teachers and parents are using the same language when discussing technology.
- Keeps up with continual change in technology education, as each year there is a whole new program. It also integrates use of technologies including Internet, e-mail, scanner etc."

RATIONALE FOR THE INNOVATION

The decision to promote communication and information technology through the Futurekids Curriculum is vested in the charter of the school dedicated to the whole person, to high quality outcomes and a commitment to excellence in learning.

- From the Purpose Statement of Nativity School…"to focus on the faith development of students within an educational environment dedicated to the cultivation of the whole person"
- Our Mission to the Students: **"**To provide a high quality, faith-centred educational program that will focus on students personal and spiritual development with emphasis on building self-esteem"
- Our Values "are based on a commitment to excellence, justice and equity, acceptance and understanding, creativity, a passion for learning and teaching, Catholic faith, Family life, Christian ideals"

The innovation of teaching the Futurekids curriculum is in the context of a six-year process of improving computer access, training and curriculum integration. In 1992 the staff identified the following objectives for the Computing Program:

1. More access to computers (at least one in each classroom)
2. Release time for computing (for class teachers, computing key teachers)
3. Parent inservice (parents were seen as a source of help for classroom computing)
4. Teacher inservice
5. Computer desks and other furniture

The staff issues concerning computing at the time included:

1. Do students, particularly Junior Primary students, need computers?
2. Who will support students in their learning using computers?
3. How will teacher in-service be delivered?

In Dec 1993 there were 6 machines in 14 classes

1 Laser 386SX/3 machines with printers
3 Laser 286 machines with printers
1 DCS 386 machine and printer

In March 1999 there are 46 Pentium 400 machines in ten classes

Another aspect of the rationale for this project is the Information Revolution. Australia has a history of rapidly taking up electronic innovations such as video-recorders, computers and mobile phones. Australian schools are amongst the best in the world in the devising and implementing educational applications of communication and information technology. In 1995 a program of school visits in South Australia and interstate revealed that some schools had embarked on whole-school commitment to providing their students with a learning advantage through the new learning technologies. Although Nativity did not have access to the resources available to many of these schools leading the way, we wanted our students to have the best possible learning opportunities.

Again it may be helpful to consider another teacher perspective of why we teach Futurekids at Nativity:

- "To implement an IT program that teaches specific skills for both teachers and students so the technology can become a purposeful tool for learning - empowering
- To have a computing program that is up to date with current technologies
- To be able to have a program which can be integrated in all teaching areas
- A program which is already successful in teaching and learning skills that can be adapted to our needs so we do not have to develop our own. At the time there were not many whole school programs available for primary schools.
- For the whole school to become computer literate"

EXPECTED BENEFITS OF THE INNOVATION FOR STUDENTS

In 1996 we drew upon a document from the Department of Education and Training Children's, Youth and Family Services Bureau in the A.C.T. which described a learning environment conducive to the integration of IT.

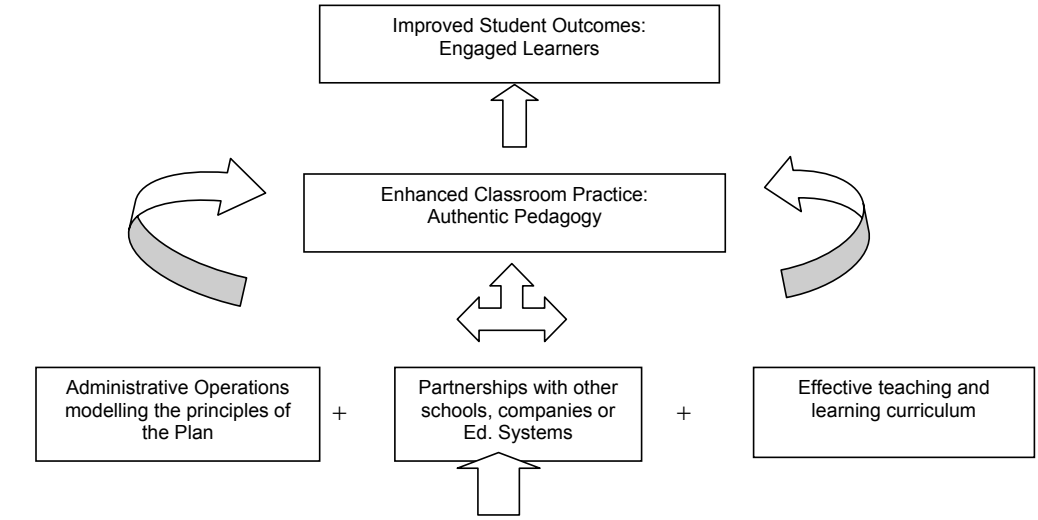
The School Board presented the following points to parents as our vision for an approach to the integration of IT in a context of teaching best practice. We were looking for benefits that would have a positive impact on student learning rather than one-dimensional outcomes such as having an improved student/computer ratio.

- "Collaborative and cooperative learning
- Cooperative planning and teaching – using a team based approach
- Students and teachers developing appropriate learning strategies
- Customization of learning tools to individual learner and content needs including the use of appropriate adaptive technology
- Just in time learning service delivery – students and teachers accessing information and learning resources when and where they need them"
- Improved access to computers"

We hoped that the introduction of the technology would facilitate improved collaborative and cooperative learning, that the computers would assist teachers to plan and teach together in teams.

The following graphic describes the relationships between the key features of the innovation and the anticipated outcomes. The graphic has been produced in a form which could guide other schools in school-based development of learning technologies.

Conceptual Model for the School-Based Development of Learning Technologies



PLAN
The school publishes a Learning Technologies Plan, which takes into account local needs priorities and resources.

LEADERSHIP
A clear purpose and vision for using Learning Technologies in the school is developed by the local community in a spirit of renewal, investigation, collegial discourse, networking and growth. This will involve schools determining what they know already and what they need to know, to be able to make informed decisions. This process acknowledges that all staff; students and parents have a leadership role to play in this development. This active role will result in more ownership at the local level and less dependency on others outside the school. This does not mean that the local community will not need advice and support. Schools will learn from each other by posting questions and solutions on a secure interactive Web site.

CARE
The process starts and finishes with people at the local level. The school conducts an analysis of personal and professional needs of staff and students (such as safety, power, belonging, freedom and fun) as the first step in the process of formulating a Learning Technologies Plan. A useful structure would be an I.T. Task Group including an I.T Coordinator as contact person. Existing structures such as Staff Meetings, Consultative Forum, School Board, P&F, Class Meetings and SRC will provide feedback required. This school-based process creates an environment in which the change initiatives are likely to be successful.

We believed that the project was likely to be successful because it was soundly based on principles of adult learning, it was fun for the students and it was valued and supported by parents.

This is supported by the following analysis of the success of the program by a class teacher:

- "Support was gained by the whole staff to implement the program. Teachers felt the need to have a set program as teachers were not computer literate and didn't feel competent in teaching skills with out the support of a set curriculum and training. Futurekids offered both of these. Implementing it on a trial basis with the Junior Primary classes was beneficial as we were able to make a more informed decision.
- Staff training and continued support
- Whole school approach
- The program is designed so that children have fun and are challenged while learning the skills
- Gained support of the parents
- Nativity made it a focus to purchase appropriate resources and are committed in keeping the resources updated.
- As needs/problems arose they were addressed"

MOTIVATION OR PRESSURE FOR THE INNOVATION

The Principal of the school was interested in the futurist theories which emerged in the late eighties and early nineties which spoke of the Information Revolution, changing patterns of employment, mega-trends, learning about learning, enterprise etc

The Principal visited local and interstate schools that were addressing these issues. It was a common feature of these schools that they had dramatically increased the number of computers in their schools and to varying degrees were restructuring their schools to accommodate key competencies including information technology. These schools were usually R-12 schools and often private schools that either had access to significant resources or chose to allocate their limited resources to purchase computers as a priority.

The Principal argued the case to the School Board and the Staff that the changes brought by the Information Revolution needed to be addressed in our planning for the future. The School Board supported the recommendations of the Principal that planning should be made for rapid and significant change in the use of the learning technologies to support student learning. There was some opposition from within the Board and also from other parents and some staff members. Some resistors of change portrayed the project as an individual passion of the Principal rather than a shared vision. However, the vision and commitment of members of the School Board was a key factor in the successful implementation of Nativity's IT Plan.

Any pressure from outside the school was "big picture" influence from our interest in phenomena such as mega-trends rather than " small picture" issues emanating as direct pressure from local groups. To some extent this pressure was self-imposed as we actively sought information about current best practice in the area of communication and information technology.

We also imposed pressure upon ourselves by attempting to predict where we wanted our IT program to be in five years time. To do this we researched the likely pervasiveness of the

technologies in everyday life. From these investigations, we predicted that the Internet would be a significant factor in communication and information access in the near future. We also predicted that the life of the CD ROMs would be limited in favour of on-line access to programs.

These educated guesses established the benchmarks for our development of our C & IT program. We realized that the multi-media nature of the Internet would have implications for the quality and accessibility of our computers. That is, we set ourselves the standard of having powerful computers which would cope with the data-rich diet of graphics, sound and video clips. This in turn set us up for criticism because some people could not understand why a primary school could possibly need such powerful computers. The situation was not helped by the fact that most secondary schools at the time were not planning for the level of performance to which we aspired. Our most trenchant critic within the school was a parent who worked as a Computer Coordinator in another school. This person declared to an well-attended meeting of parents that our IT plans were "fundamentally flawed."

Apart from the Principal, a young teacher with an interest in computing shared the vision and provided significant support in staff training, developing technical specifications, software selection, developed a web site and many more tasks. The Web site has been a marvellous window through which the world can look in on Nativity. This person has since been appointed as the person responsible for IT on the staff and is an effective link between the school and Futurekids.

STRATEGIES TO IMPLEMENT THE INNOVATION

The history of the key stages and phases in the implementation of this project provide a fascinating case study in awareness raising, public consultation, conflict resolution, financial planning, democratic decision-making and restructuring schools and schooling.

PHASE ONE: PRE-FUTUREKIDS

PRINCIPAL'S REPORT: 1994 ANNUAL GENERAL MEETING

The Principal took the opportunity at the 1994 Annual General Meeting to raise the awareness of the school community of the need for change. The address quoted extensively from "National Technology: a futures framework" a paper presented by Professor Michael Hough from the University of Woolongong at the Australian Council of Educational Administration Conference in Melbourne.

The address gave a socio-cultural perspective on technology quoting the work of Toffler and Ellyard. Key issues and trends for education flowing from an information economy were considered. Consideration was given to the competitive edge and the learning ability of organisations, in particular the role of learning tools in gaining a competitive edge. The changing role of the teacher in the 21st Century was discussed.

The Report was very broad ranging and occupied a considerable part of the meeting. Some people were fascinated; others were affronted (For example one teacher considered it an insult that students would know more than teachers did). Nevertheless, the school was changed fundamentally from that point in time.

NATIVITY IT COMMITTEE 1994-96

An Information Technology Committee was established comprising staff and parents from the school. The Committee enthusiastically set about the following projects:

Raising the IT awareness of students, staff and parents
Improving the student/computer ratio from 1:100 to 1:25
Linking the stand-alone computers in each classroom via coaxial cable
Providing Staff Training
Establishing an Internet connection
Establishing a Nativity Web Site
Establishing a Management Information System

SCHOOL BOARD POLICY 1995
The School Board adopted the suggestion that it should produce a policy, which addressed the appropriate use of computers in primary schools. The policy developed a rationale for the use of computers and looked at issues such as access to the Internet, equity of student access and the financial impact on the community of purchasing larger numbers of computers.

PHASE TWO: THE FUTUREKIDS GENERATION

In mid 1996 the Principal submitted to the School Board a Draft Plan for the Development of Information Technology at Nativity for the period 1997-2000.
This plan was submitted in the knowledge that the expectations of the School Board were high concerning any proposal, which proposed expenditure on such a scale.

The following factors were considered in the framing of the plan
Power Supply
Cabling infrastructure
Hardware
Software
Internet access
Staff Training
Curriculum
Security
Furniture
Strategic Partnerships

Comment: Total cost of ownership includes training

The School Board, Parents & Friends Association, School Staff and the Nativity Finance Committee examined the plan. See Appendix.

OPEN MEETING OF PARENTS, NOVEMBER 11th, 1996
The plan was presented to parents of the school at an open meeting in the Campus Activity Hall on Tuesday November 11th, 1996. (The 11th of November has a record of hosting momentous occasions in Australian history). A notice advertising the plan included a number of points explaining the genesis of the plan. See Appendix.

The Plan for 1997

Senior Primary

- Three classrooms and the Multi-Media Room
- Each room to have six network points
- Each class to have five desk-top computers and one lap-top computer
- Six times greater than previous access for senior-primary students
- Classes may have access to up to 18 computers at a time

Middle Primary

- Four classrooms
- Each room to have six network points to eventually accommodate six computers per room
- Each class to have two desk top and one lap-top computer
- Treble the previous access to computers for middle-primary students
- Classes may have access to up to 6 computers at a time

Junior Primary

- Four classrooms
- Each room to have six network points to eventually accommodate six computers per room
- Each class to have two desk top computers
- Double the previous access to computers for junior-primary students

Technology Levy

It was proposed that the purchase of the extra computers would be covered by the proceeds of a Technology Levy. The proposed levels for the Levy were:

- Junior Primary $100 per student
- Middle Primary $180 per student
- Senior Primary $260 per student
- This would have meant an additional cost of $1380 per student over 8 years for access to current technology

A crèche was provided and over 100 parents arrived for what proved to be a spirited discussion. The meeting began with some spectacular examples of student multi-media work with computers. The evening ended with some heated comments from the audience including accusations that the Principal and School Board were placing unreasonable financial demands on the parent community. Some parents questioned the need for computers at primary school level. Others demanded that if computers were placed in the school, they must be in a Lab configuration. Some claimed the proposal was too much too soon. Some families threatened to leave the school if the plan went ahead.

The School Board again considered its' position and continued the consultation process with the P&F and Nativity Finance Committee. A second meeting was held two weeks later on Tuesday 26th of November. The letter inviting parents to attend reiterated the main points of the plan. The plan remained the same. Time was running out as the end of the school year loomed.

At the December Meeting of the School Board final decisions were made. The design of the computer benches was changed in the main building creating a pod of computers, which ran down the middle of the building. This answered the demand for a computer lab. It was the best of both worlds; a line of computers, which could be nominated in segments to particular classes or regarded as a whole when, needed for large group instruction of staff, for example.

The technology levy was reduced:

R-2 students	$75 each
Yr 3-4 students	$125 each
Yr 6-7 students	$175 each

The building levy was increased by $30 per family. This enabled the Board to meet the costs of some of the IT development within the capital program of the school and to spread the burden equitably among families.

The reduction in the technology levy was achieved by the following strategies:
Removing laptops from Middle and Senior classes
Cost of the cabling funded by the Building Fund over three years
Staff training provided by Futurekids in return for after-hours use of computers.

The School Board then addressed every point of concern raised by parents in the two consultative meetings. These points are shown below and the School Board response is shown in the Appendix.

Parent Concerns

Letters to the School Board
- Impact on other areas of fundraising e.g., P&F Fundraising, Parish Planned Giving
- Ensuring balance between IT and other areas of the curriculum
- Impact on families with more than one child or families with reduced income
- Is there a need for Junior Primary students to access IT?

Feedback from Information Evenings
- Use of network computers rather than full PC's.
- Balance in expenditure, cost of IT compared to other areas of the curriculum
- Equity of access for all class groups
- Employment of IT technician
- Computer Lab
- Cost
- Measure outcomes of learning
- The levy needs to be staged, the access is unequal to students
- Staff Training
- Gradually introduce the Levy
- Secondary Transition, will the access be maintained at Secondary schools?
- Will all students get equal access?
- Incorporate cost into Building Fund
- Basic Skills – will they suffer?
- Internet safeguards?

Having successfully dealt with each of these points, the School Board voted unanimously to immediately implement the Technology Development Plan. The installation of the network, computer benches and hardware would be ready for Term 1, 1997. The Futurekids curriculum would be implemented for the first time at Nativity with all classes from Reception to Year 2.

The School staff voted to return to school early from their holidays in January to attend staff training and development provided by Futurekids.

Professional development of Nativity staff was a key factor in the implementation of the Futurekids curriculum. The teachers would not be able to enrich student learning with the new technologies if they did not understand how the technology worked. The following is an account by a teacher of why the professional development program was successful.

- "Futurekids trainers were available for teachers – As we were all learning and at different stages of learning, having support was necessary. It was a partnership.
- Training of administrators to team-teach each session with the class teacher. –
- Sharing different methods of teaching the lessons – As the implementation is an innovation we were willing to share problems and ways individuals dealt with or overcame the problems to achieve successful implementation. This was part of our need for it to be a whole school approach but to recognise the differences of individuals and value them.
- Whole staff approach to training – The staff all receive the same training sessions even with the range of skill levels of staff members and the different curriculums being taught. The purpose for this is that we can support each other and empower each other while learning. Also this means that the JP teachers are able to learn skills that they need for their own professional development and to motivate them to learn the skills and use them for their own needs – empowerment. [Teacher named] is going through the Gold curriculum so she can practise the skills and learn them for her own use."

IMPLEMENTATION OF THE FUTUREKIDS CURRICULUM

School Organisation

An important aspect of the implementation of the Futurekids curriculum was the siting of the computers so that the machines were available to the students when and where they were needed. Since our philosophy was that the focus was on student learners rather than on technology we wished to site the computers so that they were always accessible to the students. The idea of having them in a Lab in a separate room timetabled for each class, was anathema to our vision. Therefore the machines had to be near learning areas and capable of being supervised at all times. We did seek professional advice; however, we eventually devised our own solutions. There was a sudden brainwave and a line of bookshelves running through the centre of the building standing against a short brick wall provided us with a "window of opportunity". It was unfortunate symbolism – books giving way for computers- but strong decisions were needed. The books were relocated to the Resource Centre. It was proposed that a computer bench would run along this brick wall. Constructing another wall between two other classrooms and extending the cabling under the floor further extended the line of computers. The cables and electrical wiring was installed inside the new wall. Thus we had 24 network points serving 4 classrooms.

At the time, three points per room met "best- practice" standards, so we doubled that. We now wish we had provided 12 points or 24 points per room. The introduction of computer benches and computers in such numbers creates a problem of space for teachers. Rooms were simply not designed with these facilities in mind. However, where there is a will there is a way.

Another aspect of the re-organization of the school was financial. The introduction of computer levies has already been discussed. This was a major change at the time as we were one of the first schools to implement such a policy. This attracted a great deal of scrutiny upon the program and

consequent high expectations. The impressive appearance of the pod of computers running down the spine of the main building helped from a PR point of view. People commented that they looked like they had always been there.
The implementation also required re-organisation of staff deployment. The Principal and Deputy Principal were needed to help reduce student numbers for the Futurekids Lessons. The structure of the classes varied from class to class depending on the teaching style of the class teacher, the nature of the classroom and the needs of the students.
Class teachers also co-operated with each other to ensure that class groups had access to the maximum number of machines when they needed them.
A spirit of flexibility pervaded the implementation of the program. An isolated instance concerned access to computers in a classroom by students from another class.

People were the vital element in the implementation of this project. If we did not have an effective School Board with vision, high level decision-making skills, financial skills and a team ethic the project would have been at risk. Our school was one of the first undertaking this reform, thus parents at the school had no other experience to relate to in assessing the merit of our proposal
The school staff was another key group. Although there was some resistance, their concerns were totally understandable. We were asking them to "dive in the deep end" and take on a program for which there was little precedent. We told the teachers that they were embarking on a project making extensive use of communication and information technology and that student skills in this area would usually exceed their own skill level. Very few of the teachers had been able to experience at first hand, what other lighthouse schools were doing in C & IT. In the same spirit as the School Board, the teachers were bravely taking on the project in a leap of faith.
There were people in each group of stakeholders who exercised sufficient vision to focus on the positives of the proposal and to give it their support. If these people had been constrained by certainties and current practice in most other schools, the project would have not got off the ground.
The financial expertise and willingness to take informed risks of the Nativity Finance Committee were a crucial factor. Their competence set the standard from the outset. The Principal could almost predict their searching questions and this prompted him to present a definitive proposal from the outset. There was a spirit of teamwork and problem solving pervading the work of the core group preparing the proposal for the School Board. The Finance Committee recruited a parent without financial skills but with a strong facility for common sense to help us vet our proposal from a mainstream parent point of view. Financial models were created on Excel and changed and honed until they appeared to be workable. Parent feedback eventually caused refinements and, ultimately, improvements to the model.

Comment: Need for Top down leadership

The following is a teacher perspective of the issues relating to organisational change

- "Address the need that one teacher alone can not adequately implement the program to a whole class. This resulted in the class either receiving the lesson in two groups or the whole class taking the lesson with two teachers familiar with the curriculum.
- In 1998 teachers and admin staff found that time was a factor firstly for the teacher as it was an extra 2 teaching lessons to fit in and for the admin staff that their time was being stretched to the limits. 1999, teachers agreed to try team teaching the curriculum which halved the teaching time.
- Maintenance of equipment- this is still a problem but we are attempting to address the situation with a technician employed. Provision of computers for equitable access was a major [appeal of] the innovation for teachers and parents."

There were some key factors in the success of the project

1. Flexibility in the use of resources by teachers and students.

One teacher felt this was a major achievement of the project;

"This is a major factor in the success of the programme. Although each class has a bank of computers the single classrooms do not have enough to teach whole class. Therefore these classes need to use the open space area where there are large computer banks. The classes in these areas need to be flexible to allow this shared use of resources."

However, another teacher did not share this view:

"Computers [are located] in another classroom [not this teacher's classroom] therefore classes [the teachers class] disturb [students from other classes doing] Futurekids and [students from other classes doing Futurekids] disturb classes [the teacher's class]."

The Nativity Computer Network
The network allows children to access their files and the appropriate programs on all computers. Students were able to practise skills in their own time and complete activities in their own computer areas. Computer pods available to a whole class facilitated large group instruction. The progression to the application of the IT skills learnt at Futurekids across the curriculum will be possible because of the location of the computers to classes.

The School Culture
This is best described by the Catholic ethos we embrace. We promote a holistic vision, a belief in Jesus, pride in the history of the Church and Catholic Education, discernment, pastoral care, community, citizenship for justice and partnership with the earth. As a Catholic school we are about inviting, introducing, initiating and leading young people into the gospel.

A teacher describes the climate of support succinctly.

> "Continual support of each other. Every staff member assists others, seeks help from others. Especially more experienced teachers seeking the assistance of less experienced teachers in this area."

Comment: Culture of support

This culture was a very positive environment in which to initiate such a significant change.

FACTORS LIMITING THE SUCCESS OF THE PROGRAM

These are illustrated by the comments of teachers who sometimes shared the same concerns and at other times had quite different issues.

1. Equipment failure

The effects of equipment failure are self-evident.

" General breakdowns with computers. Mice not working, children changing files, computers not functioning,"

2. Team teaching with teachers at varying skill levels

"Needing two teachers who must be prepared for the lesson. Or one teacher takes half the class twice, - thus needing two lessons of support. Staff development for staff who teach the gold program not increasing their personal skills. 'Beginning skilled' teachers teaching the Platinum program and highly skilled computing teachers teaching Silver."

"My personal feelings of inadequacy in the area of computing was an area that I personally had to work to overcome. Availability of computers certainly helped me. Also the training but personally I believe it is the actual Futurekids program [which she taught to the students] that I have developed my skills in. Purchasing my own computer was a huge asset in my learning." Teacher comment.

3. Time

For most staff the time issue is common, the addition of another demand on time was an added pressure on teachers as expressed in this teacher comment:

"Time- staff were concerned in 1998 with the amount of lesson time needed to implement the program successfully. At times it was felt that Futurekids was the main area. Teachers feel pressured to do all the sessions and miss other subjects to fit it in."

For some teachers the time to prepare became another burden particularly if they were teaching upper primary classes.

"The huge amount of time it was taking me to get ready for my lesson approximately 2 to 3 hours per week teaching platinum." Teacher comment.

4.Organisation
Each teacher has had to find ways of delivering the lessons, which suit their particular situation. This quote conveys the agony before the ecstasy.

"Organisation is a huge barrier. I have tried many ways of teaching the program with the children. Writing notes for the children to follow. Having half the class at a time, taking the whole class for the lesson. Finally I have found the process that I am happy with. Keeping a handle on each student by having the students in pairs and taking half the class at a time." Teacher comment.

5. Noise Level
At least one teacher reported problems with the open space environment in which classes are located. Problems with noise level are not shared by all teachers working in open space settings.

"The amazing noise in our unit is a constant concern to me. Having 14 children sitting to me as closely as possible and still children saying they can not hear me." Teacher comment.

6. Supervision
Similarly, the same teacher experienced supervision problems. It is clear that concerns about supervision are not shared by all teachers who work with full class groups of students.

"When taking the whole class ……..is a massive problem for supervision and positive interaction to assist individual learning. My concern is not to get the task finished, but to interact personally with the children asking searching questions, building on the weeks before." Teacher comment.

7. Course Structure
Most teachers experienced a relatively smooth implementation of Futurekids. Other teachers were sidetracked by perceived problems with the nature of the Futurekids curriculum . It seems that the Futurekids curriculum operates most effectively when the class teacher "goes with the flow" and follows the curriculum as provided. The "opening up" of the applications of IT seems to happen naturally once the student has acquired the skills.

"Worrying about the prescriptive and structured style of the course. Trying to open up the course has been my concern." Teacher comment.

8.Individual Differences
All teachers have had to cope with the spread of ability in IT in their class groups.

"Having children with such vast degrees of skills and catering for their needs. Not wanting to hold up the capable ones." Teacher comment.

STRATEGIES TO IMPROVE THE PROGRAM

Extra support

Some classes have been given extra support time by the Deputy Principal or Principal. This means that the Deputy Principal or Principal have taught Futurekids with half the class or have supervised half the class on two occasions each week to enable the class teacher to teach the class Futurekids.

Lower class level

Some teachers have been assigned a lower class level at which to teach Futurekids, the skill level requirement on teachers is commensurately lower. In addition, teachers find their preparation time and workload is also reduced by teaching younger students. Interestingly, not all teachers find this a positive. For example , one junior-primary teacher borrows the Futurekids curriculum for older students and uses it to improve her own skill level.

Employment of computer technician

Nativity has cooperatively employed a trainee computer technician. This will help us cope with the minor breakdown glitches, which can frustrate teachers.

SUSTAINING THE PROGRAM

Staff have identified the following factors as being essential to sustaining Futurekids
In the future

- Continued staff training.
- Continual belief in the importance and value of skilling students in the area of computing and IT.
- Quality curriculum and a continual increase of processes taught as the children become more computer literate and capable.
- Replacing or maintaining computers to a high standard
- Staff selection process that takes into account computer skills relevant to the Futurekids Program.
- Celebrate achievements with the Futurekids program.

DESCRIPTION AND ANALYSIS OF DATA COLLECTED

The research method for this study is described in Appendix 1 of this report. Due to the required limitation in size of report, the data from St Catherine's has not been analysed.

In framing our research questions we were interested in assessing the extent to which the Futurekids curriculum engendered "authentic" learning as well as assessing the impact the program had on student engagement. It is therefore important to define the terms "authentic" and "engagement".

The issue of authenticity is explained by Wehlage in the following terms:

> "When students compartmentalize their lives into 'school' and the 'real world', they are left with the perception of an irreconcilable split that forces them to complete school work with minimal effort and minimal learning. Students who are alienated from the process of schooling will become unmotivated and reluctant learners". *(Wehlage, et al, 1989)*

In this explanation, Wehlage describes the outcomes for the learner when learning is not authentic. What would the outcomes for students be when learning is authentic? When students perceive they can connect their work to the real world, outcomes could include students investing time and effort into their work, and students being eager and motivated learners. An extract from an interview with a student illustrates these notions of authentic learning:

> "I've got to be honest with you, in class I hardly concentrate and hardly listen – only if I like the subject, but if it's on computers I pay attention more. It's easier to concentrate with the computer – instead of some teacher talking "Blah, blah, blah…" it gets annoying, but with computers you just read it, then practise it and store it in your head." (Jake Yr 7)

Comment: Learning maodlities

So what is engagement? Engaged learners can be described as students who take responsibility for their own learning, are energized by learning, are strategic in their learning, and participate in learning activities collaboratively (McKenzie, 1998). Students who take responsibility for their learning would be likely to show initiative in their work. Furthermore, students would be empowered. Students who are energised by learning are likely to be intrinsically motivated. Students who are strategic in their learning probably employ effective learning strategies. Students who participate in learning activities collaboratively would be able to work effectively with others.

In this section, we present the findings following data analysis. As a response to our focus, findings are presented under the following headings: (a) the Futurekids curriculum engenders "Authentic" learning in communication and information technology, (b) the Futurekids curriculum empowers students in their use of communication and information technology, (c) Futurekids "switches on" students, (d) Futurekids enables students to become strategic in their learning, and (e) Futurekids facilitates collaborative learning amongst students.

OUTCOMES OF OUR RESEARCH

The Futurekids Curriculum engenders "Authentic" learning in communication and information technology.

From the data, we found that the students find their work relevant to their lives. What students learn through Futurekids enables students to students to perceive this relevance. The students are able to name programs and their applications. For example, one student explained her understanding of what she could do with some programs, "Excel – we can do spreadsheets, Publisher – make cars and stuff, PowerPoint – we can do slide shows (Karina Yr 3). Not only are students able to name programs and their applications, but also students are able to discriminate between similar applications to make the best choice to meet their needs. The following explanation, provided by a student in year four, demonstrates this point:

> "Publisher – it has Word Art – you can type in any style you want and it has pictures that you can choose. Word has better colour but with Publisher, they don't have a rainbow. Word - if you pulled down a web-site you can click on it and go onto the Internet. Power point - you can go to a file and make it move, then you click on a button and it shows a big

> screen and it shows you what you've done. Access – there's a grid and you have to type down these numbers and it shows the answer at the bottom." (Stephen Yr4)

This awareness of various programs and their applications enables students to make judgements about present and future relevance of what Futurekids is teaching them. We found that students regard the programs that they encounter in Futurekids as relevant to their future learning in schools and the workplace. The applications students thought were particularly relevant to their future were PowerPoint, Word and the Internet. Students also explained that Word, Publisher and Excel had possible business applications in the future. One student commented, "If I join a business that uses computers, probably Microsoft Word and Publisher will help me to understand what I am doing" (Casey Yr 4). This comment also illustrates how students identified individual applications as relevant to their futures. Furthermore, this comment demonstrates how students thought certain applications would be particularly useful in the field of business.

We found that the Futurekids curriculum has helped students be able to use IT for their own needs and interests. Apart from relevance to future employment, some "old computing heads" on very young shoulders can see social applications, such as communicating with others. For example, a year three student commented, "Microsoft Word – [has helped me] be able to write letters to old school friends" (Ali Yr 3). Furthermore, most students regard the Internet as a viable information source for their daily needs and interests. For instance, one student used the Internet to "find out lots of stuff on sports and what's going on in the world"(Todd Yr 4). Another student who explained how the Internet was useful to him further illustrates this point:

> "I'm right into guitar and Music. When I want to look up a new song, it's got on the Internet everything I need, you can use it for shopping, basically everything you want is on the Internet, food, clothes, everything. (Daniel Yr 7)

Thus, through Futurekids students have learned skills and gained an understanding of the IT necessary to use it as they choose.

It has emerged from our study that students perceive very little difference between their IT requirements at school and their IT requirements at home. To them school and home is the one world. The following extract demonstrates this finding:

> "At school [I use] Excel and Word. Excel [is used for] making spreadsheets and things like that, and Word [is used for] for publishing, because it's reasonably easy to use. Outside school [I use] Excel, Word and Access. Excel for like when my Dad asks me to do things and when I have to figure things out, getting things all up to date and knowing where they are, what they do, etc." (Michael Yr 7)

Students showed that they enjoy their work and are keen to practise what they have learned in their own time. The following comment demonstrates what many students do. "Everyday at my house, after school I quickly go on the programs and practise what I have learnt" (Stephen Yr4). Students seemed happy to commit time to their work. For example:

> "In my free time I usually do my slide-show, because I like doing it. Microsoft Word helps me, because I can type things up and save it instead of doing it in my book and then afterwards trying to find the right page" (Elizabeth Yr 3)

Thus, students are clearly motivated to invest time and efforts into working with what they have learned from Futurekids.

Students enjoy Futurekids particularly because they think they are learning a great deal and they like the way in which they are learning. For example, a student said, "[The best thing about Futurekids is that] you learn heaps about computers and you learn more about sound effects and little microphones." Another stated:

> "Instead of doing your projects on A3 paper, you can just do it on the computer, put music through it, so it's more enjoyable, you can custom animate everything, you can have as many slides as you want. You can use the Internet to do good pictures of it. It's just fun." (Jake Yr 7)

Students could see how they have developed and they were pleased with what they had achieved. The following comment illustrates this:

> "When I was in year two I didn't know how to use the computer, when I was in year three I started writing letters. Now in year four I've learned how to do slide shows and get into the Internet and find things".

In summary, the students connect their work to the real world in a variety of ways. Students can see the relevance of what they learn to their present and future lives, they use IT for their daily needs and interests, and they use IT in the same manner at home as they do at school. Futurekids enables this connection of work to the real world as students become aware of the programs and their applications and can make judgements about their usefulness. Hence, the Futurekids curriculum engenders authentic learning in communication and information technology. Students are eager to invest time and effort into their work and they seem to be motivated learners.

The Futurekids curriculum empowers students in their use of communication and information technology

It is clear from the responses of the students that they perceive they have the ability and are capable of utilising the software programs and the various applications of IT described earlier in this report. This confidence seems to have enabled students to display a variety of positive qualities including independence.

The data indicates that the students are often able to operate independently of a teacher. Once students know that they have the skills to operate the software, they develop a level of confidence which sustains them in their learning to face challenges which arise. Students then take control of the technology and apply these skills at their own rate to meet their needs. A student explained, "they [computers] are good because I can do it on my own" (Sam Yr 2). The students are also able to establish a clear purpose and they perceive that they are able to achieve their purpose. For example, one student commented, "I'll tell the teacher what I want to do then I'll go down and do it" (Stephen Yr 4).

When the students were able to work independently, they seemed to gain a sense of empowerment. Students indicated they are pleased to be able to pursue their work freely without being constrained by other parties, including teachers and other co-learners. For example one student said, "You can find out things using the computer without having to ask people" (Rhiannon Yr 7). Some students explained their feelings of empowerment in the following terms.

You can “get more information by yourself” (Elizabeth Yr 4) and “[We] learn more about computers without teachers telling us what to do” (Jarrod Yr 4).

The students feel proud that they are competent at what they have learned through Futurekids and that they can demonstrate this competence to others. For example, one student explained that she feels proud when, “You can show people what you can do on computers” (Elizabeth Yr 4).

We found that the students are also empowered by the technology. Students use the computer to gain knowledge they require and to help solve their problems. They indicated that they prefer gaining information in this manner because if there is something they do not understand, the computer offers a means to gain an understanding. A comment from one student illustrates how technology has empowered students in their learning:

> “Yes, [computers have changed the way I learn] because I used to go out to the library and find books and I just read them but I really didn’t understand all of it. Whereas on the computer I can go to a program and find out the information – if I don’t understand a word you click on the word and it explains it to you” (Casey Yr 4).

Therefore, the Futurekids curriculum empowers students in their use of communication and information technology. Students perceive that they have the ability and they are capable of utilising the software programs and the various applications. Hence, students are often able to work independently, they are competent at their work and they are able to use the computer to gain knowledge they require and to help solve their problems.

Futurekids “switches on” students

In their comments about Futurekids, students used words like “exciting”, “fun” “cool” “interesting” “fascinating” “luxury” and made comments like “I feel good about what I can do”. Comments such as these are remarkably consistent across the participants surveyed. An overwhelming number of comments were positive indicating students are satisfied with the Futurekids program. Moreover, the students supported their comments with cogent reasons for their satisfaction with the program.

In particular, students indicated that much of the appeal of the program is because a great deal of the work is multi-media, involving “multi media slides, sounds, voice, animation” (Interview). They also referred to the practical attraction of the technology because it is a hands-on experience.

Many of the younger students commented that they enjoy using the computers and like to play on them. Comments they made included, “Good to play on” (Jake Reception), “They are very easy to play on. They are fun. You get to play on them a lot. (Bianca Reception). “You can draw on the computer” (Jessica Reception). This is particularly interesting because the school does not have computer games as such and therefore students made these comments about the general software available to them.

The students enjoy the sense of achievement they gain from the Futurekids curriculum. Students perceive that they are acquiring skills, becoming familiar with software and learning what they can do with the software. Students also like that they can apply what they have learned at home, either by practising their skills or continuing work in progress at home. For example, one student commented, [When I learn something at Futurekids, I like to] “Take stuff home. Show Dad. Practise what I have learnt” (Interview)

However, not all in the garden is rosy. Some students reported problems of having different needs to the rest of the group such as wanting work that is more challenging. Some students did not like "sheet instructions" used by a few class teachers. Others still were concerned about disruptive students who "make out they are dumb and mess around" (Michael Yr 7).

Therefore, the students are "switched on" by Futurekids. Generally, students enjoy what they are doing and seem satisfied with the Futurekids program. Importantly, the students seem motivated to achieve goals related to the task at hand rather than performance related goals. Students are not concerned with how others would judge their performance.

Futurekids enables students to become strategic in their learning,

We found that the students are becoming strategic in their learning. Some students reported that they had acquired problem-solving skills related to using IT. For example, "They've taught me how to get into programs, figuring out what to type in if you're stuck" (Interview). Students also referred to monitoring their work by concentrating on what they are doing. One student explained that when "Using the keyboard, CD ROM drive, opening and shutting it, clicking the mouse [you need] to concentrate where you need to click it." (Interview). In addition, students indicated that they are regulating their behaviour because they are interested in the subject matter. Students said they "listen carefully" (Stephen Yr 4) and "Sometimes if I don't hear the teacher, you have to put up your hand and they'll tell you again" (Interview). Thus students are using learning strategies such as problem-solving skills, self-monitoring and self-regulation when working during Futurekids.

The students have a sense that learning is an ongoing process. Many students think that they are learning through trial and error. For example one student said that Futurekids helps him learn "By telling me things that I never knew, and probably things that I knew and I got wrong sometimes" (Interview). The students are aware that they utilise newly acquired skills in other work in the classroom. The following comment illustrates this awareness. "[Futurekids] showed me how to do a lot of things. We do it lots and once you know how to do something you keep on doing it out of the lesson" (Interview). One student articulated his learning by direct instruction and experimentation. He said, "I got taught to use PowerPoint, then I fiddled around with it and learnt how to do a lot more things. Then when I started using Word I found out that most things were very similar" (Jake Yr 7). This student has made connections between different software and gained an understanding of their similarities.

Data analysis showed that students use the technology to facilitate access to information. Students are aware of different avenues available to gain such information but find computer technology better suits their needs. One student explained, "I used to go out to the library and find books and I just read them but I didn't really understand all of it. Whereas on the computer I can go to a program and find out the information. If I don't understand a word, you click on the word and it explains to you what it is" (Interview) The ease of the technology seemed to be important to the students. For example, a student said "The computer- It's easy to look up, get into it and type it in (Interview). Additionally, technology seemed to facilitate access to information when other avenues are less successful:

Comment: They then need to interpret and synthesize with existing knowledge

> "One day I didn't know this answer in my schoolwork, and my Dad told me to go on the computer and look it up. And I got the answer. And I got it right when I went to school the next day." (Interview)

Older students compared the effectiveness of the technology against previous learning experiences. They explained that using technology is more efficient. One comment illustrates this point:

> "Information – it's a lot easier to research on everything – on Encarta you can just type in what you want, then press Enter and it will come up with a list of things, whereas using an encyclopaedia or dictionary it'll sometimes take you ten or twenty minutes before you can find something that you can use." (Michael Yr 7)

However, the students readily acknowledge the limits of their personal expertise, particularly in an environment away from their familiar classroom using unfamiliar software. For example, "Information – I can do this by myself, but I might need help in a library" (Casey Yr 4).

Some student perceptions about the veracity and "currentness" of information are a cause for concern. Such as, "You can find more information on them [computers] and you can print stuff out and copy it out in your book. If you're doing a project. If you go on the Internet, the information gets changed every day, and in books it doesn't get changed." (Interview)

We also found there is a clear understanding by students that a machine can now handle tasks previously unavoidable. For example, one student said "On a computer, you can add things up by typing them in and it's already worked out for you – you don't have to do it all mentally" (Interview). Another student said, "I can type up my work quicker than I might be writing it" (Interview). Moreover, students appreciate that being free from these tasks they have time for other things. For example, a student commented,
"It's a lot easier to research using computers, so you get things done faster, which means that you learn more in a year" (Interview). Another said, "They [computers] certainly teach me a lot quicker. Like if I wanted to learn how to use one of these programs, I'd just go to 'Help' or something and it would tell me all that I needed to know. If someone tried to explain it to me, it'd be a lot more difficult to explain." (Interview)

There is probably cause for concern from some people that valued skills of the past may become redundant. Students made comments such as, "I used to have to hand-write lots of different things and you'd have to find out your information by books. Now instead of drawing pictures you can just find them on the computer" (Interview). However, with the demise of traditional skills come new skills, which the students identified. For instance, a student stated, "Word – quicker to write with, you just have to know your keys."

Students stated that their work is enhanced by the technology. For example, a student explained how technology helps him present his work. He said, "Presenting work – if you're the world's most hopeless drawer, you can go to Clip-Art and you'll find something that relates to what you want" (Interview). Being able to enhance their work using the technology engenders a sense of pride in students. This is illustrated by the following comment:

> "I feel very good about what I produce on the computer. I reckon it looks heaps good. If you want to make a professional letter and you don't know how to write one, you just use a letter-wizard on Microsoft Word." (Interview)

This comment also demonstrates how students reported they felt supported by the technology to perform tasks more successfully.

Students indicated that they have learned strategies for using the technology more effectively. The following comment illustrates this, “Sometimes I used to do things long ways, but now I’ve learned to shorten things up” (Interview). Another example is that students recognise that work in progress can be stored retrieved and updated. A student said, “You can do some work, save it on your ‘S’ drive, and keep coming back to it later – start where you finished.” (Interview) Such strategies have enabled students to improve their performance.

Students are well aware of their weaknesses and use and adapt the technology to their needs. For example students found by using the computer, they could check their spelling and present their work more professionally.

Students have discovered that the technology also allows them to choose between automatic functions and manual functions to accommodate skill-level changes. This means they may commence a task using a Wizard but once they get the idea they revert to manual control of the program. A student explained, “Yes. You can choose like Wizards which will help you through, or you can do everything yourself, manually” (Christiaan Yr 6). Thus, the student is effectively controlling the technology. The following comment further demonstrates this finding:

> “Sometimes, some programs if you type a mistake it’ll make sure you know it’s a mistake. Some programs if you have to have a capital letter there and you don’t put a capital there it’ll change it. I’d be spending a lot of time doing other things. I wouldn’t be on the computer all day and I wouldn’t be able to do my slide shows I’d have to write out everything by hand instead of typing it.”

Students report that they are able to complete tasks more effectively and are able to work on multiple applications at the same time. Such as:

> “Before we did Futurekids, I didn’t know much about computers – e.g., I never knew how to do a PowerPoint presentation properly with all the sounds and movement. And I never knew how to do boxes and Word Art etc” (Melissa Yr 7).

The students indicated that opportunities for communication are greatly enhanced with the advent of the new technologies. A student explains, “With the Internet, you can go all the way around the world in less than an hour, and Internet – send messages across the room or to people in different countries” (JakeYr 7). Furthermore the students are surprised by the ease with which they have adopted the protocols of email . One student stated, “Communication – with Email and things it’s an awful lot easier. I’ve hardly ever written any letters in my life, but with Email I’ve written heaps” (Michael Yr 7). Students also perceived that email has enhanced the quality of the communication available to them. Comments included, “You can send pictures, which you can’t do over the phone” (Melissa Yr 7).

In summary, we found Futurekids enables students to become strategic in their learning**.** Students adopt a variety of learning strategies when using IT. Furthermore students are strategic in their use of IT.

Futurekids facilitates collaborative learning among students

As the Futurekids program is conducted with students working in pairs (now with Monitors with 17” screens!), it is essential that students cooperate and share their time handling the mouse,

choosing objects, suggesting ideas and completing tasks. The students devise their own time-sharing strategies, for example the 50/50 model. This is a low level of co-operation and the person "off–duty" is in danger of becoming disengaged. Students explained how they cooperated:

> "We both choose together, swap mouse and keyboard each lesson."
> "Someone does up to the line on the sheet, the other person does the rest."
> "We take turns – I read out a bit of the writing and she does it and then we swap over and it turns out really good."

When working collaboratively, many students approach decision-making in a sophisticated manner, often by reaching a consensus. For example, a student described what happened; "Making choices … we normally decide on something that we both like" (Interview). Another student explained how he made decisions;

> "I find it easy because we take it in turns. The person who is using the mouse, we both decide on a picture or whatever and if one of us doesn't like it we try to find something that we both like." (Interview)

Others opt for more participative sharing by almost literally hand-in-hand co-operation. This form of decision making requires higher levels of co-operation because both partners are actively engaged. A student explained, "One of us does the mouse for a while and one of us does the typing and then we swap over" (Interview).

Student co-operation comes at a cost to personal learning style and to the quality of the outcome because of varying levels of engagement in the task. For example, "It's a bit hard, because I like to do all this other stuff than my partner does – like sometimes I want to do better pictures and he doesn't want me to."

Generally, students enjoy working with others. Students recognise that a problem shared is a problem halved. For instance, a student explained he liked working with others, "because we usually have partners to help us and remember all the stuff that teachers tell you. We do half the program each" (Interview). Furthermore, students recognise that sometimes they are purveyors of help and sometimes they are on the receiving end. For example a student said, "Most of the time it's easier if someone knows more than you do, they can help you or you can help them" (Interview).

However, for other students the ultimate solution to the challenges of sharing is to have one computer for each student:

> "Generally you don't have to worry about other people using it, because here at Nativity we've got a lot of computers – they're quite often not all filled, so pretty much when you want to use a computer, you've got a fair chance of using it. There are plenty of computers, and I don't think I've seen a time, apart from F/kids lessons, when they've been totally full." (Interview)

When students choose a partner with whom to work, they usually prefer to select a friend. Students explained they preferred working with friends because "they understand and work with me" (Interview). Although friends are important, the students are discriminating as to which friends they call up as partners. For example, competency is an important issue. A student

explains, “Friends – and people who know something about computers, otherwise you’re forever explaining stuff to them, or you have to do most of the work” (Interview). The discrimination skills extend to even broader issues than pure competency. Qualities such as flexibility, intellectual value and an eye for quality were also important to students selecting a partner. Students gave reasons for selecting others such as, “Ashleigh – because she always agrees with everything, Courtney – she has a good imagination, Hannah – because she’s not fussy and because she chooses the best computer!” (Interview)
It seems that a friend who is good with computers is desirable but a friend who also stays on task would provide the ultimate partnership. A student illustrates this, “Andrew – he’s confident with computers and he doesn’t muck around much, he stays on task” (Interview).

In addition, students consider peers skill level as an important issue. Sometimes students like to choose a partner who had more knowledge and skills than themselves. On other occasions students like to choose a partner who had approximately the same skill level to avoid being patronised and to maximise cooperation amongst friends. The following comment illustrates this:

> “My two friends, Craig and Michael, because we’re not the best on computers in the class. And it’s best to work with someone who has the same intellect as you on computers because otherwise people might teach you like a baby. We know how to do different things, so we help each other out a lot and we’re also good friends.”

Interestingly, some partners have proved to be trouble because they are anything but cooperative. For example, a student said:

> “It’s hard because my partner, Jonathon, he’s always fiddling instead of going into the program. He’s always on a microphone talking, or fiddling around with pictures. It’s hard, because he always wants to go on the good chairs and using the computer. I’m usually on half of the time doing all the work and he’s on doing all the pictures.” (Interview)

Students enjoyed collaborating with others, particularly their friends. Students used various ways to enhance their collaboration, particularly decision-making techniques.

Summary

We found that the Futurekids curriculum engenders authentic learning and student engagement. Students consider their learning authentic, as they are able to connect their work to the real world. Students are engaged as they take responsibility for their own learning, are energized by learning, are strategic in their learning, and they participate in learning activities collaboratively.

There is a co-relation between the evidence gathered from students, staff and parents on at least the following points:

Analysis of the data clearly shows that students overwhelmingly have positive perceptions of their experiences with the Futurekids Program.

Over 90% of the Nativity students sampled exhibit a positive attitude to their experiences of the Futurekids learning program. This means that in the interviews more than 90% of the students answered in the affirmative when they were asked if they liked Futurekids.

Furthermore, all students had positive perceptions of communication and information technology. That is, in all interviews no students said that they did not like computers or that they thought computers were a negative phenomenon.

We also found that students, staff and students agreed that in the future students are going to need the skills required to utilise the applications of information technology [Which include multi-media, graphics, data bases, robotics and control, word-processing, desktop-publishing, telecommunications and spreadsheets].

THE IMPACT OF FUTUREKIDS

- All Nativity classes are provided with information, skills and access to the educational applications of word processing, multi-media, data processing, etc in a cohesive whole school approach using age and ability appropriate curriculum resources.
- Nativity students' learning is enhanced by their contact with Futurekids, they are engaged.
- The physical deployment and access to computers has been dramatically improved as a result of the implementation of Futurekids. The program would not be possible if students could not freely access computers in sufficient numbers.
- An extensive suite of software essential for Futurekids and this software in turn is needed by teachers and usable across the curriculum by all students.
- All staff at Nativity are involved in teaching the Futurekids curriculum and are rapidly improving their skills.
- Parents actively support the Futurekids program by paying the Computer Levy. Despite the conjecture raised when the Levy was first mooted it is not problematic.
- Teachers working collaboratively as they implement the Futurekids Curriculum
- Teachers are actively investigating ways with support of Futurekids staff that the new technologies can be applied across the other 8 areas of curriculum.
- There is strong accountability about teaching Futurekids
- Futurekids is a cost-effective strategy for promoting C & IT in Nativity

ESTABLISHING FUTUREKIDS IN ANOTHER SCHOOL

St Catherine's School at Stirling in South Australia has adopted the use of the Futurekids Curriculum in all classes following the success of the Nativity experience.

Nativity staff have suggested the following strategies to any other school which may consider using Futurekids

- Introduce the Futurekids curriculum across the whole school and take a whole school approach to all implementation processes.
- Establish display areas for teachers to use for Futurekids lessons. (Datapanel, Large monitor or large TV.)
- Inform parents via information sessions or general school meetings. Invite Futurekids representative to talk at these sessions.
- Invite staff to look at a school that has already introduced the program.
- Have a computer technician to solve network problems

CRITICAL FEATURES OF FUTUREKIDS

Nativity teachers have identified the following critical elements of Futurekids

- Whole school approach is desirable
- Skill based program where skills are taught with a purpose and sequentially.
- Theme based program which fosters motivation
- Provides professional development for staff
- Uses a wide variety of programs that are motivational and encourages the children to be 'switched on' to their learning.
- Able to be integrated in class activities
- Children are empowered to use the skills outside the set curriculum
- Having a good quality and easily accessible network is important.
- A staff that is fully behind the program.
- Coordination and feedback between Futurekids and the school.
- Gain support from parents
- Have a plan to purchase necessary technology
- Find appropriate areas in which to locate computers
- Support from the Futurekids company needs to be accessible
- Use the Futurekids curriculum, however you must add to the program by opening up other tasks supplementing and providing choice and range so there is ownership.

HOW WE WOULD IMPROVE FUTUREKIDS SECOND TIME AROUND

- Introduce the Futurekids curriculum across the whole school and take a whole school approach to all implementation processes from the beginning.
- Establish display areas for teachers to use for Futurekids lessons in each area of the school. (Datapanel, Large monitor or large TV.)

CONSTRAINTS TO BE CONSIDERED

- Staff's ability to have access to a computer at home.
- New staff and their computer skills.

REDUCED IMPACT ON STUDENT LEARNING OUTCOMES

- Certain teaching styles. Offering a step by step approach to the sessions. (Do this and then do this.) removing the chance for (What happens if I do this? I need to do this, maybe this will work. How do I get out of this? I might ask Jack, he could show me.)
- Technical hitches with the network and the ability of the teachers being able to rectify the problems themselves.
- Teachers' management of student behaviour on the computer and following the computer use policy. Breaches often meant a breakdown in a computers usability for the next user.

Comment: Need to deliver in a step-by-step manner first. Then experiement

CONCLUSION

IMPROVEMENT IN STUDENT LEARNING

There is little doubt that the project has produced an improvement in student learning outcomes. The results of our research and the attitudes of our teachers towards Futurekids show this.

One teacher commented;

"Children are motivated to learn and switched on using multimedia and technology. They are empowered to try new skills and to use the skills to help their learning."

The Computer Coordinator was originally sceptical about the Futurekids curriculum but can now see substantial benefits:

"Student's skills have improved dramatically. So much that we have noticed that the independence of students on the computers has increased. The feedback from the IBPP research has reinforced the level of success we have had. The demand for using the computers in other curriculum areas from students has increased."

INNOVATION AT NATIVITY

We have learnt the following criteria for the successful implementation of innovatory programs at Nativity.

- That a whole school approach is important.
- Staff commitment and support is vital.
- Physical resources must be adequate
- Equity of access to resources is essential
- The need to be aware of and accept that peoples opinions differ and some will be more enthusiastic than others
- To bring about change slowly so that problems and concerns can be identified and dealt with
- That people need time to adapt to change
- To continually reassess where 'we' are heading both formally and informally
- To find out what the children are thinking and to address their needs

FLEXIBILITY

Flexibility was a key factor in the success of the Futurekids program. For example:
It was very important that the school made Futurekids a priority and accommodated the extensive training sessions involved. It was important that staff were supported. Where required, half of a teacher's class was taken by the Principal or Deputy Principal to enable the teacher to teach a Futurekids class with fewer numbers. It was essential that staff could work collaboratively to prepare Futurekids lessons. Teachers who found it difficult to work collaboratively with others found Futurekids difficult. It was crucial to create a timetable for the network to enable teachers to utilise hubs of computers for Futurekids sessions.

WHAT WE HAVE LEARNED ABOUT FUTUREKIDS

We have established that Futurekids enables staff to become more confident in their own computing skills. They were able to use the computers outside of the Futurekids sessions in their daily lives completing tasks such as writing letters, timetables and email.

We now realise that students through their increased skills are placing more demands on teachers and computers. They have heightened expectations as to what you can do with computers as a result of Futurekids.

We learnt that the program can be successfully implemented into a school setting with outcomes altered to suit the needs of the students, teacher and school.

Learning specific skills is necessary to empower children to be able to use technology competently and successfully. Technology is a real life skill and is continually changing; therefore we need to change to grow with it.

THE IMPACT ON THE SCHOOL GENERALLY.

Futurekids has raised the profile of IT at Nativity at a local community level, nationally and internationally. Futurekids has given as a good grounding from which to move into the integration of the use of technology across the curriculum. A pleasing benefit was the emergence of collaborative roles amongst students and teachers in working through the Futurekids sessions. Highly developed group skills and cooperation were required to achieve the learning outcomes in the Futurekids sessions.

Futurekids has heightened parent interest in what is being learnt at Nativity in Information technology and given IT an increased importance as an aspect of education.

School Services Officers have also had opportunity for professional development. Teachers have been able to use the computer as a tool and this has taken pressure off office staff for tasks such as typing and record keeping. Futurekids has taught us that we need to be life-long learners. Change and innovations are around every corner. Futurekids provides us with some of the knowledge, skills and attitudes we need to cope with change.

Appendix 1 Research method used

Evidence of an improvement in student learning outcomes arising from the use of the Futurekids Communication and Information Technology curriculum was collected in the following ways:

1. A total of 50 Nativity students (five students from each class) at Nativity (Reception – Year 7) were interviewed by a team of three Nativity teachers using a two-page questionnaire (See Appendix). The interviews were audiotaped and the student responses were later transcribed. 75 pages of transcript were produced for analysis.
   Students from Reception and Year 1 classes were interviewed using a technique, which involved the frequent use of clarifying questions and note taking, by the interviewer.

2. Nativity class teachers were interviewed concerning the Futurekids. Notes taken in these interviews together with written testimonials from some staff were collected for analysis.

3. Student Assessments from the Futurekids Program undertaken in 1998 also provide evidence of student attainment. These assessments are contained in the yearly Student Learning Logs kept by each student at each year level at Nativity.

4. Questionnaires have also been circulated to some parents of students in the sample group.

5. Documentation of significant physical changes made to the school to accommodate the teaching of the Futurekids C&IT curriculum is also available.

6. Observations made in the student use of computers since the introduction of the Futurekids Curriculum have also been documented.

7. Interviews of total of 30 students from St Catherine's Parish school in Stirling S.A. were conducted by two members of the interviewing team to gain a comparison with Nativity. St Catherine's was chosen for two reasons. First, according to the Ross Farish index of education advantage, St Catherine's serves a similar clientele of students in terms of educational opportunity. Second, St Catherine intends to implement the Futurekids Curriculum for the first time in 1999. The questions to St Catherine's student excluded references to Futurekids with which they are not yet familiar. The enquiry was directed to student attitudes, knowledge and skill level in relation to the educational applications of computers.