



iPodagogy - using iPods and Video Podcasting for Learning



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1 EXECUTIVE SUMMARY

In the digital age, young people will need more than basic literacy, numeracy and technology skills. To be informed citizens able to contribute to society, to express themselves clearly and to lead happy and fulfilling lives, young people will need to learn to think in innovative and creative ways about complex issues.

The rise in popularity of handheld devices such as the iPod amongst young people means that their greatest use of technology is outside of school. Students consider themselves more technology-savvy and Internet-wise than their teachers. When their technology literacy is less than their students and their teaching resources do not compare with the Internet, teachers are unable to be the classroom authority figures that they were in the past.

This research project investigates the potential of the iPod to engage and stimulate students in a cross curriculum approach embedded within the Victorian Essential Learning Standards, and to improve teachers' use of ICT in the classroom through the concept of iPodagogy, that is, innovative ways of teaching using iPods and video podcasting.

Students at home have access to a range of mobile technologies that are not present in schools and are engaged and motivated by a range of emerging technologies and social software that enable communication and collaboration. Teachers are excited by the opportunities to work at the leading edge with emerging technologies and are keen to make a difference to student engagement and learning.

What this research shows us is that new technologies and innovative pedagogies are successful if they are teamed with sound pedagogical discussions, strong school planning and classroom based support. Innovative and informed teacher pedagogy lies at the heart of any significant change within the traditional environment of schools. The reality is that technology requires a rationale that guides its use in pedagogical contexts.

What the research further reveals is that emerging technologies have the potential to change teacher pedagogy to a learner-centred approach that alters the relationship dynamics and promotes greater levels of higher-order thinking by student in classrooms and at home.

This research project indicates that personal, portable, handheld devices that provide flexibility, accessibility and frequency of use, can increase motivation, organisational skills, active learning and self-directed learning. They provide 1:1 access in schools leading to more engaged students, and, linked with a virtual learning environment, their portability extends learning into the home – the concept of m-Learning, with which students are very comfortable.

'Children will soon be bringing their own powerful networked multimedia computers into the classroom' (Sharples, 2006). What will be the reaction from schools – ignore, ban, embrace or manage?

2 INTRODUCTION

The gap between technology devices used in everyday life and those used in schools continues to widen, as new and emerging technologies overwhelm the capacity of schools to keep pace. Today's students use mobile, portable devices as a matter of course in their lives outside school, yet are faced with a schooling system largely still based in print. Young people, in this age of information and creativity, reach for the Internet before they reach for printed texts.

The project titled iPodagogy: using iPods and Video podcasting for Learning investigates students' attitudes to and ownership of emerging technologies, and examined the use of iPods and video podcasting in a school setting, with emphasis on the impact on student learning and on teacher pedagogy.

It was essentially a learner-centred project, where the views and ideas of students about how emerging technologies can enhance engagement were investigated and tested in a practical environment. Teachers were also encouraged to look creatively at their teaching practice and to work on strategies that could be articulated for others on using emerging technologies.

It is envisaged that other schools and teachers wanting to implement iPods and video podcasting may learn from the experiences at Heathmont College and plan their implementations based on knowledge gained from the outcomes of this project.

2.1 Background to the Project

International and Australian research indicates that handheld devices can have a positive impact on learning experiences for both educators and students. The project sought to test this principle in an Australian context, focusing specifically on how iPods and video podcasting might be used to increase engagement and promote ICT integration in line with the Victorian Essential Learning Standards in the Middle Years curriculum.

This project investigated the potential of the iPod and vodcasts to engage and stimulate students in a cross-curriculum approach embedded within the Victorian Essential Learning Standards. It also looked at whether the concept of iPodagogy could promote teachers' use of ICT through the innovative use of iPods and video podcasting in classrooms.

A class of twenty-five Year 8 students were each given an iPod and six Apple MacBook laptop computers to share with six of their teachers to integrate them across the core curriculum areas. The virtual learning environment, Studywiz provided teachers and students with an intuitive eLearning space that could be synchronised with iPods and accessed from home. The learning content management system, Equella was integrated with Studywiz to provide teachers with a repository to manage the digital content used in this project.

An alliance was formed between the Department of Education, Victoria, and Delphian eLearning to conduct the research. Heathmont College was selected as a typical school with a cohort of typical students, not a well-funded high-tech school. Three corporate partners were brought on board in a unique association, in order to provide the necessary infrastructure to the school. Apple Australia provided hardware, eTech Group provided a virtual learning environment and The Learning Edge International provided a learning content management system. Technical support and skill-based training for teachers was also provided by the companies.

2.2 Scope of the project

The specific objectives of the research project were to investigate the potential of iPods, video podcasting and iPodagogy to support learning and teaching, focusing on:

- the use of information and communication technologies outside the classroom by young people and the impact of these activities on their learning
- the capacity of iPods, that synchronise audiovisuals with an integrated learning content management system, to enhance student engagement
- the capacity of iPodagogy (using iPods and video podcasting for teaching and learning) within an integrated learning content management system to embed innovative teaching practice.

One class, 8F, at Heathmont College was selected, as representative of typical students across Victoria. Similarly the teachers involved were not expected to be highly skilled in using ICT across core curriculum areas, merely to be motivated and enthusiastic about making a difference. Six regular 8F teachers of English, SOSE, Maths, Science, Music, German, Health and Physical Education were invited to participate.

Term Four 2006 was set aside for the establishment of the project. This included installation of the virtual learning environment, Studywiz, the learning content management system, Equella, provision and set up of the Apple equipment and the iPods, initial training of the teachers, curriculum planning and administrative arrangements such as policy development for use of the handheld equipment.

The project commenced practically in Term One 2007, with students being given their iPods at the start of the year, and training in the production of podcasts commenced. Implementation of the project continued through to the end of May 2007, halfway through Term Two, essentially for four months of classroom practice.

2.3 Approach to the research

The Project used a number of research methodologies, including action research, case studies, evaluations and interpretive research. These involved collecting data through a range of approaches including a literature review, interviews, online questionnaires, attitude surveys, teacher reflective journals and vodcasts. Both quantitative and qualitative approaches was used.

Students and teachers were surveyed online before the project commenced to establish quantitative baseline data on their knowledge, skills and use of emerging technologies. An exit survey was conducted at the close of the project to provide a basis for analysing their responses to emerging technologies for learning. All teachers and students reflected on their feelings, observations and attitudes at various times through out the project and were interviewed as a final reflective piece on the whole project.

Action research formed the basis of teacher reflection based on their work in teams. It gave the teachers new opportunities to reflect on and assess their teaching practice; to explore and test new ideas, methods and materials; to assess how effective the new approaches were and to share feedback with fellow team members. Their reflections took the form of online reflective posts, vodcasts and interviews.

Student research was based on student engagement and learning, and targeted relevant areas to the school such as the development of literacy and numeracy skills,

reflective learners, 24x7 learning. Student-produced vodcasts were uploaded into Studywiz, the virtual learning environment provided for the project or into iTunes.

The interoperability of iPods with a virtual learning environment and a learning content management system was also evaluated and a case study developed.

Department of Education Research Priority Areas of Interest for 2006-2007 provided a backdrop for the research questions. These are:

1. Increase learner participation, engagement and achievement
 - 1.1. Effective and sustainable approaches to improved literacy and numeracy outcomes
 - 1.2. Increase participation and achievement particularly in the areas of Indigenous, SES, place, disability
 - 1.3. Future directions for ICT use in education and training, learner benefits and implications for pedagogy and the learning environments

The research questions fell into two broad categories – those to do with students and learning, and those to do with teachers and teaching.

Student learning questions aimed to investigate the use of ICT and emerging technologies by young people, both outside and in the classroom, and the impact these activities have on their learning. Students were surveyed to find out about:

- the technologies they have
- their acquisition of skills and current skill level
- the frequency of use of ICT
- the potential of emerging technologies for learning

Teaching pedagogy was a central core of the investigations and teachers reflected on their practice in numerous pedagogy sessions where they shared their successes and problems. Flexibility and the desire to change from non-traditional classroom approaches was a focus for the discussions.

The research also aimed to investigate a number of teaching and learning elements and how they are influenced by the use of iPods and video podcasting such as the potential of emerging technologies as instructional tools, as personal organisers for students, for their motivational effects, convenience, communication and collaboration potential.

2.4 Reflections on the literature

'iPod therefore I learn' (Thomas, 2006).

Much is now written about iPods and a significant number of research reports, reviews, articles and practical projects were scanned for references or information on the latest thinking about iPods and video podcasting. Many of them outlined what is happening in classrooms, lecture theatres or tutorial groups, but few concentrated on the learning outcomes or the potential impact on students' learning. Even fewer look at what is happening with teachers and the potential impact on pedagogical change, or on the school design of learning spaces and culture. It is obvious that further research on the educational implications of emerging technologies is much needed.

As the iPod has developed, so have a plethora of smaller portable mobile devices such as Personal Digital Assistants (PDAs), mobile phones, PlayStations and the like. These developments have converged with the consolidation of the laptop and

wireless access to provide a rich environment for mLearning – the use of small handheld devices anywhere, anytime.

The rise in popularity of handheld devices such as the iPod amongst young people means that their greatest use of technology is outside of school. Students generally consider themselves more Internet-wise than their teachers and they indicate that their teachers' use of technology is uninspiring (Oblinger, 2003).

International research indicates that handheld devices have a positive effect on students' learning. Research studies such as the Willard R-12 schools in the U.S. have found that the vast majority of teachers believed the devices can have a positive impact on students' learning, were easier to integrate into classroom activities than desktop computers, support an increase in homework completion and are an effective instructional tool (Willard R-12 Schools, 2004).

It has long been accepted that students can learn from viewing and interacting with visual media such as video and television. 'Now cognitive research has shown that viewers observe, interpret, and coordinate all the information in the video to make their own personal sense of what is being communicated' (Metiri Group, 2007). Innovative research that is emerging suggests that 'video can add rich context to students' learning experiences without increasing cognitive load on working memory, translating into increases in complex, higher-order thinking' (Metiri Group, 2007). With the emerging use of video podcasting on iPods and other handheld devices, the use of interactive content will continue to occur. This of course includes interactive digital learning objects linked to the curriculum as in the simulations and animations developed for Australian schools by The Le@rning Federation. Multimedia has the power to engage students visually, cognitively, emotionally, socially and civically if the content is of high-quality and is teamed with sound pedagogical application.

For some schools, the spread of handheld portable devices has meant that they can now embrace a 1:1 policy, that is, one student to one computer or handheld device. However, this has highlighted two distinct aspects of mLearning – 'safe learning' and 'disruptive learning'. 'The first extends what we are already doing into new places, and the second helps us think differently about learning: learning in a more personalised way, handing over more control to the learners themselves.' (Becta, 2006). Studies on 1:1 are now indicating that a device in the hands of each learner increases student engagement with learning and 'promotes a shift in teaching practice to more collaborative, small-group work that is student centred and problem based, demanding more higher-order thinking' (Metiri Group, 2007).

Duke University's research on the use of iPods with first year students reported that 'innovation and experimentation for academic iPod use was widely reported as well, with 75% of first-year students reporting having used at least one iPod feature in a class or for independent support of their studies' (Duke University, 2005). Students were able to listen to content outside their normal study times, while travelling to and from campus, or moving between activities. It also reported that increased student motivation was noticed by faculty, primarily as a result of higher levels of student independence promoted by the technology.

Barriers were reported as being largely related to technical limitations, content management and user training. Institutional impacts included increased communication and collaboration and an impetus to the conversations about the role of ICT within teaching and learning. While many of the suggested advantages will need to be researched, a series of challenges were also identified. As with most emerging technologies, academics appeared to install and use the equipment, before thinking about the pedagogical implications. On the technical side, the device's short

battery life remained an issue, as well as problems related to sharing files between different iPods and other media players.

The Duke iPod program has been running for three years now. In 2007, more than 1,300 students and 85 academics are using iPods in 71 courses, with a heavy emphasis on language and the humanities. In the most recent evaluation, researchers noted some promising elements:

'Faculty continued to use iPods to support their teaching, most commonly by listening to student recordings; recording student consultations or oral exams; preparing original recordings for student use; recording lectures or course discussions; and in-class display and playback of audio, image and video materials.'
(Duke, 2006)

The potential to make digital video and enhanced audio files accessible to students in downloadable format has enabled lecturers to increase the use of multimedia resources, particularly for Languages, Media Studies, Film and Video and Public Policy.

Gracemount High School in Edinburgh, Scotland, ran an iPod project in 2005 with twenty students and ten teachers. Podcasting was a great success in relation to both teacher and student generated podcasts. The interim evaluation of the Gracemount project suggested that:

- the students felt it made life and learning more interesting
- the students and teachers felt that students were not only completing normal homework but extra iPod based homework
- the staff were given one day PD at the beginning of the project and a little support at later stages – this was inadequate
- the project enabled staff to utilise archival video/visual material and distribute this to students where it might have been difficult before

As with any emerging technology in education, the iPod has its supporters and detractors. Carvin (2007) comments that 'K-12 schools around the country are beginning to ban students from carrying MP3 players, fearing they may use them for cheating. Yet at least one university is embracing the exact opposite approach - giving every incoming student an iPod to enhance educational practices and promote academic responsibility.'

Students have been found downloading to their iPods such things as formulae, charts and tables relevant to tests and using their hidden iPods in inappropriate ways (The Associated Press, 2007). This highlights the need for policies for iPod use, in just the same way that schools have regulated the use of mobile phones. In the early days, schools simply banned mobile phones, but within three or four years, the more innovative schools had introduced policies to manage their use. Some have even investigated the capacity of mobiles to be used for learning.

It's not that students aren't capable of using handheld technologies responsibly. Educators who have considered the pedagogical benefits of using iPods, including the motivational value to students, can encourage appropriate use in learning, just as they have with pens and paper. The possibilities are endless and it will be the creativity and imagination of teachers and students that drives the uptake of emerging technologies such as podcasting and video podcasting. Jobbings (2005) has attempted to look at the pedagogical implications and has raised three potential areas that could be realised by podcasting or video podcasting, these being:

- devising a cross-curricular activity

- providing alternative teaching approaches
- promoting and using personalised learning.

Jobbings has gone on to align the tasks in making a podcast with the UK national ICT curriculum objectives as outlined in the table below.

Podcast Activity	ICT Knowledge, skills and understanding
Design and plan a podcast Consider focus, content and format of audio materials Identify and acquire the sources of audio material to include within a podcast	Finding things out: a) to consider systematically the information required and to discuss its use b) how to obtain information suited to the purpose by choosing appropriate sources, using and adapting search techniques and questioning the value of the results c) how to collect/enter/analyse/judge quantitative and qualitative information and check its accuracy
Prepare scripts and plan recordings of audio material (talk, music, SFX)	Developing ideas and making things happen a) To develop and investigate information, solve problems, produce new information for specific purposes
Record the podcast Record and edit audio material (talk, music, SFX)	
Produce and publish a podcast	Exchanging and sharing information
Design programme, considering style, content and forms of audio	a) how to make sense of information to reorganise and present it in a range of forms that fit the purpose b) efficiently use a range of ICT tools to draft, combine and refine information, creating good presentations suited to the needs of others and to the content c) the way to use email and other ICT to exchange information effectively
Record, edit and master audio material in different forms to produce suitable content	
Publish and listen to the podcast as part of an RSS feed on a website	

Table 1: Podcasting and the UK National Curriculum at Key Stage 3 (for 11-13 year olds) (Jobbings 2005:3)

Such a systematic approach to the skills inherent in the use of podcasting provides a valid framework for further research on the topic, and a way for those engaged in existing projects to begin to assess the learning skills and objectives involved.

It is clear, that much of the research focuses on how to use iPods, podcasting and video podcasting in the classroom and what to do with them, but the challenge to educators and researchers is to identify their value in terms of student learning outcomes and teacher pedagogy. They have much to offer.

3 SETTING THE CONTEXT

3.1 Heathmont College

Heathmont College was chosen as it was deemed to be a typical school in the state of Victoria. Heathmont has a student population of approximately 950 students with a mixed socio-economic feeder zone of lower to middle income families. It has not been a College subject to large funding injections for technology equipment, but has managed to develop its infrastructure through regular school planning. Small grants have been received for the purchase of some multimedia equipment in the past year.

The College plans to develop an ICT and eLearning Strategy this year. In terms of ICT resources, the College has five computer pods each with eight computers located around the buildings. They have well over thirty computers in the library and three full computer rooms located in three separate buildings. They have three mobile trolleys with six laptops and cameras in each of three buildings. A travel box on wheels houses six MacBooks and microphone equipment for the iPodagogy project. Six wireless data projectors have been hardwired into rooms in each major block (including the Library and Drama Room), a projector has been added to each trolley and one is provided solely for professional learning use. Over thirty digital cameras and more than ten digital movie cameras have been added to the mix in the past two years. Heathmont College has invested a significant amount of funding to update equipment over the past two years, with the assistance of a Federal Government grant.



Figure 1: Apple laptop trolley

3.2 Policies and management

Heathmont College developed a new policy with the introduction of the iPods, titled Mobile Phone/Digital Device User Policy which opened up the opportunities for staff to use iPods as learning devices and distinguished them from phones. This was published in the student diary and is attached at Appendix A.

In 2007, a new policy updated the previous contract for student use of the network and it was also published in the student diary. As part of the iPodagogy project, all parents/guardians of 8F students were required to sign a consent form agreeing to their participation in the project. The letter from the College outlined the project objectives, the expectations for use and care of the iPods by students, and the intellectual property and copyright releases for student work for use by the major project stakeholders.

In terms of managing the iPodagogy project, the Assistant Principal co-ordinated the elements: the class, the equipment and the teachers, facilitating access by the researchers to the regular pedagogy meetings, class visits and opportunities for viewing class work onsite or online.

The teachers were co-located in the one staffroom with the exception of one teacher. This is usual for the teachers of Year 8 at the College and is done so that

the teachers become a team in the real sense of the word, regularly interacting on a daily basis with each other about what they are doing or about the students.

3.3 Emerging technologies

Apple Australia agreed to provide technology hardware, eTech Group provided a virtual learning environment to enable students to access their work from school or home and The Learning Edge International provided a content management system.

Heathmont College was provided with the following emerging technologies:

- Thirty 60g video iPods
- Five MacBook laptops
- Two microphones
- A virtual learning environment – Studywiz
- A learning content management system – Equella



Figure 2: MacBook and video iPod

The eLearning platform was setup on a school server, after much discussion between the companies and the school technicians regarding remote access for students, security, firewalls etc. Access to Studywiz from home was made available to students using authentication passwords, to enable students to access their classwork, to download assignments and upload their homework.

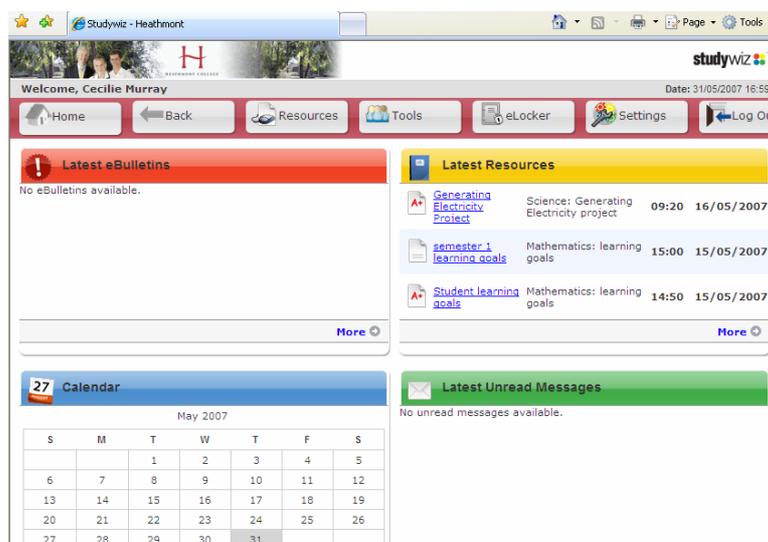


Figure 3: Studywiz virtual learning environment

3.4 Teachers' confidence and capabilities

The teachers in the iPodagogy project were invited to participate as a team of teachers managing Class 8F. They cover seven curriculum areas – English, SOSE, Maths, Science, Health and Physical Education, Music and German. In terms of experience, the teachers represent a mix of longevity of service, senior responsibility, new recruits and industry experience. Their ages span the full spectrum from twenty-two to fifty-five. The one thing that unites such a diverse group is that they are all enthusiastic and want to make a difference.

The teachers were not expected to be highly capable or confident with ICT, but they were expected to be keen to learn new skills. In the teacher pre-entry survey, they reported that they:

- were 'expert' or 'confident' in word processing
- were reasonably 'confident' in spreadsheets, presentation software and multimedia
- were reasonably 'expert' in email and Internet research
- had some experience or confidence in digital photography, video and animations
- had little confidence with digital learning objects or thinking tools
- had some experience with blogs, wikis and discussion forums
- had little experience or confidence with podcasts
- had little experience with handheld technologies such as iPods

The teachers each have a PC laptop as a teaching tool which they use on a day to day basis; none had skills with using MacBook laptops. Their experience using online services varies but is significantly less than that of their students. They use email daily but rarely use instant messenger. They sometimes purchase goods online, often getting their news and keeping up with current events online. They regularly use online services for banking and paying bills. They rarely create blogs or websites, download music or podcasts. While they regularly research online information for lessons, they rarely prepare or upload student activities to the school intranet.

3.5 The Students

The twenty-five students in class 8F are of mixed ability and generally come from lower to middle income families. The class is made up of nine girls and sixteen boys with a wide range of ICT skills.

20% indicated they started to use computers before they were six years old, over 40% between the ages of six to nine years old, 25% between the ages of ten and twelve and 20% were twelve years and over. Considering that they are all about 14 years old now, at least 40% of the class have only started to use computers in the last three years. Almost half the students indicated that they developed their ICT skills by themselves, with some support of family and friends, but less support from specialist or general classes at school.

All of their home computers are PCs and 65% of them run Windows XP. Only two students did not have the Internet at home, while 60% had cable or ADSL, with 25% still on dial-up access. Graphical representations of this data can be found in Appendix C.

4 IMPACT OF TECHNOLOGIES OUTSIDE SCHOOL

'iPod therefore I listen to music' (Thomas, 2006).

Predominantly the greatest use of technology by students at home on a daily basis is using a mobile phone (over 80%), MP3 player (78%), desktop computer (65%), X-Box or Playstation Portable (35%). There is less use of digital still and video cameras at home, although most students do have access to digital still cameras. Detailed information can be seen in Appendix C.

Prior to the commencement of the project, few students had used their home or school computers to access vodcasts, blogs or the school portal, conduct Internet research or create publications. What they were doing *daily* was downloading MP3s or MP4s (50%), using Instant Messenger (40%) and email (30% daily and 40% weekly). This indicates that wherever they can get access, either from school or home, the students' main interests are in listening to music or keeping in touch with friends. 'iPod therefore I listen to music' (Thomas, 2006) is indeed appropriate and was confirmed through student interviews.

In terms of ICT skills before the project commenced, students rated themselves as being:

- 'Expert' at the Internet (60% of students), word processing (52%), presentation software (52%), email (40%)
- 'Confident' at spreadsheets (78% of students), diagrams and mind-maps (52%), word processing and presentation software (50%), Internet and email (40%), College intranet and multimedia software (38%)
- 'Some skill' only in video podcasting (55% of students), College intranet (50%), digital photography, digital video and music production (approximately 40%)
- 'Not confident' in music production (30%) and video podcasting (25%) followed by digital photography and video (approximately 20%).

What these ratings tend to indicate is that most of the students are confident technology users, with many considering themselves experts using online services. The skills they tend to feel less confident in are those where stand-alone devices are used for specialised activities such as digital video or music production.

Throughout the four months of the project, students had to learn a significant set of new skills including using MacBooks, accessing Studywiz, making vodcasts and using their iPods. As they were using these technologies in general curriculum classes, this played some role in developing their skills, however they indicated that learning from friends or by themselves played a major role in the development of new skills.

During the project students' home use of computers and digital still and video cameras increased whilst mobile phone and MP3 player use showed a small decrease. What this means is that what students were doing at school flowed on to what they were doing at home. Students accessed the school portal more, and there was a slight increase in the use of vodcasts. Studywiz, statistics indicate that all students accessed the software at school, with half logging on from home, submitting assignments, some late at night, with the highest usage averaging once a night for the duration of the project. Students also showed an increase in their use of Internet research, blogs and experimentation with other types of technologies such as PDAs. Although the number of students with access to a laptop at home didn't change, use of the laptops became more regular.

In terms of expertise and confidence, there were improvements overall in video podcasting, music production, digital video and College intranet (Studywiz). Students rated themselves as having less confidence in Internet research, presentation software, spreadsheets and word processing, which were their strengths in the entry survey. At interview students indicated that they had to learn to use Apple version of these applications, where as previously most of their skill was with PC based computers.

At interview the majority of students indicated they had learned new skills in the areas of using Studywiz, iPods, video podcasting and MacBooks. They also indicated in response to the same question that they had learned to make their own vodcasts, to view teacher vodcasts for understanding curriculum concepts and as revision for tests. Many also indicated that they learned more about 'how they learn' and this will be discussed further in the following section.

The survey data over time and the student interviews seem to point to students' assessment of their own skills being more incisive and analytical as they learned more. This is reflective of their age and the fact that they were exposed to different technologies. They have become more aware of their skills and the increase in the diversity of their skills as they learned more. At interview many of them said they loved the involvement in the project and that they would miss the technologies, but they wouldn't miss the associated workload.

Students were asked their opinions of the technologies used and whether they would recommend these technologies to other schools and students. The majority of them (52%) indicated that they would recommend MacBooks as they were "fun to use and easy to use" (Dean, 8F), "you can make movies rather than posters" (Katie, 8F) and that "they have a wider variety of software for learning (Luke, 8F). Almost half of the students recommended Studywiz (44%) as they could "submit assignments and see what the teacher wants" (Leah, 8F), "organise all your stuff together in the one place and it's easier than the school network (Bianca, 8F) and "submit all projects and teachers put up bulletins and reminders and discussions" (Katie, 8F).

A third of the students recommended iPods as "I like to watch the iPod screen as I concentrated more" (Matt, 8F), "the iPods gave quiet to learn when I'm ready" (Katie, 8F) and "it was good to have the iPod with me out on the field. I listen to music in class and get more work done. Mates talk to me and I put the earphones in and listen to music while I work" (Matthew, 8F).

Video podcasts were also recommended for other schools and students as "it's easier to understand than board work as it breaks it down into little parts making it easier to learn" (Natalie, 8F), "if I didn't understand I could go back over and over until I did" (Blake, 8F), "vodcasts are clearer and explain more with your own teacher talking [in them]" (Bianca, 8F), and "the textbook shows what you are meant to do, video shows *how* you have to do it" (Dean, 8F).

Students were asked about other emerging technologies that in their opinion would be useful for schools and that they would recommend. It was interesting to note the thoughtful way in which students considered this question. Most students thought that mobile phones would be useful in terms of communication, sharing information, calculation and transfer of files using Bluetooth. Some indicated that games would be helpful to learning and that Playstation Portable was an example of a single console that had numerous features, such as games and Internet access. There seemed to be a consensus that a single handheld device would be the most useful in the years to come.

5 IMPACT ON STUDENT LEARNING

'iPod therefore iWrite' (Vallance, 2007)

In order to measure any impact on student learning, students were surveyed online before the project commenced and at the end of the project. They were also interviewed individually once the project was completed. The main focus was to ascertain how the students performed at school and whether the iPods, MacBooks and Studywiz had a significant impact on their engagement, their learning and their attitudes to school.

The iPods were given to the students at the beginning of the project for them to use and care for as individuals. They had total responsibility for the iPods and could take them home each day. Most students had an MP3 or MP4 player prior to the project, but there were still a number of individuals who had never used them before.

Students' attitudes to school were surveyed, with the vast majority indicating it was OK to go to school, with most students missing two days or less per month. In the exit survey four months later, student dissatisfaction with school had increased, as nearly half the students indicated they didn't like coming to school, with a slight increase in their absences. There could be many reasons for this including that they are more positive about school at the beginning of the year and less willing to come later in the term. On the other hand, at interview, students were asked about issues or problems they experienced during the project and the majority (64%) cited too much homework or too much extra work as significant. This mirrored the Gracemount iPod Project outcomes and will be discussed further in more detail.

Students were asked to rate themselves against a set of indicators on their attitudes to school. In general, indicators such as natural curiosity and participation in class have improved over the life of the project; attendance, organisation and preparation for class and completion of classwork and homework all showed marginal decline. When interviewed, student perceptions were that they were not performing as well as other Year 8 classes, based on uniform progression in curriculum. Many of the students thought that they were falling behind in their work when they were on a different page of their Maths textbook to the other Year 8s. This is rebutted by the teachers who claim that 8F is ahead of all the other Year 8s in all curriculum areas; they have simply covered the work in alternate ways, a perception not always clear to the students. This will be covered in more detail in the section on teacher pedagogy.

When asked how often they used ICT tools and applications in various curriculum areas, students reported an increased use in the areas covered by the iPodagogy project, that is LOTE, Health and Physical Education, Maths, Science, SOSE and English. They reported less use in the Arts, despite Music being included in the project, due to ongoing absences through illness of the Music teacher.

In relation to technologies generally used in class for learning, students reported an increased use of digital video, use of laptops and desktop computers and MP3 players. Some students reported use of PDAs and games consoles for learning and this may have been in classes outside the project.

At interview, students were asked to reflect on whether they had discovered anything new about themselves and the way they learn using the emerging technologies. About half reported that they learned better by doing things and liked to be active learners. "I'm more of a hands-on person – I liked listening to them [podcasts] and watching it as well" (Tyler, 8F); " Maths podcast was visual and

helped" (Mahsa, 8F); "I like to learn actively, don't like to sit there writing...it made me plan and think more about my work" (John, 8F) and it is "better to use technology than pens and paper...I learn better with technology" (Blake, 8F).

While some indicated they liked to work from textbooks, most said using the technology was fun and viewing the podcasts had improved their performance or test scores: "I watch and learn everyday so podcasts helped me" (Sasha, 8F); "teacher podcasts helped me learn how to bowl – I could review the podcasts and try it myself. It was good to have the iPod with me out on the field" (Matthew, 8F); "I used the teacher podcasts – did good on the Maths test – if I didn't understand I went over and over it and then understood" (Blake, 8F) and "teacher podcasts helped me a lot, I passed the tests – looked at the podcasts the night before the tests" (Michael, 8F); "podcasts from teachers were pretty cool and portable to take anywhere...watch them from home" (Dean, 8F).

iPods can be an effective way to take work home, and the use of iPods in the classroom holds and heightened student interest, engages students in learning, and provides yet another means for expressive and receptive literacy. Thus, professors reported that students seemed more engaged in classes where they could use the iPods' (Dogeby, 2007). Heathmont students reported that iPods were useful as "you can learn at your own pace while the class is being silly" (Katie, 8F); "I liked to watch the iPod screen as I concentrated more" (Matt, 8F); "You can listen to music in class and get more work done. Mates talk to me and I put the phones in and listen to music while I work" (Matthew, 8F). This is borne out by previous research in which "a fair number of students... report using the iPods or similar devices as a way to block out distractions, especially the chatter of those who are not so concerned about working, while they are working. Students with ADD or ADHD have also been observed to become remarkably focused if they are able to have an iPod with them; it probably helps to give them control over the amount of sensory stimulation" (Dogeby, 2007). Some of the students also said that while the iPods have potential in the classroom, they are still underutilised. In terms of memory, a 60g hard drive is like having a laptop in the palm of your hand.

Some students learned that they can perform well as part of a group and these comments are particularly interesting from those who are on the social periphery: "discovered that I can learn quickly and help other people learn quickly using technology" (Natalie, 8F); "learned that I can take control of the group a bit to get the job done as soon as possible" (Michael, 8F).

Student comments were quite revealing about themselves and the way they learn: "Reflecting on video made me think more" (Dylan, 8F); "we matured a bit and learned to work together" (Michael, 8F); "it's a step further in our learning" (Sasha, 8F). Some students who cope well with print literacy and the traditional curriculum, struggled with technologies: "I need to learn to use my time better – talk too much, don't concentrate on my work enough. I didn't listen when things were being explained" (Luke, 8F); [Using technologies] the learning was more complicated, normal work is easier" (Mahsa, 8F).

They reported that they had "the iPod work and the classwork on top of it" (Krystal, 8F), "the work was harder and the class was noisier" (Brad, 8F) and "some of the teachers gave us iPod work on top of school work and it took time for them to settle into it" (Natalie, 8F). Some students, however, indicated that the workload was not an issue, that being involved in the project meant that "putting more work in yourself helps get you ready for Year 12" (Sasha, 8F). Others indicated that the perceived workload was a teacher issue: "iPod and the school work a teacher issue –

iPod work at school, schoolwork at home, was OK for every now and then" (Michael, 8F).

At issue is the students' perception that they had twice the amount of work compared with the other Year 8 classes. According to the teachers, 8F did not have a significant amount of homework and there is no evidence that they did spend extra time doing their homework. In fact many teachers called into question the perception of students in 8F having to keep up with the other classes in an otherwise traditional school. The teachers, in fact, reported that 8F had progressed further than the other Year 8s in all curriculum areas and also in behaviour, motivation and responsibility by the end of the project. Teachers also discussed the impact of the technologies on the increased level of higher-order thinking required by the students which added to their perception that the work was harder. This is borne out by Metiri Group research cited in earlier sections, and discussed further in the Teacher Pedagogy section.

"A podcast is like few other devices that a teacher can use in advancing a student's development...It teaches them to do research, to communicate in print, to speak effectively and grab attention with sound"(New York Times, in Else, 2006).



Figure 4: Cricket vodcasts (Michael Regan, 2007)

In terms of students making their own podcasts, the majority indicated that they enjoyed the experience, learned new skills and learned to work in groups, albeit difficult at times. Students reported that they liked making the podcasts in English about their families which are in the main insightful, well-planned and emotive responses. The teacher indicated that students drafted and redrafted their scripts, rehearsed and re-recorded their podcasts when they saw how they appeared on video. For many of them it was the first time they had seen themselves on film and many were prompted to review the content, appearance, body image and delivery of their talk. For some it was a personally harrowing experience to have to speak about their family and homelife, producing empathy and tears from others in the class. For others, an uplifting experience to praise their parents or relatives on being wonderful people.

Science Practical Reports were also made into vodcasts, following the scientific method, with students videoing the practical experiment and then reporting on their results in the form of a vodcast. They recorded the aim, apparatus, method, results of the activity and drew conclusions and reflected on them. The quality of their reflections were very insightful, exhibiting a level of deep thinking with regard to their conclusions and performance as a team, rarely seen at a Year 8 level.

Jobbings (2005) framework for podcast activity (see page 7) aligns closely with the Victorian Essential Learning Standards for ICT – ICT for visualising, for creating and

for communicating, as students plan and design their vodcasts, draft and review their audio scripts, record and edit the video material, publish and review the video podcast. The process also develops literacy (verbal, written and technical) and numeracy as they conduct and time their vodcasts.

Teachers were asked to comment on whether an iPod for each student promotes greater independence and engagement in learning. Becta (2007) concludes that 'the use of ICT seems to engage pupils, resulting in more on-task behaviour, greater persistence and deeper understanding...and it appears to support and encourage greater collaborative activity, inquiry or problem-based learning and independent study.' These findings appear to support what was discovered in the iPodagogy project. Teachers reported that work output increased and improved in quality; students were "more independent and focused"; "kids who struggle listened to music while working which was better for them"; "engagement increased for boys particularly, they would do the work and listen to music"; for one teacher "none of them ever came without their iPod – responsibility is an expectation"; "it was good for student reflection"; "Science was more engaging with podcasts and Maths helped the weaker students."

Research studies indicate that young people who have learning difficulties are able to carry out exciting and rewarding learning activities with computers, something that wasn't possible with books, for example, a group of fourteen visually challenged adults are using Apple iPods in a pilot project to develop a flexible way of providing audio information and access to text based materials (aclearn.net, 2007).

What we have seen in this research project is that personal, portable, handheld devices that provide flexibility, accessibility and frequency of use, despite their small screen size and limited battery life, can increase motivation, organisational skills, active learning and self-directed learning. They provide 1:1 access in schools leading to more engaged students and their portability extends learning into the home – the concept of m-Learning, with which students are very comfortable.

6 IMPACT ON TEACHER PEDAGOGY

'Education professionals recognise that the students generally know more than their teachers about "doing" digital. So even if they wanted to...they cannot be the classroom authority figures when their digital literacy is not on a par with their students, and when their information resources do not compare with those of the internet' (Spender, 2007).

This is essentially the landscape that confronted the six teachers in the iPodagogy project. Most of the students in 8F have confidence in their abilities with technologies and consider themselves expert in many online areas. Not so for the teachers. Although they entered the project with significant apprehension, they were all sure that it would be a worthwhile involvement, they would learn about new technologies and they would make a difference to their students' learning.

Innovative and informed teacher pedagogy lies at the heart of any significant change within the traditional environment of schools. The reality is that technology requires a rationale that guides its use in pedagogical contexts. While successful approaches can and have been developed with the introduction of emerging technologies, it is essential to have pedagogical discussions before it is introduced, especially if it is planned as a school-wide implementation.

In this research project, pedagogy was at the heart of the teacher conversations during the planning and early implementation stage when the technologies were

being installed and introduced to students and teachers. Regular discussion sessions were held alongside skill acquisition sessions, and they were often stimulated by interaction with the Principal and Assistant-Principal on the place of the iPodagogy project within the Victorian Essential Learning Standards, the current teaching programs being implemented by teachers, the impact of emerging technologies on student learning and the nature of innovation in the classroom.

What the research shows in this project is that teacher skills and confidence have increased overall throughout the project. Information detail can be found in Appendix B – Teacher Data. In terms of word processing, confidence and skill level remained the same, but for all other applications, the teachers showed increased confidence and expertise, including in the use of spreadsheets, presentation software, multimedia, email and Internet research. They displayed growing confidence in using digital photography, video and digital learning objects. Many had little experience with blogs, podcasts and handhelds such as iPods prior to their involvement in the project, and generally showed an increasing confidence and expertise by the end of the project.

Teachers' use of online services has increased overall, with more teachers banking and purchasing items, accessing news and current events. More teachers were downloading music and podcasts more often, and researching information for lessons and uploading to the school intranet.

In terms of using applications and technologies with students, the research shows that teachers are more regularly using handhelds (iPods), podcasts, digital photography, video and multimedia as expected. There has been a slight decrease in the use of more traditional applications such as spreadsheets and Internet research.

Most teachers hadn't considered interacting with students or colleagues by email, blogs, discussion forums or student submission of work electronically prior to the project, but what eventuated was that there was little increased use of electronic interaction apart from podcasts. During the life of the project, four of the six teachers used Studywiz for uploading and downloading podcasts and accessing homework. There was also some use of it for teacher and student reflective journals and discussion forums. One teacher experienced regular absences due to illness and another teacher was a late replacement into the project.

When asked how they encourage student ICT skill development, the teachers indicated they were at a high level, using fully integrated systems, applications and tools to support students. However, months later they assessed themselves at a lower level. What this shows is that the teachers have a more realistic view of what is possible and are more aware of their own performance in supporting student skills. They indicated that as individual teachers they have to use ICT in the classroom and support each other as mentors in integrating ICT into the curriculum, particularly in a team-based approach to new technologies.

At interview, all of the teachers expressed their excitement and enthusiasm for the opportunity to be involved in an emerging technologies project. They indicated it was a challenge, "a great opportunity as a young teacher to do something at the cutting edge", "an enriching, rewarding learning curve", and they felt "really privileged, very pleased with the outcomes."

'As with any instructional endeavour, podcasting in eLearning environments must be in alignment with your instructional goals and objectives and simultaneously provide a creative, interesting and genuine learning experience for your students.'(Rohrer, 2006).

The teachers were encouraged during the regular pedagogy discussions to integrate the technologies into their current curriculum plans, not to see them as an add-on, as Rohrer describes above. Curriculum units (see Appendix E) were developed that provided choices in delivery of content to students and for student presentation of work.

When asked how it has changed their teaching practice, comments were insightful, including "it changed the way I think about my teaching, about how technology can be used to recall and manage what they learn," "it gave me an insight into what I'm capable of and what the kids are capable of," "it made me reflect about what I do and want to do," "I saw it as a challenge as it made me think outside the box," and "it has definitely improved my organisational skills, as I have to do a lot of planning outside of the class time."

The majority of the teachers reported that they did not expend considerable time in class on student ICT skill development and spent more time on curriculum concepts. In the words of the youngest teacher in his second year of teaching, "the kids are so quick with ICT skills...what takes us twenty minutes, they do in five," while other more experienced teachers commented, "the power dynamics have changed, it's empowering for them to teach me, it was great," "I didn't assist them at all – they know how to do it. I pretend I don't know and they explain it to me." Science was the only area where ICT skills development took time, as the students developed scientific podcasts on their practical experiment reports.

In terms of the Victorian Essential Learning Standards, teachers reported that having access to the range of technologies enabled them to more easily integrate ICT across their curriculum areas and to assess student ICT skills in their domain. "It assisted me to really see ICT within the VELs," "I used evidence from using the iPods," and "thank God we've addressed the ICT progression points using the iPods!" One teacher indicated that assessment was easy, "the kids self-assessed, did a group assessment and I assessed them as well."

When asked about the virtual learning environment or learning content management system, half indicated they used it with success, while others had issues with access and passwords. For some teachers it was a mechanism for facilitating discussion using the forum boards, for others it was the assignment submission and uploading homework from home that impressed them. All indicated that content management was an issue with Studywiz, that the synchronisation with iPods did not work efficiently and that it was difficult to upload large video files, particularly with twenty-five students all wanting to upload at the same time. For many students, the result was that they used iTunes, and a USB device to transport the files home. Some even reported that they used Bluetooth to send the files to their mobile phones to take home. Students, as digital natives, quickly found alternative solutions when faced with problems associated with large files.

Content management was a major issue with the MacBooks and with Studywiz. The video files could have been compressed by the teachers had they known how to, so this essentially is a professional learning issue. The saving of files to MacBooks, however, related to memory and to software, and it is recommended that Mac computers for schools possess adequate memory and software to enable the easy saving of files. Uploading large files to Studywiz was an issue due to the time it took to save them, which is a school network issue, and then to download at home, impacting on Internet costs for students. Equella, the learning content management system behind Studywiz does enable saving, storing, searching and retrieving of large files, but the integration between the two products had not been completed in

the Studywiz version installed in the College. The new version was to be released in June 2007, making it easier to manage content. Had the project been of more than four months duration, these issues would have been adequately resolved.

The benefits of iPods and podcasting, according to the teachers, "allowed an individualised teaching experience for kids," where "they work at their own pace, you can target kids' ability levels, extend the good kids and address other kids' fundamental flaws." The students have "freedom to create individual multimedia assignments," and "kids teach each other skills, igniting more passion in learning," and "they become more proficient with tools for later in life." Studywiz enabled teachers to upload assignments and individual learning plans for students to work on at home from where they could download them. The discussion forum was also of benefit to teachers wishing to engage students in putting forward their views. The value of Studywiz was not fully realised by most of the teachers as it was an additional skill they had to learn along with iPods, podcasting and MacBooks. Equella was all but invisible to the teachers so they did not use the facilities it offers, neither the content management nor the lesson plan assembler which may have been of benefit.

Each of the teachers experienced different outcomes based on the content they were trying to cover in their respective curriculum areas. Generally, however, the project as a whole achieved what Vallance calls 'informed use', as discussed previously. If we attempt to align the Heathmont iPodagogy project against the criteria for 'informed use', we find that all criteria were addressed:

Informed use	Heathmont iPodagogy project
encourages discussion, consultation and sharing focuses upon process and product of task and learning objectives integrates multiple media allows access to a wide range of information provides a channel for feedback and assessment flexibility of when and where learning occurs facilitates and/or negotiates students' learning outcomes questions whether the activities required in the Task process can be done without IT	students worked in groups to develop podcasts students able to negotiate process and learning outcomes with each other and the teacher use of iPods, podcasting, video podcasting, movies access to the internet, texts etc Visual feedback from iPods and from Studywiz Studywiz accessible 24 X 7 from school and home iPod for each student, shared MacBooks difficult. Poor time management for some students ICT is required for completing the activities

Table 2: Informed use with iPods (Vallance, 2007)

6.1 Curriculum areas

The response to the use of the emerging technologies varied across curriculum areas and it is interesting to note the use in differing settings. (See Appendix E)

In LOTE, downloading podcasts and vodcasts to an iPod has immediate benefits, as student can listen over and over to the German vocab or conversations and learn as and where they want. Similarly, they developed their own presentations on their families in German using Keynote to make into podcasts later. According to the teacher, there's "huge potential in LOTE", but the logistics of working in groups with limited laptops and issues with saving files to put onto their iPods prevented her from doing what she really wanted to. Many students resorted to saving files to their USB drive due to time constraints.

In English, the teacher was really enthusiastic that "for once I had access to iPods and Macs – humanities misses out in ICT." The students were engaged in producing a family reflection piece that entailed drafting and proofing a script, videoing and

reviewing the output. It reinforced that age and image is important to students and "many of them came to the realisation that I'm not as good as I thought I was." The students' reflections involved making a podcast for an audience to view, in which they revealed their family life to others. As they observed each other and saw what some families' lives are like, many were brought to tears and "realised that life is about others, not just yourself." The technologies enabled all the kids to appreciate each others' lives and to reflect on the level of constructive support for each other. In the teacher's words, "I'd do it again...loved it, challenged me a lot but really loved it."

Mathematics can derive great benefit from using podcasts to explain mathematical operations. A series of podcasts were made by the teacher on Directed Number and then uploaded to students' iPods for viewing as and when required. Students reported that they used them for revision at home and before tests, resulting in improved test scores for a number of students. One student commented that the podcast breaks down the mathematical operation into small segments, making it easier to understand what was happening. The teacher was able to develop individual learning plans for each student and use the podcasts to supplement self-paced learning of curriculum concepts.

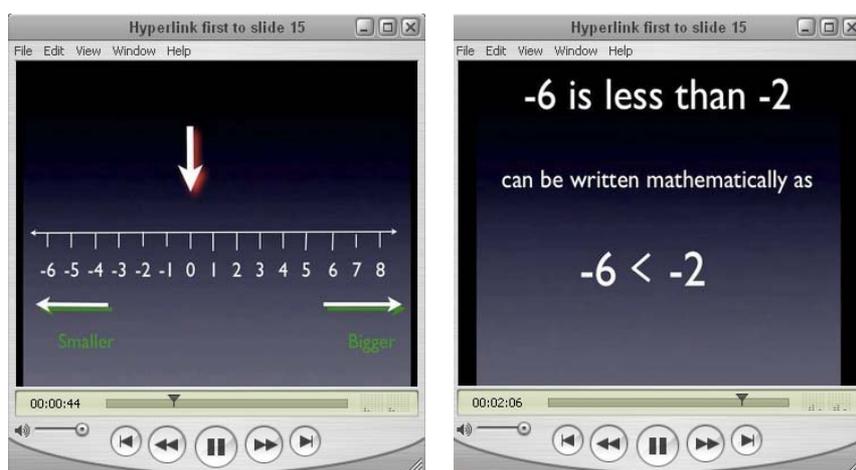


Figure 5: Directed number vodcasts (Sally Bodo, 2007)

In Science the teacher customised her pedagogy to include group work to enable students to record their practical experiment reports as vodcasts. iPods stimulated creativity and engaged students in sharing information and reflecting on their role as a group member and on their interaction with the scientific experimental process. The podcasts were then uploaded to Studywiz for others to see. Students were able to assess their group's performance and to self-assess. In the words of the Science teacher, "I became more flexible in my teaching practice and reflected on it more. it was motivating and I'll be disappointed if I lose contact with what we are doing."

Health and Physical Education are areas that don't easily fit with technology in most teachers' eyes. Nevertheless, the PE teacher developed very professional vodcasts of cricket techniques including batting and bowling. The students were asked to learn visually from the vodcast, to take photos of their own technique and to upload their photos to their iPod for comparison. "In PE it's hard to include ICT – we need something that's portable and contains content." Due to issues with uploading large files of photos to Studywiz and the students' unreliability with uploading and downloading the required files, a slideshow was made of the photos for a whole class discussion about cricket techniques. In Personal Development, students were asked

to contribute to an online forum in Studywiz which proved to be successful, with the majority of students reporting at interview that it was enjoyable and different. "iPods do allow for an individualised teaching experience for kids."

SOSE has ready application for student podcasts through interpretations of events, in this case the weather. "The boys were engaged and empowered by the technologies, particularly boys who are challenged. The girls who are sound in written work and books found it quite confronting." Working in groups, sharing the equipment equitably was a challenge in SOSE. "The students found it empowering and helped me which in turn helped our relationship as a whole class. The power dynamics have changed."

Music and iPods have a strong connection. The teacher commented that "students don't need a knowledge base, they can make music by clicking and dragging." The beauty of the MacBooks is that they enable the students to render their files to MP3 and upload to the iPod which motivates them to take their work away and make refinements at home. "Using iPods made my life easier as a teacher, storing a whole library, including all the pieces of VCE repertoire including sheet music as well."

6.2 Teaching and learning

Teachers reported that overall student attainment had improved and that their achievements were above the other Year 8 classes. Although the students thought they were falling behind the other classes, they have simply gone on an alternative route and arrived at the required place ahead of the others. This was not apparent to the students. Teachers commented that "students learned to work with other kids, to try new things, to step outside their comfort zone, to think about what they were doing." They were challenged to work outside the traditional way of learning and to see the iPods as a learning tool, rather than simply a device for listening to music.

Behaviour, motivation, engagement and organisation were key areas identified as having improved. Becta cites research that talks of "increased motivation and improved engagement exhibited by pupils when ICT is used in learning and teaching" (Becta, 2007) particularly in relation to digital video. In a lively conversation at the end of the project, the teachers discussed the general behaviour and attitudes of the students during the project and immediately following its completion. There was some debate as to whether student behaviour had improved or deteriorated, the implication being that they were required to work more in groups which didn't suit some students. Half of the teachers thought their behaviour had improved, half thought it had deteriorated. Some thought that since the iPod use had stopped, student behaviour had worsened. One teacher who teaches all the Year 8 classes commented that 8F was the more mature and studious and that "they changed more than the other Year 8 classes overall".

There are two issues here which need to be highlighted: the use of group work and the broader issue of behaviour impacted by technology. The first issue relates to teacher pedagogy and the informed use of group work or team work and what that means. People do not instinctively know how to work in groups, nor can they identify easily what they bring to a group. Students have to be taught about working as a team, and this is not a methodology that the teachers appeared to be conversant with. Most secondary schools suffer from being stuck in the traditional mode of teaching, with rows of desks facing the front, the teacher in control. Technology puts pressure on this model and research now clearly indicates that if we wish to engage students with technology-assisted learning, we must take into account their divergent thinking and learning styles with a preference for group work and working together (Oblinger, 2003).

The second issue relates to the impact of technology on student behaviour. We know from this research project that technologies engage and motivate students, so it is logical to conclude that their behaviour will be improved when they are using technology effectively in class. This of course impacts on teacher pedagogy and the confidence and capability of the individual teacher. Research indicates that 'teachers' pedagogies had a large effect on pupils' attainment, with aspects such as technologies selected, the ways in which they were deployed and the extent to which the teacher planned and prepared for the lesson being significant' (Becta, 2007).

What is not clear, however, is the impact of new and emerging technologies on higher-order thinking and the resulting stress this places on students, particularly those used to a traditional model of schooling. In this project it is clear that both teachers and students felt that there was pressure on the students to work in a different way, to learn new skills quickly and to engage in deep thinking about what they were doing. In the words of one teacher, using the iPods and video podcasting "made the kids think more and they are not ready for that – they've never done it before and we're reinventing the wheel for them". On the other hand, in terms of outcomes, it was also revealed that "the kids engaged with the podcasts and still remembered everything after four weeks which doesn't happen normally." Most of the students themselves admitted that the podcasts had improved their performance and test scores. "When making movies you are putting things in your words – you can't copy and paste – you have to use your own words and have to think" (Natalie, 8F). "Reflecting on video made me think more" (Dylan, 8F).

Professional learning is a key to the successful introduction of any technology in schools, particularly emerging portable technologies that are unfamiliar to teachers. The professional learning program for this project is located in Appendix D. The teachers recommended that a greater amount of professional learning support should be offered, especially prior to the project commencing and in the classroom environment throughout the project. In retrospect, more training always seems appropriate, but in the lead up to the project, it was difficult for the teachers to find time or to prioritise their time for professional learning. Just-in-time PD seems to be more appropriate, and it was evident from classroom visits that the teachers would have benefited greatly from in-classroom support from an ICT mentor, not only to support their skills but also to support student skill acquisition. As the teachers commented, "the kids work differently than we do," and "we got a bit confused trying to make the kids do things in one rigid way, when with ICT there is no one way."

7 THE LEARNING ENVIRONMENT

Students worked in a new learning environment with a mix of new technologies, software and eLearning platforms.

When asked about the value of new skills they had learned, 60% mentioned Studywiz, 36% iPods and video podcasting, 24% MacBooks and 8% said they learned about reflecting on video.

In terms of making recommendations for other schools and students, regarding the technologies they used, more than half said they would recommend MacBooks, 44% Studywiz, 28% iPods and 20% video podcasting.

7.1 iPods

All students initially enjoyed having an iPod to themselves, being responsible for it and being able to take it home. In the students' words, it was "a once in a life

chance”, “really interesting, a privilege”, “special as we were chosen out of the whole Year 8”, “pretty cool using the iPods as they do lots of stuff”.

In terms of responsibility, the students took great care of the iPods and the College had no issues with loss or damage. Students showed respect for the gear they used as if it were their own.

36% of students said they learned new skills with the iPods and video podcasting, but when asked about the range of new technologies they had used, only 28% said they would recommend iPods to other schools and students.



Figure 6: Apple iPods and their uses

7.2 MacBooks

The majority of students and teachers rated using the MacBooks as one of the highlights of the project. As all the teachers currently have a PC laptop for work, it took some time for the teachers to learn to use the MacBooks efficiently. PCs and Macs work in slightly different ways for the user and many of the teachers found it difficult to pick up the new skills in a short space of time. Indeed, one of the issues with video podcasting taking some time to complete was the fact that a new set of skills had to be learned.

Students however reported no real problem and were able to learn the new skills quickly, even those students who do not regard themselves as ICT literate. Only 24% of students commented on the new skills they'd learned with Macs, whereas 52% of students said they would recommend Macs to other schools and students.

The main issue with the MacBooks was that there were only six for the students to use in groups when they were making vodcasts. Although it was often discussed that the MacBooks froze and would not save work due to software problems, only 4 students mentioned it at interview as a problem. One student indicated that there was not enough use of them and they should have been used more.

Case Study: MacBooks – iLife

Create, Distribute, Access and Collaborate

iLife is a software suite included with all Apple computers for creating, organising, viewing, manipulating and presenting content. With iLife, teachers and students can present their ideas in a podcast, as a movie, a slideshow or in a blog.

The MacBook delivers a solution for creating, managing and distributing media-rich educational content that can be accessed by mobile computers or portable players such as an iPod. Podcasts can be distributed over the Internet (iTunes) or within the school's network and can be accessed with an iPod,

notebook or desktop computer, both Mac and PC. iPod is a portable learning tool, allowing anywhere, anytime access to curriculum content, audio books, learning objects, photos, podcasts and videos. One of the key areas for student engagement is the ability for students to display their work so that it can be seen, shared and explored.

“I’d recommend MacBooks as a new way of learning” (Lauren, 8F).

“It was a step further in our learning. Using Macs was a great opportunity, way better than PCs as they’re easier to get into” (Sasha, 8F).

“I’d definitely recommend Macs to other students. Making movies, you can put things in your own words, you can’t copy and paste and you have to think” (Natalie, 8F).

“Making videos and using the iPods, makes it more interesting. Reflecting on video made me think more” (Dylan, 8F).

“MacBooks have a wider variety of software for learning” (Luke, 8F).

“I learned new skills – making movies was a different way of learning – you have to plan and think about your work” (John, 8F).

“MacBooks are fun to use – I’ll miss them” (Dean, 8F).

7.3 Studywiz and Equella

At interview the majority of the class indicated that they thought the virtual learning environment, Studywiz, was great as it enabled them to access classwork from home, to complete assignments and submit them from home and to share their thoughts with others through the discussion forum. 44% of students reported that they would recommend Studywiz to other schools and students. All students logged on with some students accessing Studywiz late at night, most nights during the project. The highest use of Studywiz was for the student who averaged once per night for the duration of the project, often late at night. That student regularly achieves well in print and text, but was assessed by the teachers to be the most techno-phobic in the class. The amount of access and her usage of the system belies this impression.

The version of Studywiz used in the project limited the process for uploading large files, as it was not seamlessly integrated with Equella. A version released towards the end of the project now enables smooth interface between the two products and would have significantly improved the user experience had it been available earlier.

Case Study: Studywiz and Equella

Studywiz and Equella work together. Studywiz provides learning management tools for the teacher and student so they can both manage the learning in the classroom and from home. Studywiz connects teachers, students, parents and other members of the school community together whilst automating workflows within a personalized learning environment.

Using rich media creation tools or off-the-shelf content, teachers can quickly build or tailor online learning activities, content and resources through a web browser to enable teaching and learning to continue anywhere, anytime. Teachers can use functions for assignments, discussions, 3D gallery, tests and reports.

Equella is an advanced digital repository that incorporates learning objects, learning content management and integrated content authoring. All types of files from documents and spreadsheets to learning objects, multimedia interactives such as simulations and animations, video files, images and web addresses are able to be submitted to the repository. Equella assists the educator to discover, classify, compare, document and enhance the power of digital learning resources.

Equella is integrated with Studywiz to provide a powerful content management system behind the scenes. Large files can be uploaded to Equella through the Resources section of Studywiz. Both Studywiz and Equella have the capability to synchronise with iPods to enable students to upload or download from school or home.

"It was really easy to upload into eLocker." Leah, 8F.

"I'd recommend Studywiz as you can access it from home. If you're away or sick you can download your work and do it, then upload to your eLocker." Blake, 8F.

"I could upload my homework from home. I can get more learning in. I do the homework easier and with Studywiz I can hand in work and forget it without having to remember to bring it to school next day." Brent, 8F.

"I could submit all my projects with Studywiz, and teachers put up bulletins and reminders and discussions. Liked that." Katie, 8F.

"Studywiz was really helpful. Projects were put up and we accessed from home. The discussion for Personal Development was different. Definitely recommend it." Mahsa, 8F.

eTech Group

Etech Group is an Australian software company that specialises in developing online learning technology for businesses, universities and schools. Etech's new generation Virtual Learning Environment, Studywiz, was created through client collaboration.

The Learning Edge International

The Learning Edge International is a leading software solutions provider for the educational market. Part of the Dytech Group, The Learning Edge has developed a product called Equella that is an advanced digital repository, content author and learning content management system.

8 CONCLUSIONS AND IMPLICATIONS

An analysis of the literature on the use of emerging handheld technologies by students reveals much about what to do in classrooms and how to go about it, but little research is evident of the wider impact on student learning and attainment or on teacher pedagogy. Similar studies in schools and universities on the use of iPods, podcasting and video podcasting indicate that there is a positive impact on student learning. Similarly, studies on the use of virtual learning environments or learning content management systems also indicate that they enable closer communication between teachers and students' homes and provide students with remote 24X7 access to their classwork, increasing engagement and collaboration.

The Heathmont College experience clearly supports previous findings as outlined below but goes further to make inferences about the impact on students of emerging technologies and higher-order thinking.

The impact of ICT outside school

- Students were confident or expert with emerging technologies and found them to be engaging and motivating. They were able to work confidently with emerging technologies, learning by doing. This was evident in the manner in which students regularly sought alternative solutions when faced with technical problems
- Confidence and skills using the range of technologies (including iPods, video podcasting and virtual learning environments) clearly have positive benefits for their learning, for their peers and for the teacher's level of skills
- A personal, portable handheld device provides flexibility, accessibility and frequency of use, increasing motivation, organisational skills, active learning and more independent learning

The impact on student engagement

- iPods and video podcasting accommodated students' learning styles as they learned quickly from visual stimuli with their teacher's voice in the background. They drafted, proofed and redrafted written scripts, improving their literacy skills, and were able to retain information for longer periods of time by viewing vodcasts of mathematical calculations or physical movements, thus improving performance and test scores

- The video podcasts on iPod personalised the learning for students as they downloaded their individual learning plans and Maths vodcasts from Studywiz
- iPods enabled students to effectively avoid distractions in class by putting in their earphones and listening to podcasts or music whilst working
- Students improved their participation in group work, collaborating to develop their own vodcasts, assisting each other with the required skills. The quality of their reflections improved significantly when having to critically evaluate their own input, performance, group contribution or their appearance and speech on the videos
- The virtual learning environment, Studywiz, enabled all students to access classwork from home, extending learning from school to home
- Students noted an increase in the amount of work whereas teachers noted an increase in the amount of higher-order thinking for students

The impact on teacher pedagogy

- Teacher ICT skills and confidence increased overall
- The use of online services by teachers increased professionally and personally
- Pedagogical discussions and sharing with a team were essential for sharing of expertise
- Professional learning programs in using the technologies was seen as insufficient with teachers requiring in-class support or mentoring
- Teaching pedagogy changed significantly with teachers giving more control to students for teaching ICT skills and learning from students
- Students working in groups supporting each other enabled the teacher to provide greater support to less able students
- When teachers provide a range of ways for students to present work, they are able to better assess the individual strengths of students
- The relationship dynamic between students and teachers changed in a positive way enabling the teacher to relinquish control

What we have seen in this research project is that personal, portable, handheld devices that provide flexibility, accessibility and frequency of use, despite their small screen size and limited battery life, can increase motivation, organisational skills, active learning and self-directed learning. They provide 1:1 access in schools leading to more engaged students and their portability extends learning into the home. A virtual learning environment, Studywiz provides the link from school to home – the concept of m-Learning, with which students are very comfortable.

Innovative and informed teacher pedagogy lies at the heart of any significant change within the traditional environment of schools. The reality is that technology requires a rationale that guides its use in pedagogical contexts. While successful approaches can and have been developed with the introduction of emerging technologies, it is essential to have pedagogical discussions before it is introduced, especially if it is planned as a school-wide implementation.

These findings uncover a set of challenges for educators intending to implement a range of emerging technologies in a school-wide setting. It is suggested that the following elements are essential for success:

- Personalise learning for students
- Develop teacher ICT skills consistently
- Identify clear curriculum goals for emerging technologies
- Align emerging technologies with the school vision
- Develop a whole school plan that integrates ICT and eLearning

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Podcasts and lessons available from iTunes

Podcast Blaster, K-12 Podcasting Directory
<http://www.podcastblaster.com/directory/K-12/>

Podcasting and Vodcasting from Students in the Bering Straits
<http://www.methings.com/podcasts/index.php?iid=14174>

The PodLounge – Podcasting in Education
Maths, Science, ESL, English, Health, Sports, Music, German
<http://www.thepodlounge.com.au/listcat.php?cat=502&p=7>

11 Glossary of Terms

Acronym	Term
ICT	Information and communication technology
IP	Intellectual Property
iPod	The iPod is a brand of portable media players designed and marketed by Apple
iPodagogy	The art of teaching using an iPod or handheld device as a vehicle for learning
LCMS	Learning content management system
Podcasting	Podcasting is the method of distributing multimedia files, such as audio or video programs, over the Internet using syndication feeds, for playback on mobile devices and personal computers
Vodcasting	Video podcast (sometimes shortened to vodcast) is a term used for the online delivery of video on demand video clip content via Atom or RSS enclosures
VELS	Victorian Essential Learning Standards
VLE	Virtual Learning Environment
WWW	World Wide Web

Appendix A: School Policy

HEATHMONT COLLEGE

Mobile phone / Digital Device User Policy

It is recognised by the school that Mobile phones are a common form of communication today. However, for safety, security and good order in classrooms they are not to be used during the school day. Important contact with parents must be made using the school phones in our reception area or via coordinators.

Mobile phones or digital devices must not be used in any manner of place that is disruptive to the normal routine of Heathmont College.

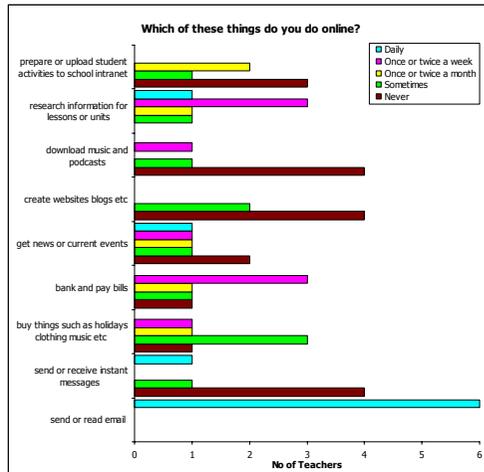
1. Students must have their mobile phones switched off and out of sight during classes.
2. Digital devices may not be used during class time unless explicitly part of a learning activity under the supervision of a teacher.
3. If students use any of these items without permission in class they will be confiscated and will be available for collection at the General Office at the end of the day.
4. It is important that students display courtesy, consideration and respect for others whenever they are using a mobile phone.
5. Use of In-phone cameras or personal digital cameras is prohibited at school unless authorised by a staff member.
6. Appropriate action will be taken against any student who photographs or films other individuals without their consent or who sends harassing or threatening messages.
7. Students need to ensure that these items are always stored in a safe and secure place.
8. These items are used at their owners' risk.
9. The Department of Education and Heathmont College do not hold insurance for personal property brought to schools and it will not pay for any loss or damage to such property. Students are discouraged from bringing any unnecessary or particularly valuable items to school.

Appendix B: Teacher Data

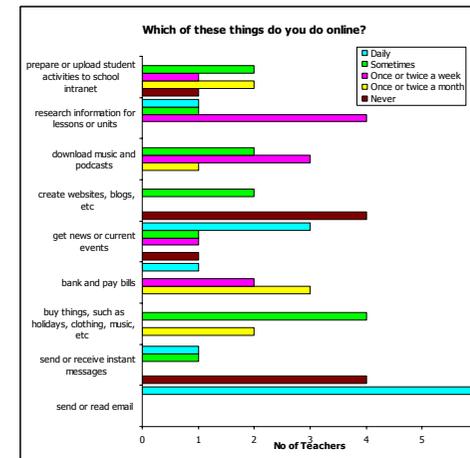
Teacher responses to surveys conducted at the beginning and conclusion of the project are summarised in the graphs below.

The title of each graph indicates the question the responses correspond to

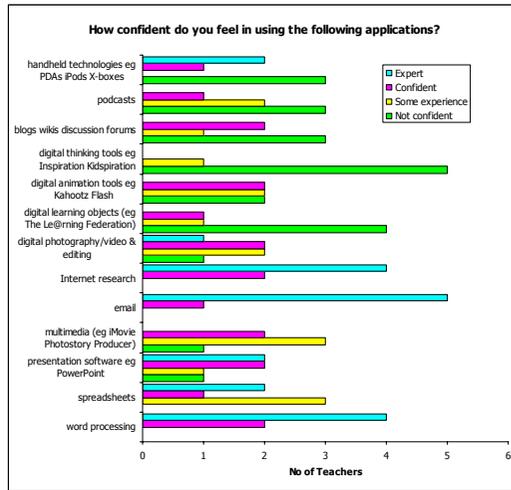
Teacher Pre Survey



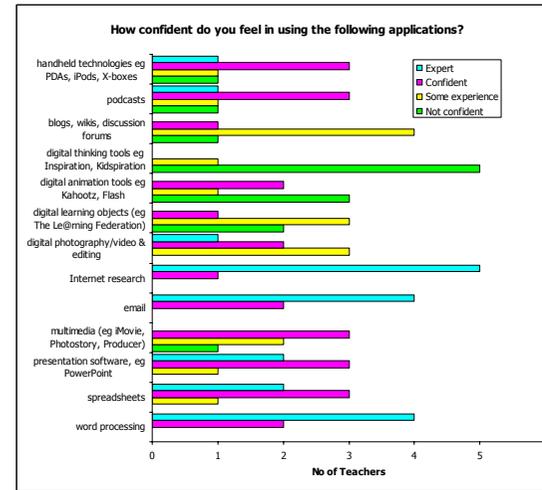
Teacher Post Survey



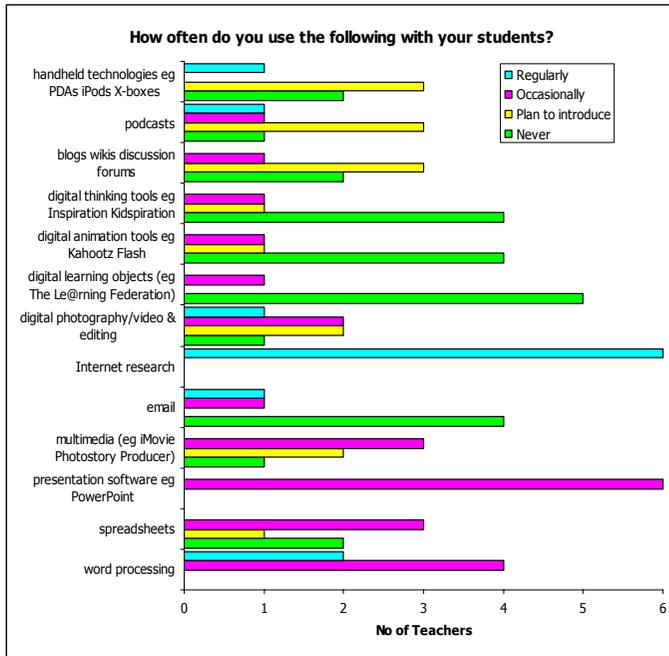
Teacher Pre Survey



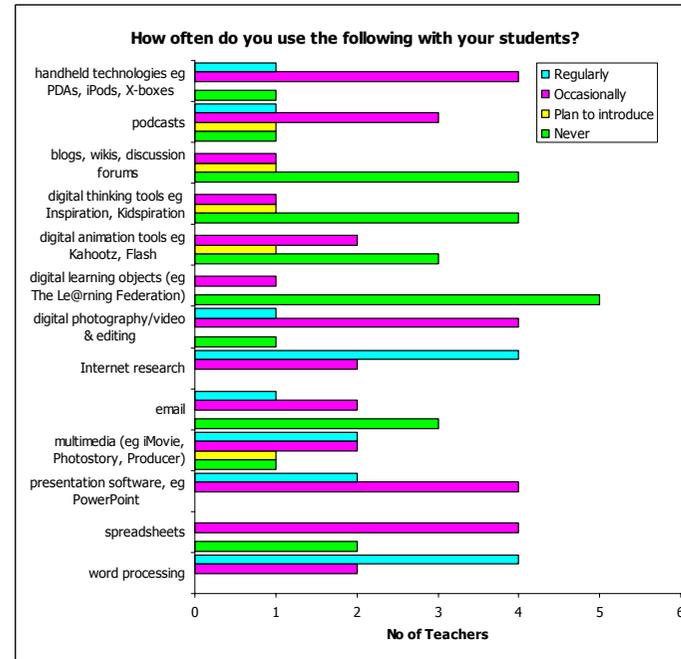
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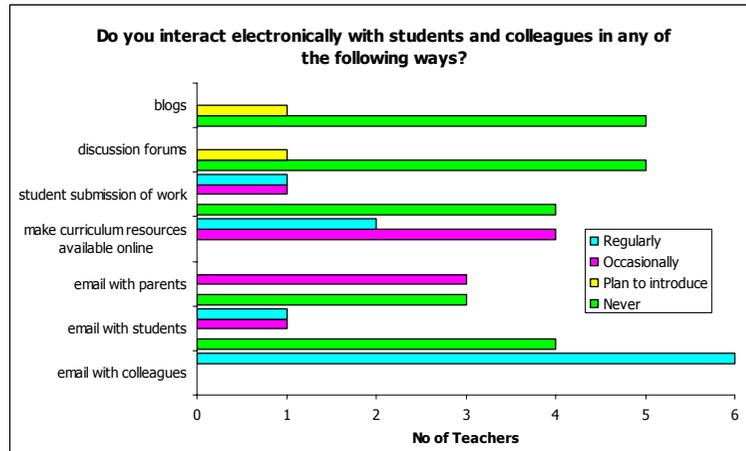
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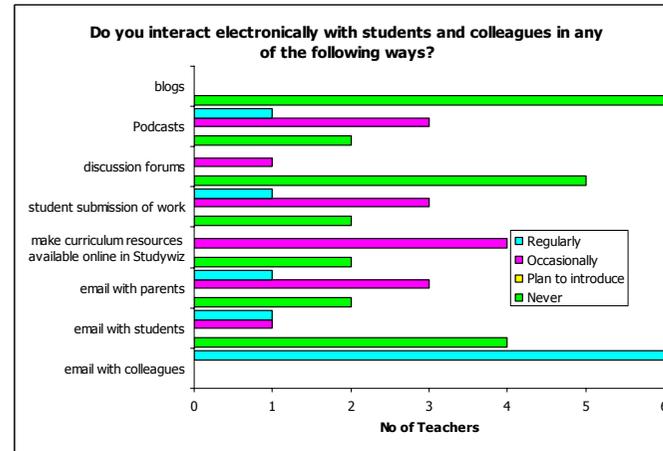
Teacher Post Survey



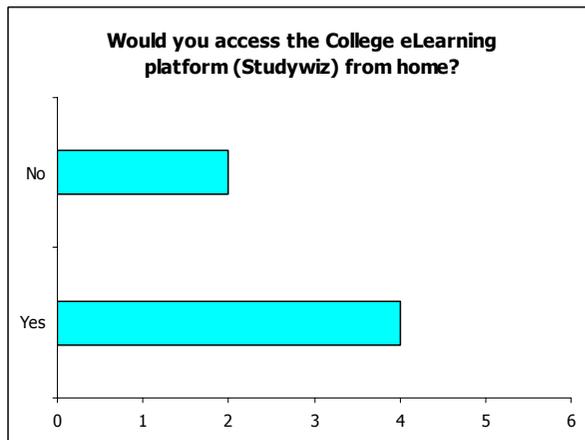
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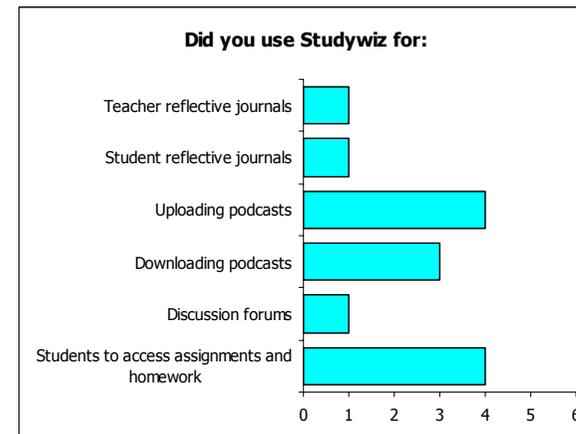
Teacher Post Survey



Would you access the College eLearning platform (Studywiz) from home?



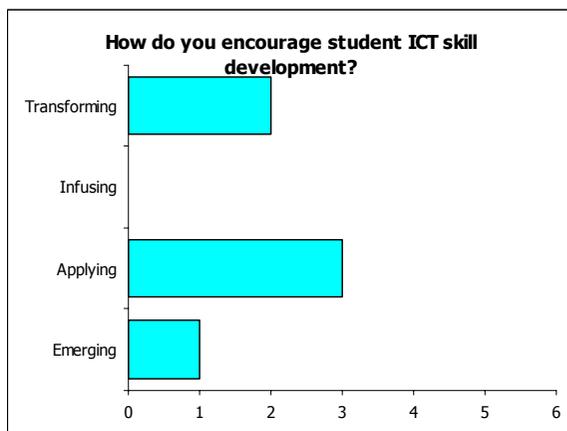
Did you use Studywiz for:



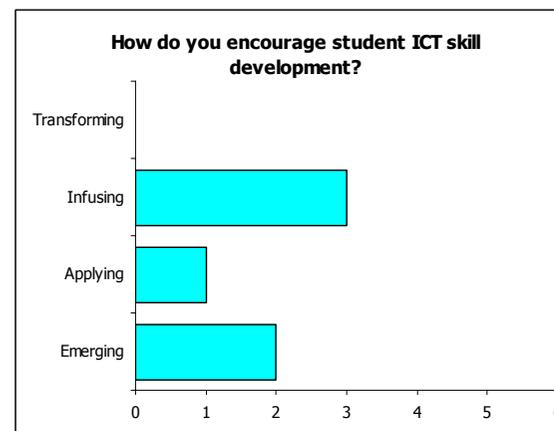
Teacher Pre Survey

The following descriptors apply to the graphs below:

- Emerging: I exploit students' basic ICT skills but students are largely responsible for developing their own ICT skills
- Applying: Curriculum areas provide for the development of ICT skills and their assessment. Generic skills are taught through specialist IT courses which reflect and develop their skills. I regularly assess student ICT skills
- Infusing: I acknowledge the level of student ICT skills and devise appropriate learning situations
- Transforming: I encourage the sharing of ICT skills freely among students. eLearning is embedded in learning experiences and used to promote peer mentoring and inclusion. Students' ICT skills are regularly assessed and reflected upon



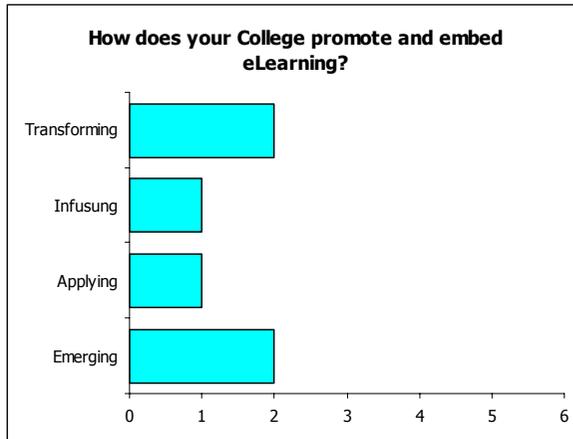
Teacher Post Survey



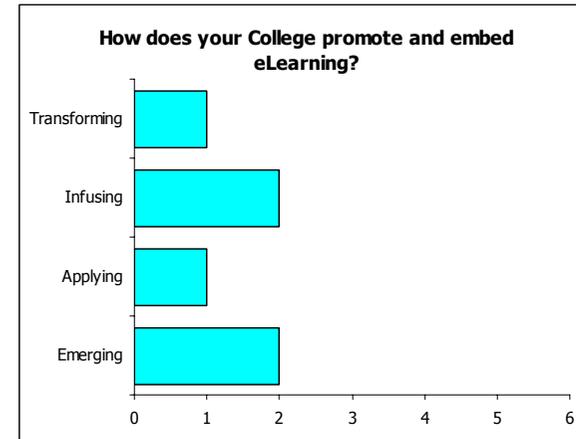
The following descriptors apply to the graphs below:

- Emerging: Individual teachers use ICT in an ad hoc approach depending on confidence and experience.
- Applying: eLearning coordinators or mentors are appointed to support staff using it in the classroom.
- Infusing: A range of eLearning elements are planned into schemes of work. The school is working towards learning and teaching online.
- Transforming: The school's eLearning platform is integrated to enable staff and students to use a range of systems, applications and tools to communicate and manage curriculum and individual pathways

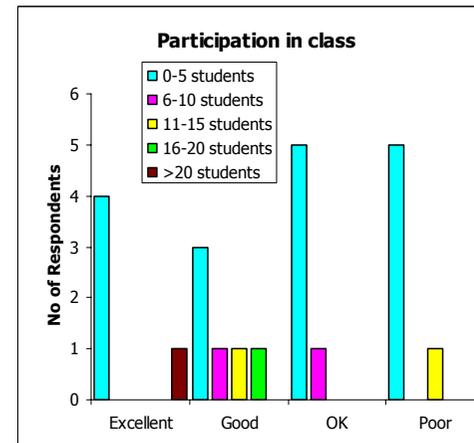
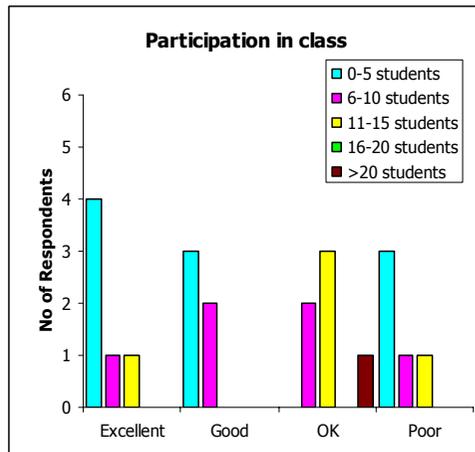
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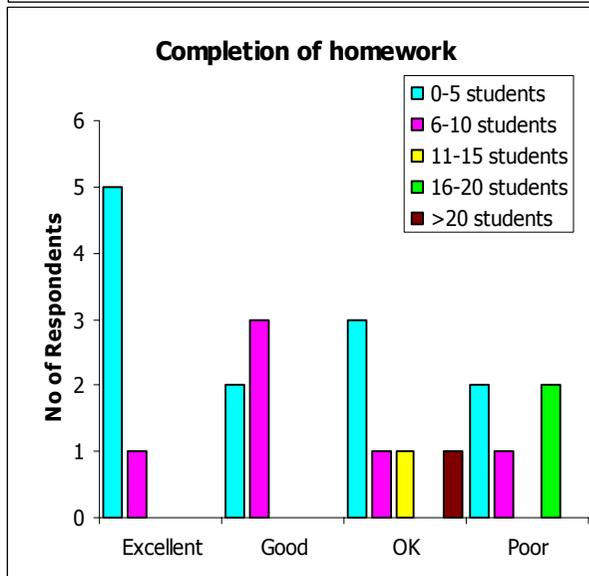
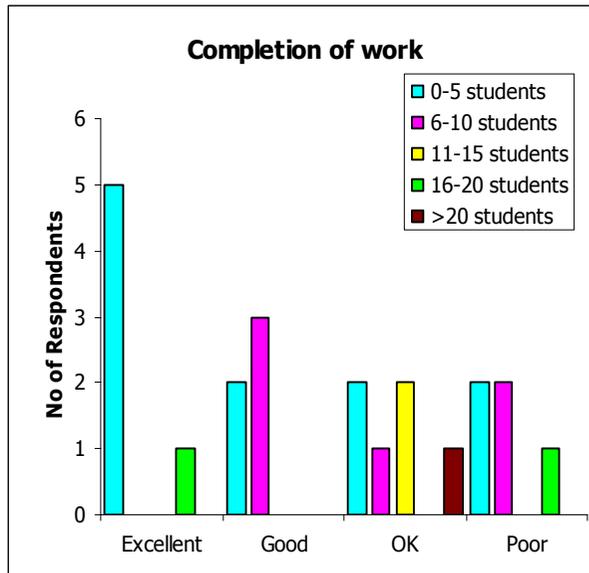
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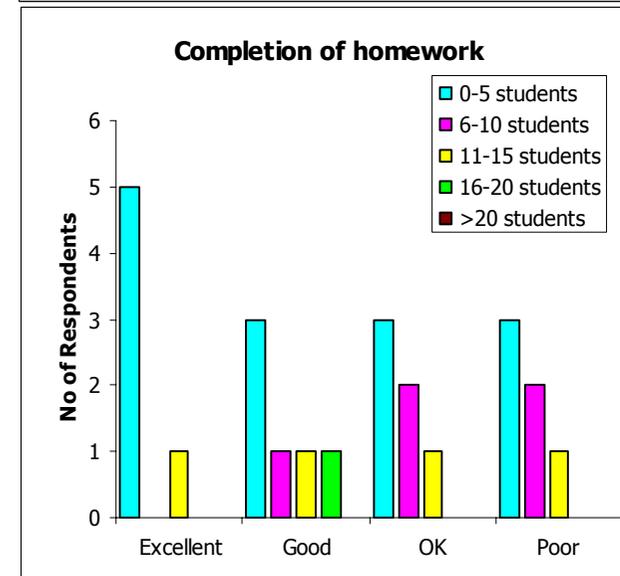
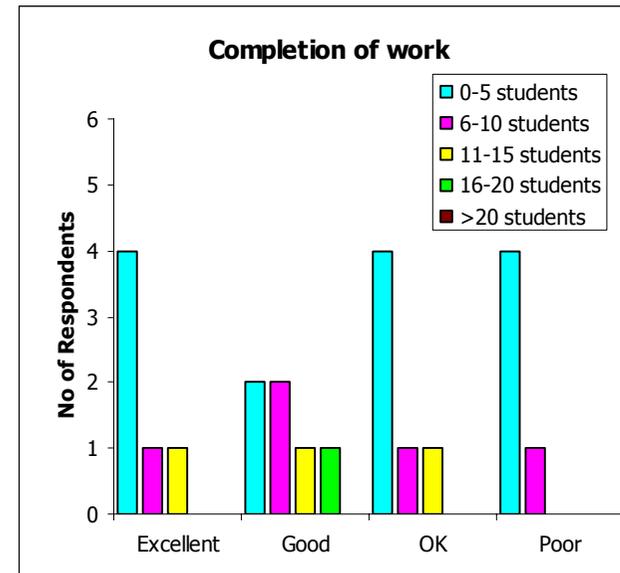
For the following questions teachers were asked to estimate the number of students in the iPod Project class who fitted into each of the categories.



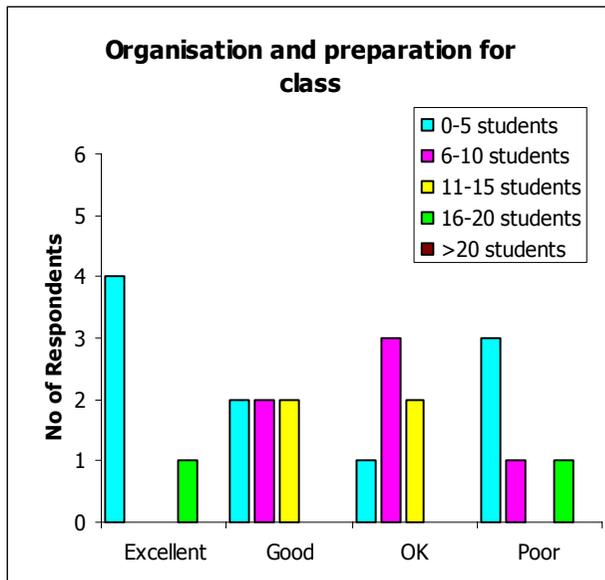
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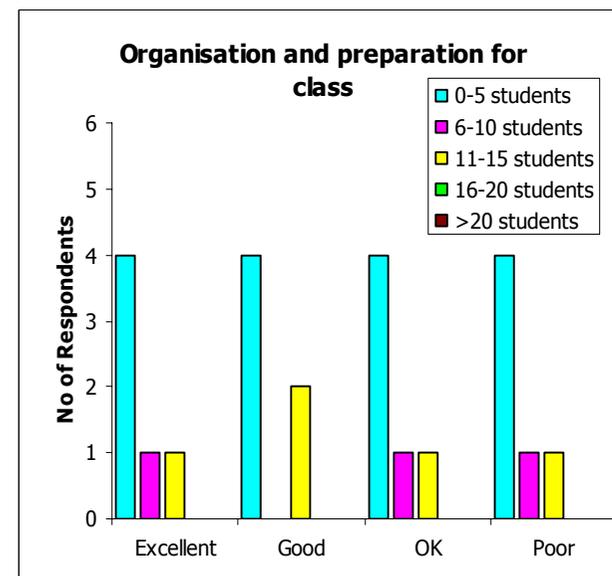
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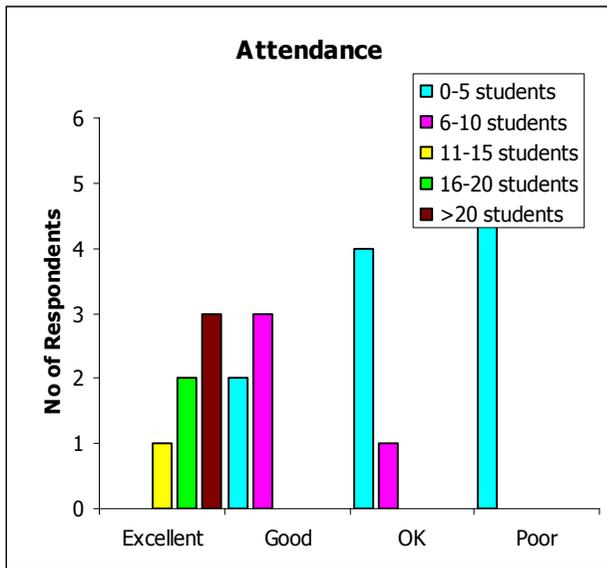
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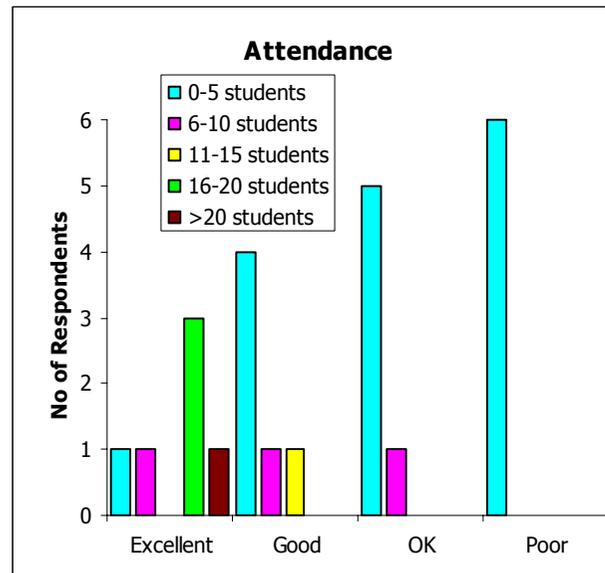
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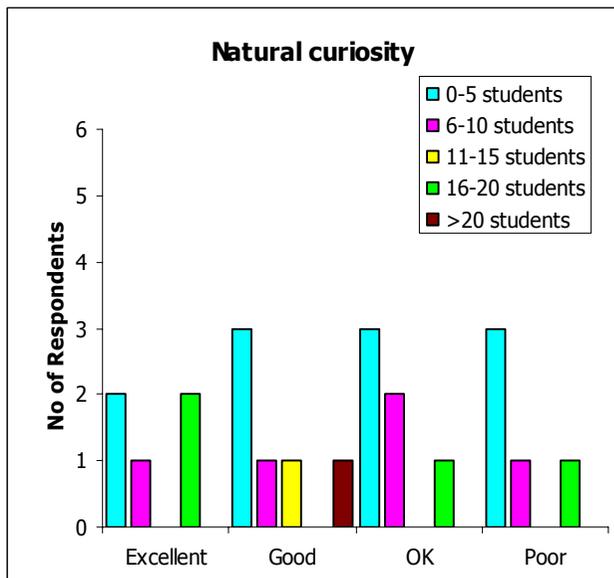
Teacher Pre Survey



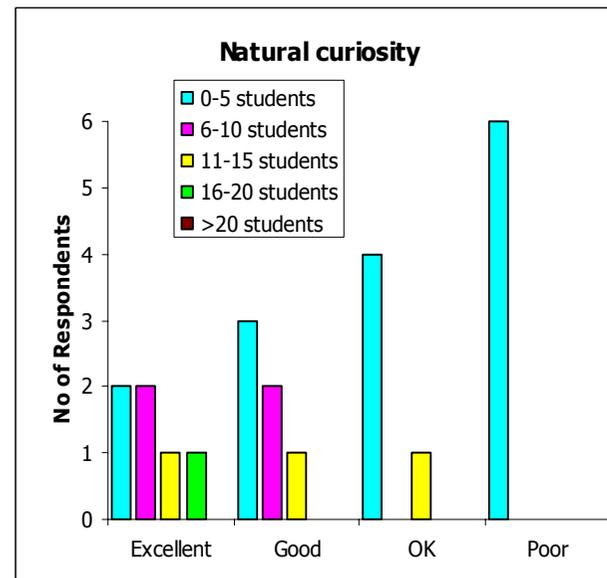
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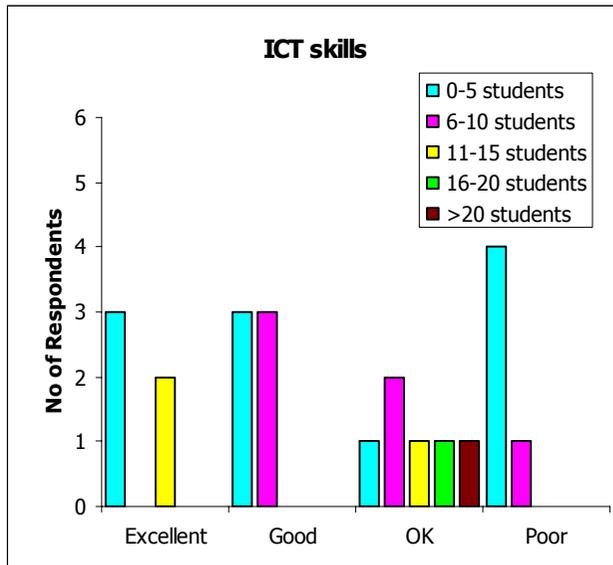
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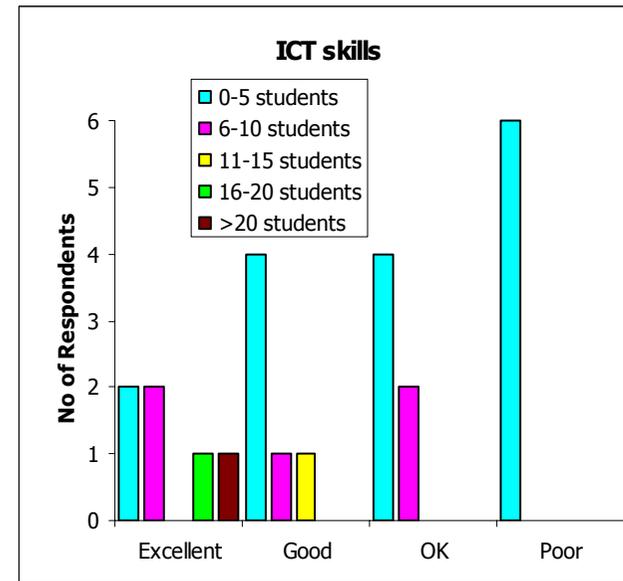
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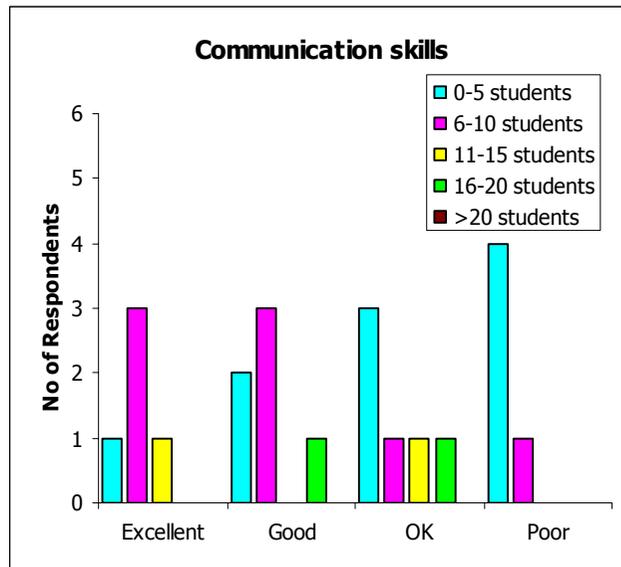
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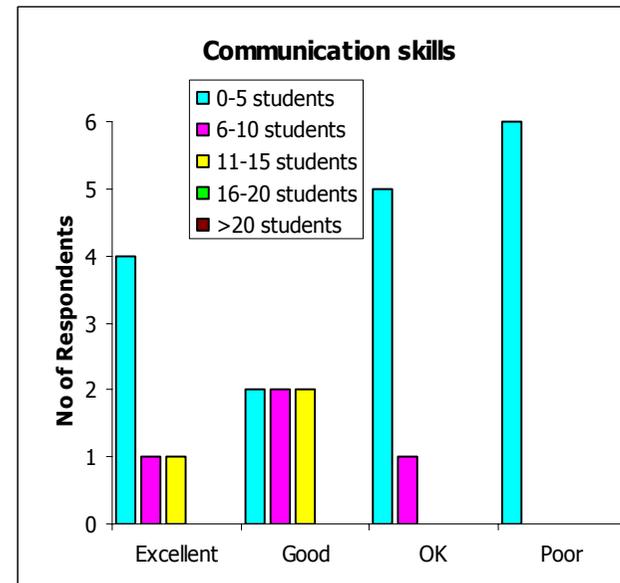
Teacher Post Survey



Teacher Pre Survey



Teacher Post Survey

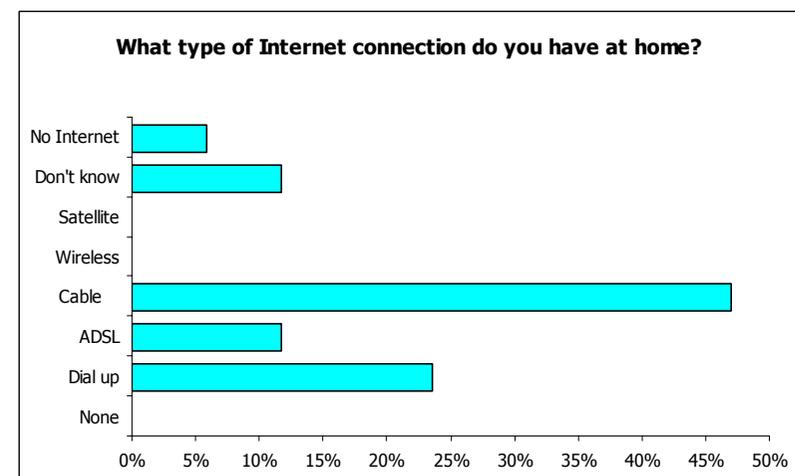
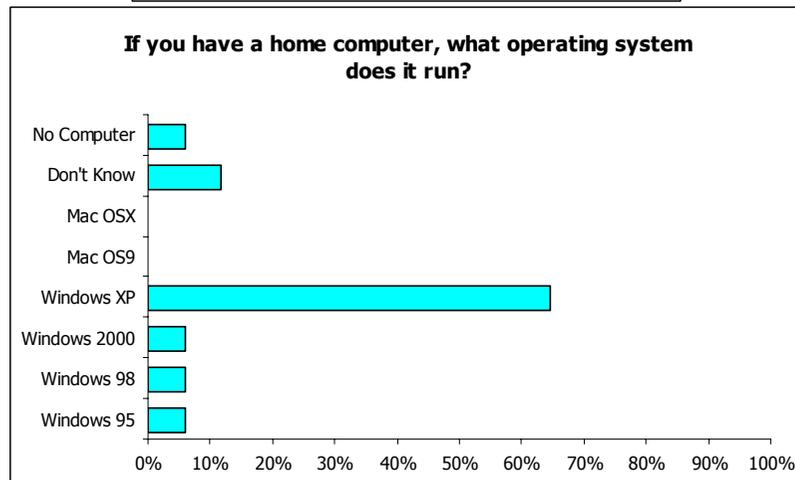
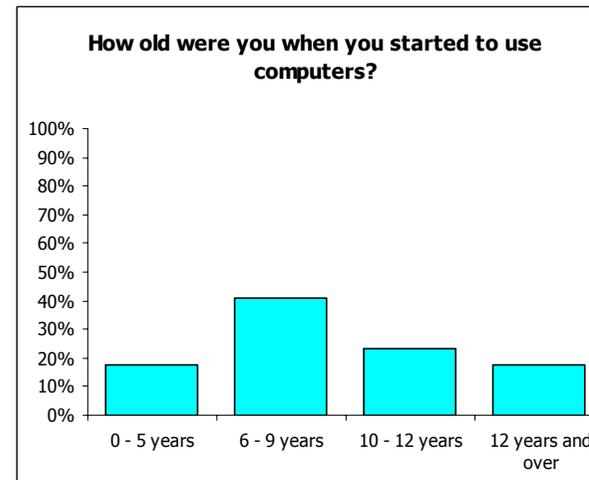
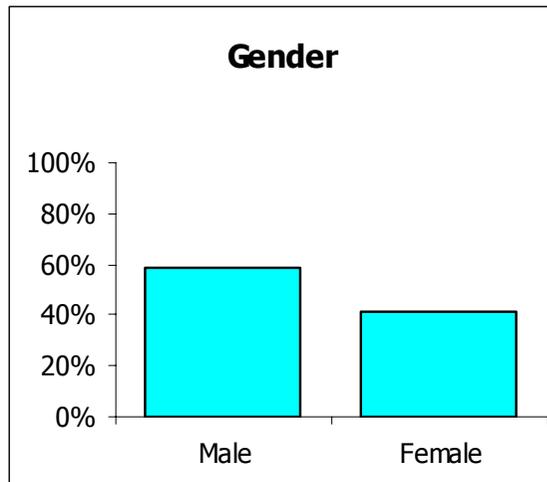


Appendix C: Student Data

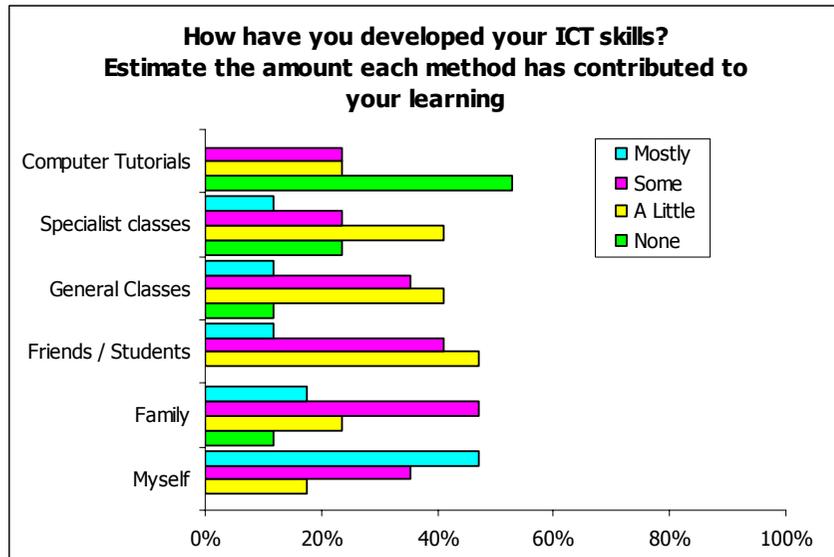
Student Survey Responses

Student responses to surveys conducted at the beginning and conclusion of the project are summarised in the graphs below. The title of each graph indicates the question the response correspond to

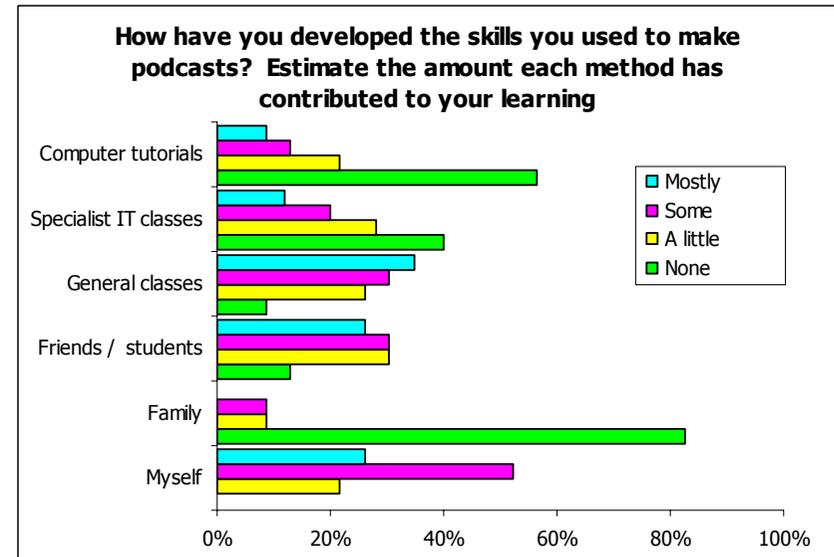
Student Profile



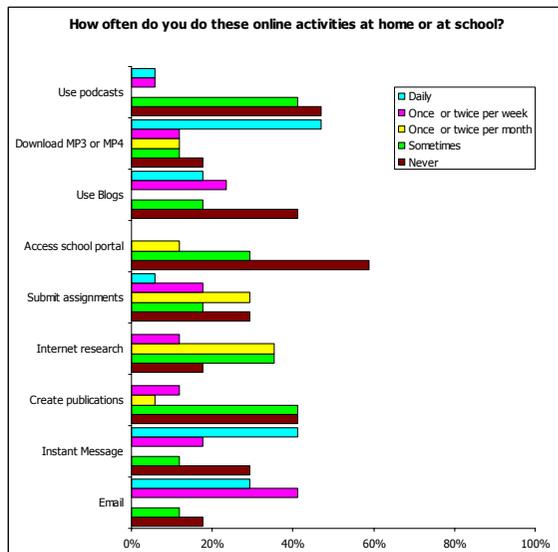
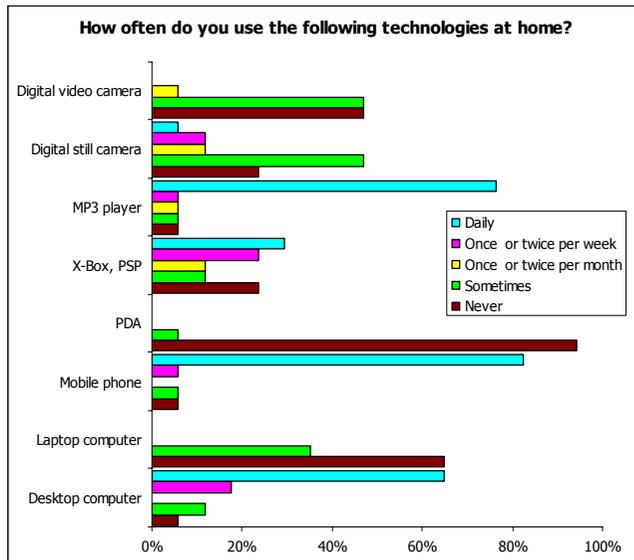
Student Pre Survey



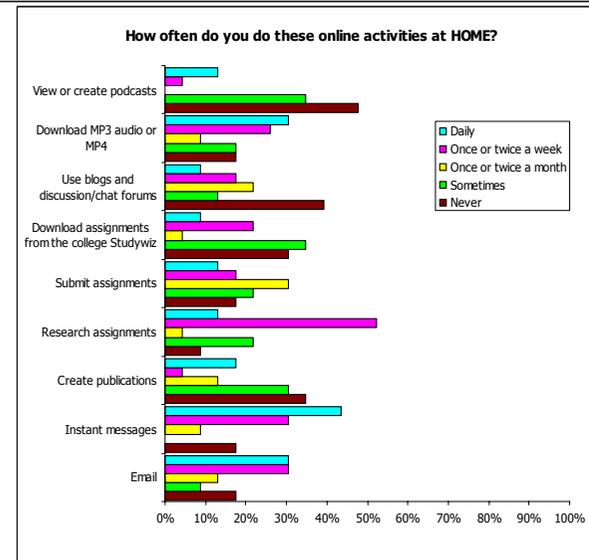
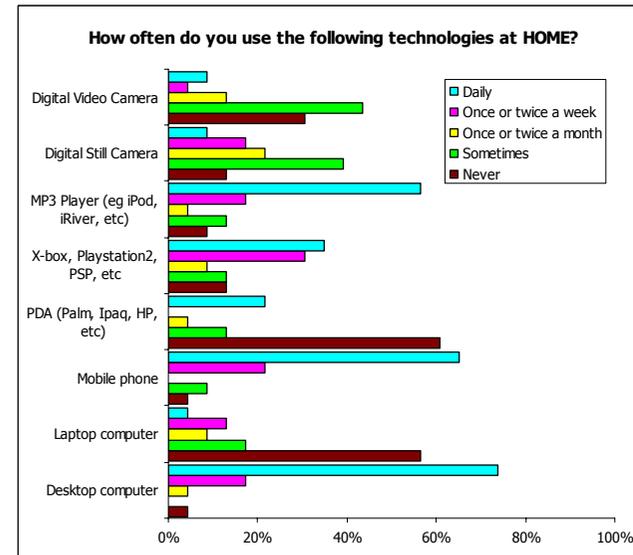
Student Post Survey



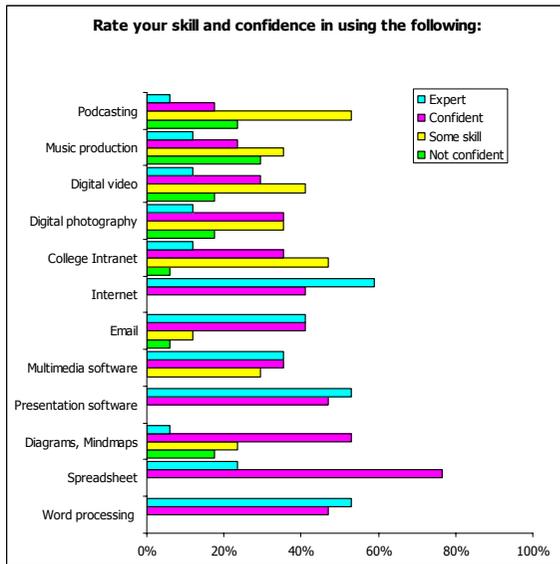
Student Pre Survey



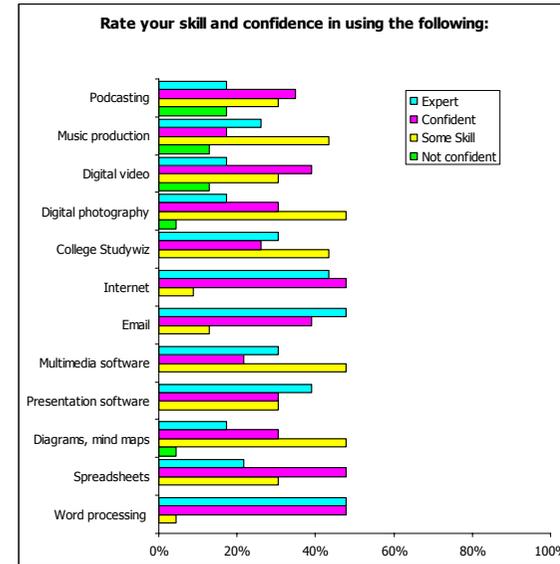
Student Post Survey



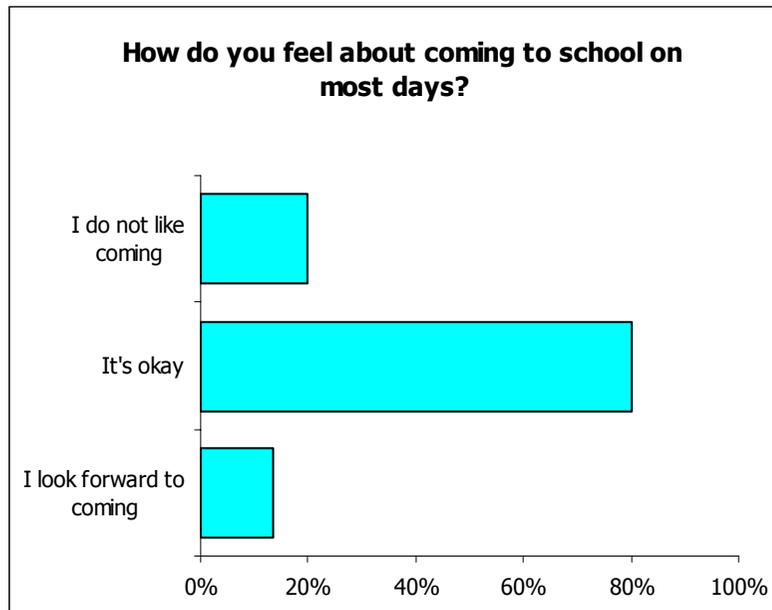
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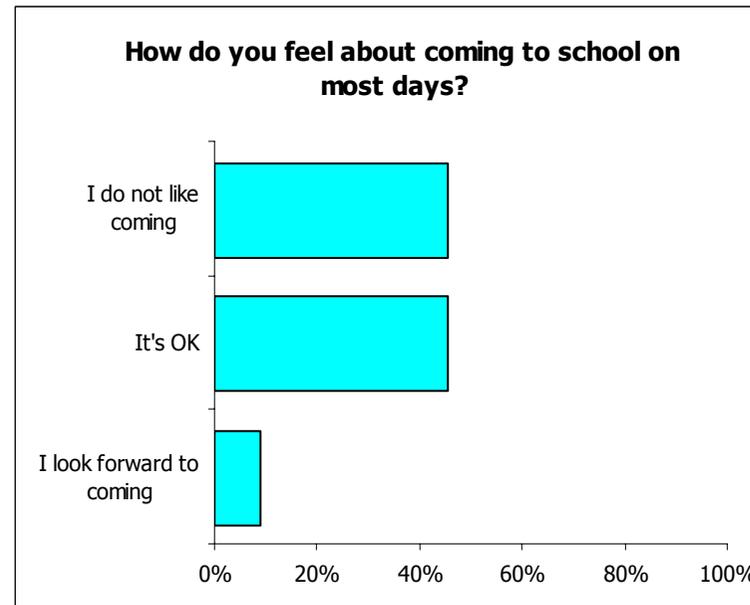
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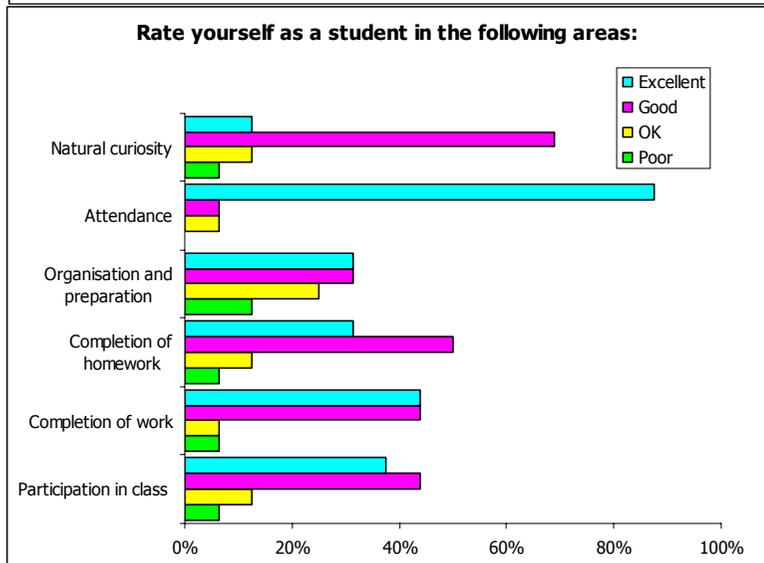
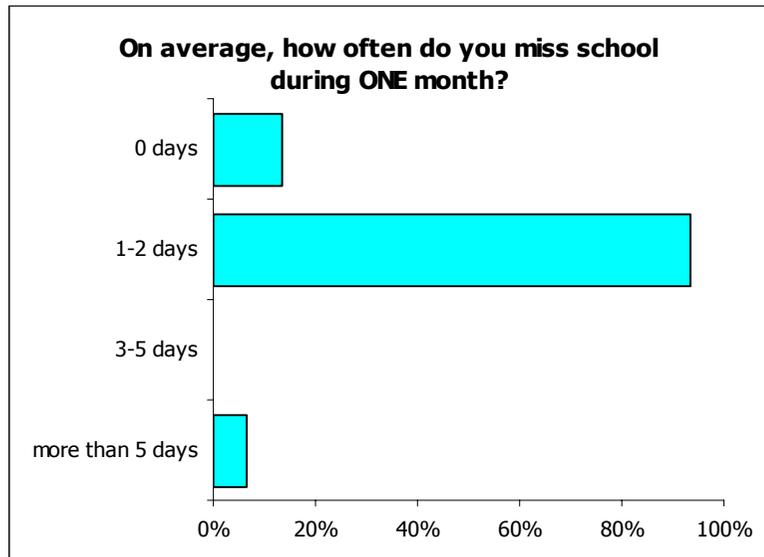
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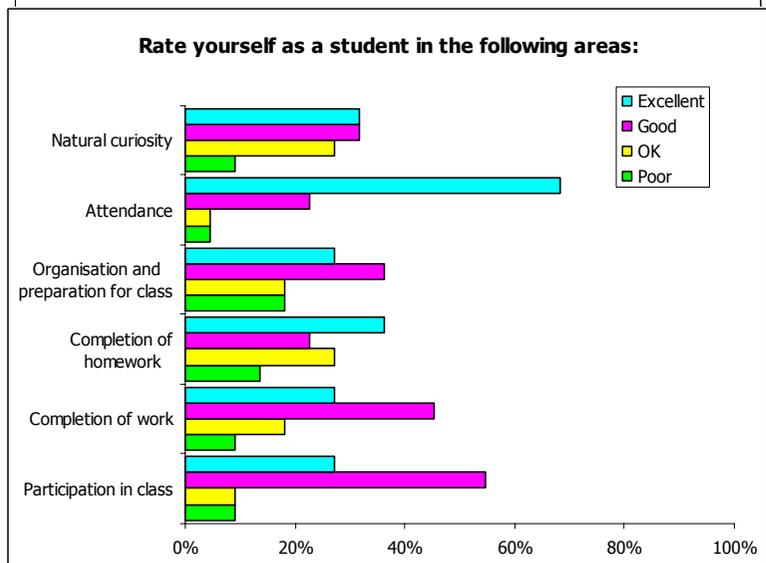
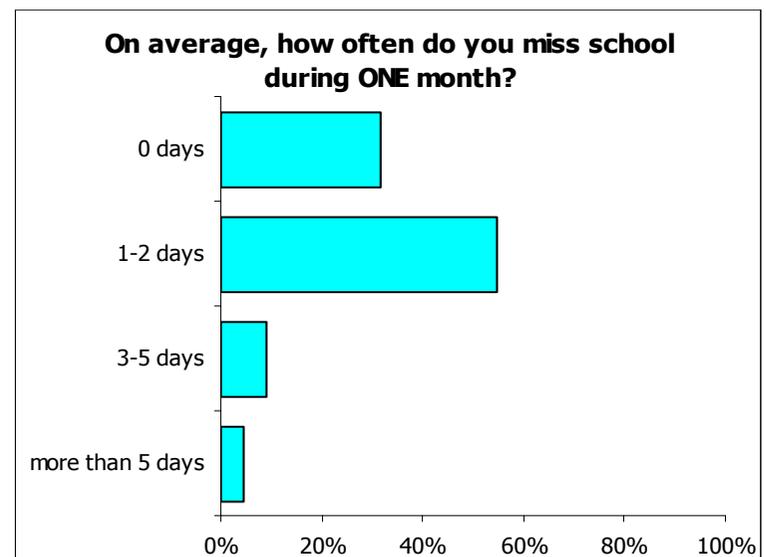
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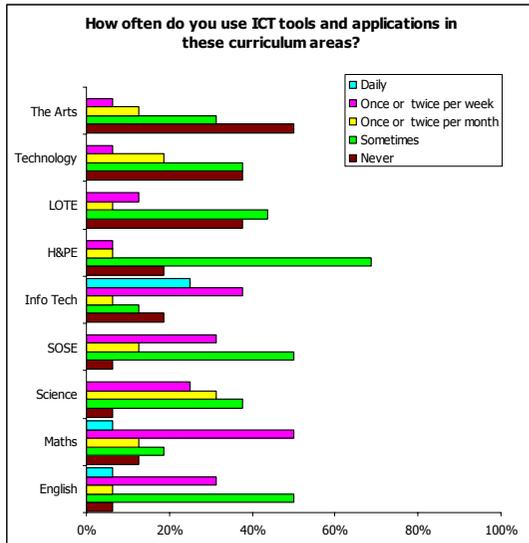
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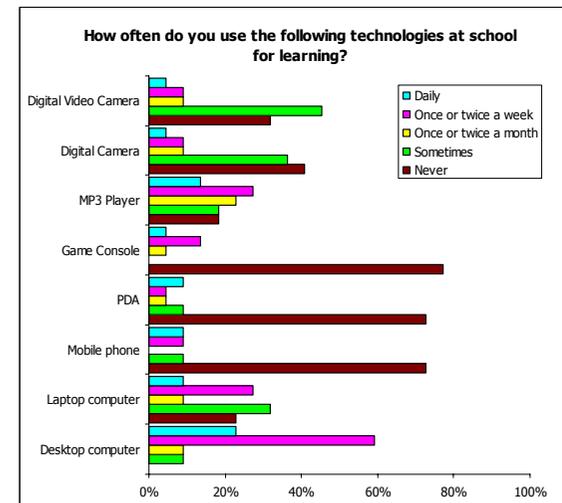
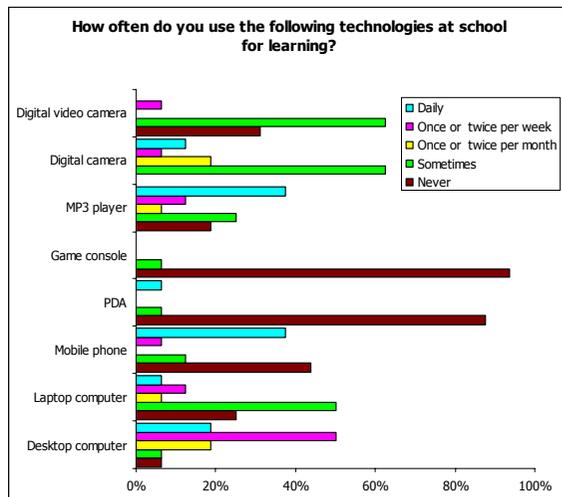
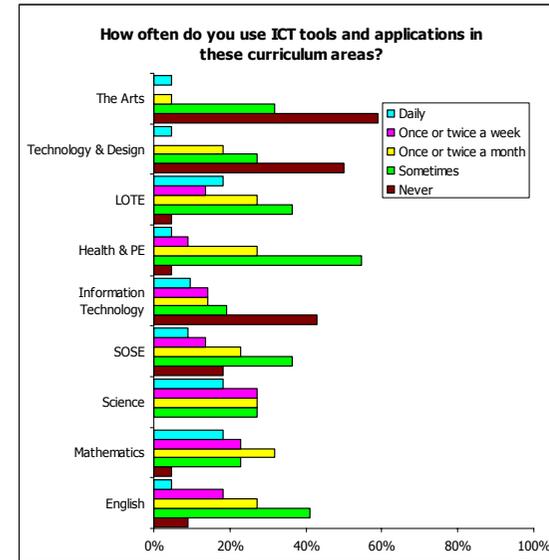
Student Post Survey



Student Pre Survey



Student Post Survey



Appendix D: Teacher Professional Learning Program

Term 4, 2006 and Term 1, 2007

Skills Program	Activity	Pedagogy Program	Activity
Introduction 28 Nov 2006	What is a virtual learning environment? What is a learning content management system? Why would you use them in a school?	Pedagogy discussion 12 Nov 2006	Introduction to project Teaching methodology & curriculum Assessment Student engagement
Studywiz 28 Nov 2006	Finding your way around Useful tools – calendar, timetable, eLocker Uploading and downloading content Transferring files to the iPod Synchronising with the iPod Access from home	Pedagogy discussion 11 Dec 2006	Steven Moore, UK, formerly from Gracemount High School, Scotland iPodagogy project. He shared outcomes and practices in the Scottish project.
		School visit 7 Feb 2006	Coburg Senior High. Pedagogy discussion with Principal Students worked with Mac Books
Equella 28 Nov 2006	Finding your way around Uploading and downloading content Searching and browsing Storing podcasts Managing your files	Pedagogy discussion 9 Feb 2006	School leaders and teachers discussed opportunities for using iPods in sound practical ways that integrated with their curriculum programs. Each teacher outlined their intentions. Technology issues raised.
Using Macs Basics 5 Dec 2006	Turning on and off an iBook How do I delete a file? How do I close a program? How big are my files? How do I know if a program is open? How does the dock (bottom icon bar) work? How do I create a PDF file? How do I adjust the volume? Where can I get help? How can I search for files?	Pedagogy discussion 23 Feb 2006	Teachers reported on the activities in their class, the issues, problems and benefits. They shared ideas and supported each other with suggestions for improvements. Technology issues raised.
		Pedagogy discussion 22 Mar 2006	Update on progress in each class. Issues and problems discussed along with benefits for students Staff reflection in Studywiz forum, focusing on innovation. What is innovation? Doing things differently or doing different things?
iPods 5 Dec	iWeb and iLife Using iPod mics, iMovie and iTunes Safe use of USB Use of Wireless Internet Programs	Pedagogy discussion 26 April	Update on progress in each class. Issues and problems discussed along with benefits for students. Pedagogical issues and student cohort discussed. Tech issues raised.
Studywiz 14 March	Staff from eTech Group visited classes. Troubleshooting with teachers. iPod synchronisation Uploading huge files Uploading podcasts	Pedagogy discussion 11 May	Update on progress in each class. Issues and problems discussed along with benefits for students. Issues around non-engagement of students were discussed. Tech issues raised.

Appendix E: Curriculum Units

Title: Anti Bullying

Introduction

This unit has been adapted during the course of the teaching to incorporate a more integrated approach to teaching, incorporating traditional and elearning methods. The broad aim of the unit is to get students thinking about how bullying can differ depending on the setting in which the bullying can take place in and influences on people who bully and are being bullied. This unit is centred around giving students the option to work on student created podcasts or to create assignments using more traditional methods.

Background

Students have been taught a unit of bullying in year 7 where they looked at what bullying is, how bullying can occur, why bullying occurs and how schools respond to bullying. This unit has been designed as an expansion and an opportunity for students to trial enquiry based learning, something which they haven't had the chance to experience in the Personal Development setting.

Curriculum Areas

- Personal Development

Number of lessons

6 x 50 minutes

Teaching and learning strategies

Unit is designed to give students the opportunity to choose between elearning and a traditional approach.

Students, working in groups were to identify types of bullying and devise strategies to overcome them. They then had to prepare a publicity campaign promoting these strategies using any media of their choice, including video and vodcasting.

Through the use of technology and increased freedom students will develop metacognition as they review their own and others' work.

Technologies used

- MacBooks
- iPods
- Digital Cameras
- Studywiz
- Video equipment.

Notes for teachers

Students need to be introduced to this style of learning and need a good deal of teacher support to develop the necessary skills and attitudes. They were crying out for structure by the end of the unit, and it was seen that the enquiry-based learning, while producing deep learning in the students, (as seen in the work they produced) produced a drop in student engagement during class times.

Students found it hard to remain focussed even on integrated iPod work for repeated weeks and needed "gap" lessons with a solely traditional focus.

Evaluation

As a whole there is limitless potential for the application of iPods and handheld technology in the classroom. However, I would have liked to have the opportunity to try the project when the students were only exposed to the iPods in a couple of learning areas at once, rather than having all their learning areas using the technology simultaneously.

Students when given the choice between creating podcasts or creating a more traditional assignment presented an overwhelming majority moving towards the traditional assignment. This was mainly due to the assignment being at the end of the project and students having had enough of using the technology.

The students were crying out for structure and enjoyed an integrated approach, where teaching was balanced out between deep thinking, enquiry based learning with integrated elearning opportunities and a more traditional structured classroom environment.

Resources

- MacBooks
- Video equipment
- iMovie
- video cameras
- Studywiz.

Title: Directed Number

Introduction

The students have not covered directed number in year 7, so this is their first exposure to directed number since primary school.

Background

Students from year 8 to year 12 have problems with directed number (and other maths topics). As a teacher I find myself assisting students at all year levels with the same problems, be it solving linear equations, multiplying two negative numbers together, or any other of a wide range of topics.

Having a series of short video vodcasts that demonstrate mathematical techniques and rules for students to access when they have difficulties would be a useful resource for students, teachers and parents.

Curriculum Areas

- Mathematics - number

Number of lessons

15 x 50 minutes

Teaching and learning strategies

The classes were conducted traditionally with students being taught theory at the start and then working through exercises from their textbook. A series of eight vodcasts were made that explained the techniques of performing operations using directed numbers along with visual representations. Students could access these vodcasts using their iPods when needed during their exercises and for revision purposes

Technologies used

- Studywiz - vodcasts were put in a 'Directed Number' gallery for students to download at school or at home.
- Macbooks – used to prepare and share vodcasts. Animations of the processes were made using Keynote then audio added using GarageBand.
- iPods - for listening and watching vodcasts

Notes for teachers

Students did not download vodcasts from Studywiz due to difficulty it had with downloading large files quickly. All vodcasts were downloaded to each student's using iTunes by the teacher.

Evaluation

Student feedback showed that they found the vodcasts very useful while working in class as they did not have to wait for teacher assistance when they had difficulty. Many students found the vodcasts a useful study aid that improved their performance on the test at the end of the unit. Some of the students did not like the vodcasts and did not bother to listen to them. Two of the students had problems with their s so that the visual part of the movie did not play, all they got was the audio.

Some boys said they would rather be taught by a teacher rather than a machine.

Half of the students felt that using the directed number vodcasts improved their test scores.

Resources

Eight directed number vodcasts created by the teacher.

Title: Family Reflections

Introduction

The aim of this unit was to produce a personal reflective piece on each student's individual family experiences. Each student was to produce a personal reflective piece on an experience they were comfortable to share with an audience. The aim was also to give students experience in preparing podcasts and access to iPods and Mac computers.

Background

The students were studying *Soldier Boy*, a novel about self-reflection and the themes of growing up, family, self-discovery, and reflecting on one's life

The students had completed an Autobiography in Year 7 which helped with prior knowledge, so they had an opportunity to reflect and use some of that experience to produce a visual and aural piece of work on a more personal account of their own lives.

Curriculum Areas

- English

Number of lessons

10 x 50 min lessons would be recommended over the term. Time needs to be spent on some teacher directed lessons and advice.

Being a Year 8 class of quite mixed ability and maturity, the number of lessons used were solely based on the following:

- gauging the interest of the students
- the amount of time to write up and proof read each piece of writing before recording it on the Mac computers (students did this in groups with the teacher used only as the mediator)
- the amount of time needed to physically record each reflective piece and then re-do it if the student was not happy. This took considerable time as each student had to come to terms with the way they sounded and looked

Teaching and learning strategies

Students were given opportunity to reflect on their own experiences in their lives so far

Students were given many opportunities during class time to discuss, explore and evaluate their experiences and those of others in the classroom, society and their own families

Prior to the final recording it is important to spend time discussing what students have produced and what they are comfortable sharing, as they will be sharing their reflections with a wide-ranging audience in terms of age and with people they may not know well. They had to keep in mind that their final product would be saved onto the school intranet or learning management system which could be accessed by other students in the school.

Technologies used

iPods

School computers

MacBook Computers (focussing on audio and visual recording)

Notes for teachers

Be prepared for technical problems

Be prepared for the class to adapt to the challenge of using a wide variety learning and teaching tools

Be prepared for the class to go through some up and downs in behaviour and work completed

Be prepared for the class to express frustration in this 'journey' using these different methods of learning and teaching.

Evaluation

Overall the students completed the task to the best of their ability. It was a challenge to both me and the students to work on a topic which was personal and had to be shared with wide range age of audience.

It was a challenge to both teacher and students to step into a whole new area of teaching, learning and presenting work.

Resources

- iPods
- MacBook Computers
- Printers
- Internet access
- Quiet rooms for recording

Title: Die Familie (The Family)

Introduction

Learning in this unit focuses on developing the knowledge, understanding and skills that will enable students to discuss families.

Students acquire vocabulary, expressions and language structures within this context as they:

- talk about different families
- talk about their own and other people's ages
- say where themselves and others live
- use numbers 21 – 100
- use grammar
 - gender of nouns
 - singular and plural nouns
 - indefinite articles (ein/eine)
 - negation(kein/keine), possessive
 - adjectives (mein/meine, dein/deine)
 - accusative version

Cultural focus – student exchange programmes

Learning outcomes – students will:

- produce a family tree with descriptive sentences/paragraphs about a family, using suitable vocabulary, gender and sentence structure with a choice of electronic or hard copy.
- increase comprehension of spoken German - listening activities and aural comprehension test
- improve understanding of written German - reading comprehension passages
- produce and take part in an interview about a family, using appropriate expression and intonation

Background

Due to social and emotional issues caused by blended and non-conventional family units, students' own work will refer to fictitious or known cartoon characters and animal families of their choice. This avoids personal information being used in an open situation.

A range of activities, making use of different learning and thinking styles, will be employed to deliver the topic material.

Curriculum Areas

- L.O.T.E. (German)
- I.C.T. Creating

Number of lessons

This unit was taught for a term of 9 weeks with 3 x 50 minute periods per week. However, other activities such as revision were undertaken.

Teaching and learning strategies

Brainstorm vocabulary that will be needed to support learning

Discuss questions such as:

- What is a 'typical' family in Germany/ in Australia?
- How do you set out a family tree?

Compare the formation of numbers above 20 in German/ in English.

Introduce German vocabulary using PowerPoint or Keynote and Flashcards.

Students download (from StudyWiz onto their iPods), then use, Teacher prepared instructional audio podcast to practise correct pronunciation and formation of vocabulary and constructions
Develop the concepts of indefinite articles and possessive adjectives and their application by having students answer questions such as:

- Hast du Geschwister?
- Hast du einen Bruder/ eine Schwester? etc
- Wie heißt?
- Wie alt ist?

Students create Keynote/PowerPoint Presentation on family members, using possessive adjectives

Students use iTalk microphones and iPods to create audio podcasts of family vocabulary using the teacher podcast as a model. (Alternatively, this can be incorporated with the presentation above using iMovie)

Students create a fictional animal family presented as a family tree, and write about each member, using a choice of electronic (Keynote or PowerPoint) or paper formats.

Script an interview with a real (celebrity, family member etc) or fictional person, asking questions about their family, using a choice of electronic (ComicLife) or paper format. Working in pairs, students record the interviews using iTalk microphones and iPods, Macbooks or digital video.

Students to save all electronic work onto their iPods and upload it to StudyWiz to facilitate access by teachers and other students

Technologies Used

- iPods
- iTalk microphones
- Mac Books
- Desktop Computers (PC) in computer pods and computer classrooms
- Printer
- Internet Access
- U.S.B memory stick

Notes for teachers

Teacher and students need to have prior knowledge of use of the technology or time will need to be allowed to develop these skills.

Alternate between group work and individual tasks for variation and to avoid "overkill".

Students like to have a choice of presentation methods. Many prefer to use conventional pen and paper but all should be encouraged to develop skills in using technologies.

The value of having an audio podcast as a learning tool can be assessed by having students record their own oral work twice, first before having access to the teacher podcast and then again after having the opportunity to use the teacher podcast as a model.

Evaluation

Using iPods is a valuable teaching and learning tool. The use of technology appeals to most but not all students.

Self direction and discipline are important. Students lacking in these areas of personal learning still struggle with completion of all required steps and tasks, as they do with conventional pen and paper work requirements or one on one oral tasks. However, creating audio and video presentations engages students and makes them think about what they are saying. Errors in accuracy in writing are much the same, whether they are on paper or in electronic form. The scope for improvement in oral and aural skills is great, and depends on the effort students put into downloading and using teacher pod casts.

As with all teaching strategies, the use of iPods needs to be part of a variety and integrated into the delivery and learning of the existing curriculum.

Resources

- Teacher Podcast ***Die Familie***
- PowerPoint Presentation on Animal Family Tree
- ***Genau Book 1*** Text Book
- Work Book
- Audio Tapes
- Flash Cards

Title: Music Aural Comprehension

Introduction

At all levels of music students need to develop the aural awareness.

Background

From simple tasks at Yr 7 through to demanding work at VCE level students need to be able to listen and respond to musical examples.

Curriculum Areas

- MUSIC- responding to music

Number of lessons

This is usually a small part of each lesson for junior classes (5 mins) on a regular basis.
VCE classes 2X 50 mins per week

Teaching and learning strategies

Directed listening

Technologies used

CD player and recording

iPod

Piano/ midi keyboard

Music Ace (theory program) on Music Computer Hub

Notes for teachers

Being able to store a comprehensive aural library on a very small device is invaluable to a music teacher. Having examples of style and technique for various levels is fantastic. Instrumental teaching has an excellent resource tool.

I would like to explore the possibility of keeping sheet music files(created using notation programs such as *Sibelius.*) on the iPod.

I would also like to be sure about the copyright implications of using the iPod to broadcast recordings to students and also for sharing audio and sheet music files with them.

Evaluation

Using the iPod does not improve the quality of the delivery of this material- IT JUST MAKES IT A LOT EASIER TO MANAGE

Resources

- iPod
- Library of recordings
- *Aural perception for VCE*- Deborah Smith
- *Music Ace*- Computer Program

Title: Music – Composition Task

Introduction

Year 8 students use SONY ACID MUSIC to realise a musical composition. ACID is a loop based composition tool that allows students to cut and paste to create simple compositions or to be more creative if they want to use the program in more detail.

Background

Students have experimented with the program at Yr7 level and have an idea of the possibilities of the program.

Curriculum Areas

- ... MUSIC- Making & creating

Number of lessons

Time is flexible but students usually take between 3 & 5 X 50 min sessions

Teaching and learning strategies

Experimentation- Students use loops to create a basic working track. All loops synchronize in time and key. More advanced students may create their own loops via midi keyboard or by taking samples from existing recordings.

Reflection- Students take work away to reflect on their creation and to project possible changes.

Refining- With teacher assistance, students alter/ improve their work. This typically involves the introduction of chord changes, structural devices, dynamic changes and often simplification of arrangements.

Adding live sounds "VOCALS" – once a workable backing track has been created students are given the opportunity to add a vocal track by recording live via microphone into the program.

Technologies used

SONY ACID MUSIC- program on music computer hub (7 networked computers)

iPOds- students can render their work as MP3 and take their work away for reflection

Notes for teachers

Students always want to take their work home. Using just the Acid program kids could not take their work home easily, unless they owned the program. Being able to render the file into MP3 format allows the kids more instant access to their work.

Evaluation

Students find this to be a stimulating activity and attack it with enthusiasm.

Only a very few extend themselves when it comes time to refine and finalize work. Having to run the activity as a side activity (only 7 machines) whilst teaching the rest of the class limits the effectiveness of delivery.

Resources

Acid Music

Title: Science Prac – Adding salt to water

Introduction

This activity aims to teach the students how to present a coherent and meaningful practical report.

Background

Many of the students at Heathmont College do not understand how to write a practical report, nor do they understand that a practical activity is undertaken to test a hypothesis.

Curriculum Areas

Science – science at work

Number of lessons

6 x 50 minute lessons

Teaching and learning strategies

Double prac lesson: Students boil plain water, water with 2 g of salt and water with 4 g of salt. They take temperature and time measurements for each of the three exercises, so the results can be graphed and conclusions drawn about the effect of salt on the boiling temperature of water. Students work in groups of three; two students perform the prac and the other one videos the prac. Students download their movie onto the MacBooks.

Double write-up lesson: Students organise a prac report in iMovie under the following headings:

AIM – All three students are filmed saying why they are doing the experiment

MATERIALS – The students cut a bit of the film they took which shows the materials used. They do a voice over explaining the materials used.

METHOD - The students cut a bit of the film they took which summarises what they did. They do a voice over explaining the method.

SAFETY – The students are each filmed explaining the risks associated with the prac, and what steps they took to mitigate those risks.

RESULTS – The students present their table of results and their graph, with a voiceover explaining them.

DISCUSSION – THE students are filmed explaining; what the results showed, errors, difficulties and answers to any questions contained in the prac. They may like to include a section of the film they took during the experiment to illustrate any of the points they make.

AIM – The aim is repeated here to highlight the fact that the conclusion is based on the aim.

CONCLUSION – The students are each filmed explaining what they discovered about how salt affects the behaviour of water when water is heated.

SELF ASSESSMENT – The students are each filmed talking about; how their group worked, how they worked as a member of the group, what they learned and how they and the group could do better next time.

Last two lessons – all prac reports are shared using Studywiz. Students look at all podcasts and reflect on the elements that make up a comprehensive practical report.

The unit is wrapped up with a class discussion on what should be included in each section of a practical report. This is summarised and distributed for all students to use in future practical reports.

Technologies used

- Video camera

- MacBooks
- iPods

Notes for teachers

Suggestions that may assist other teachers

Evaluation

It was logistically difficult to manage the prac and the write –ups with only one teacher. Consequently only three of the eight groups completed their practical reports. The reports that were completed were of a high standard.

Problems with Studywiz prevented the sharing of podcasts and the completion of the last two lessons of the unit.

Resources

Year 8 science dimensions textbook

Title: Thinking in Mathematics

Introduction

The aim of this sequence of lessons is to get the students to think about how they learn in maths, and to work towards using more effective strategies.

Background

It was apparent that the Heathmont College students do not revise for maths tests, and do not know how to revise for maths tests. They rely on a teacher directed revision lesson just before the test.

Curriculum Areas

- Mathematics – managing personal learning

Number of lessons

The lessons are not all run as a sequence, but are interspersed with the Number unit.

Teaching and learning strategies

Students make a podcast at the start of the year on:

- Their top 3 tips for doing well in maths.
- Strategies they use when they revise for a maths test.
- What worked well for them in maths last year and what did not work so well.
- Students download the 2006 8F reflection podcast and listen to it.

Students reflect on their podcast, and the 2006 podcast, and find the common threads one of which is 'concentrate more'. As a class the students agree on some thinking strategies they can use to help them work more productively in maths.

The assignment at the end of the unit on percentages is the 'Revision Project'. Students use what they have learned about percentages to analyse the strategies they use to revise for a maths test. They compare what they do with others in the class as well as with a focussed year 8 student from another school. They reflect on what they do currently and how they can make their revision more effective in the future. This assignment may be submitted as a podcast or a written piece.

Students make a podcast at the end of semester 1 on:

- How they have changed their learning strategies
- What is working well and what is working not so well
- How they aim to modify their approach to maths in semester 2

Technologies used

Studywiz:

- Platform for downloading the 2006 podcast
- Platform for setting and submitting the assignment
- Platform for students to share their pie charts which show what they do when they revise for a maths test
- Platform for storing their personal maths reflections

MacBooks for creating podcasts

Computers for uploading and downloading podcasts

iPods for sharing podcasts

Evaluation

The revision project helped me as a teacher get a clear picture of the strategies the students employed.

Studywiz was a good platform for submitting and marking assignments. It will be helpful to have each student's assignments for parent teacher interviews.

Technology problems with Studywiz impeded uploading and downloading the 2006 8F podcast at the start of the year. It was eventually downloaded through iTunes by the teacher to individual ipods in term 2, which was well after the time it was required.

Most students completed their individual maths reflections at the start of the year. However, many were lost, because:

- There was no place to put them on Studywiz, what was needed was some kind of a digital portfolio
- The students saved their podcasts in the wrong format, it took until the end of term 1 to clarify exactly how their podcasts should be saved.
- The students saved their work onto particular macbooks and when they went to finish them in another lesson they couldn't find the macbook they had been using.
- The computers would freeze, the internet connection wouldn't work, the computers ran out of power and it was difficult to access power where it was needed.

Resources

1. 2006 8F reflection podcast which is a 10 minute movie where students talk about:

- Their top 3 tips for doing well in maths.
- Strategies they use when they revise for a maths test.
- What worked well for them in maths and what did not work so well.

2. Revision Project

Revision Project

Think about the things you do when you revise for a maths test and write them down.

Estimate the time you spend on each revision activity.

Calculate the percentage of time you spend on each activity during revision.

Use excel or some other method to make a pie chart showing the percentage of time you spend on each different type of activity while revising for a maths test.

Give a copy of your chart to at least two members of your class and get a copy of their charts.

Comment on the similarities and differences between the three charts.

Next time you have a maths test will you change anything about your revision system? Explain.

Your report should be presented as a podcast or a word document and should be submitted using Studywiz.

- Your report should include the following sections:
- Aim
- Data (questions 1 & 2)
- Calculations (question 3)
- Results (question 4)
- Discussion (question 5 , 6 & 8)
- Conclusion
- Self Assessment

Title: Weather

Introduction

Year 8 students were given the aim of discovering the following:

- What weather and climate are
- What the elements of weather are and how they interact (cold and warm fronts, rain shadows, hail and snow, rain)
- What happens when there are disasters with weather (floods, thunderstorms, cyclones)
- How to predict weather patterns

They were given the aim of incorporating the use of technologies of iPods and AppleMac computers to demonstrate some of the issues listed above. For example, to use the Apple Macs to create a Keynote presentation on how the water cycle works.

Background

As this is a new topic, and there are no links to the Year 7 curriculum, it is assumed that there is very little prior knowledge on weather. The skills that students are bringing in (from their Year 7 course) include:

- ability to use and read maps to gather information
- ability to read and create graphs to display information
- reading choropleth maps

Curriculum Areas

- Humanities

Number of lessons

4 weeks of three 48 minute lessons per week

Teaching and learning strategies

Developing glossaries of terms. Students use Keynote to prepare slides with the spelling and picture illustrating the term, then use GarageBand to add a voiceover track that gives the correct pronunciation of the term and a description of its meaning. These are then made into podcasts and shared amongst the class members.

Class discussion. The discussions could be videoed and made into vodcasts for the students to review at the end of the unit.

Reading and interpreting maps. Students could prepare vodcasts that describe the main features and symbols used on maps and how to interpret them

Creating a Keynote presentation on how the water cycle works that includes animation techniques.

Reading for meaning from a variety of sources eg newspapers, texts

Creating a climograph

Internet research assignment on a specific weather disaster eg Cyclone Tracey, Hurricane Katrina. The final presentation could be made in the form of a vodcast to be shared amongst students.

Six Thinking Hats on how people respond to disasters

Technologies used

Apple MacBooks

Ipods

Notes for teachers

The use of Apple Macs to create Keynote presentations is quite time consuming, and can extend the project by a significant period, if there are not enough MacBooks to allow students to have

enough time to finish their presentation off. This can create a lot of 'down time'. This can be reduced if the project is group-based with some students researching whilst others are preparing the presentations and vodcasts.

Evaluation

The use of this technology is very positive in developing team work. The teacher needs to have a significant period of time available to develop the project to get full value out of it.

Resources

- Various internet resources
- SOSE Alive 2 Textbook
- Apple iPods
- www.jaconline.com.au
- Apple MacBooks

Title: Introduction to Cricket

Introduction

This unit has been designed to introduce students to the fundamental skills of cricket. The unit has been designed around teacher created podcasts that the students download onto their iPods and use during classes. Skills and concepts include: Batting, (grip, stance, preparation and equipment); Bowling, (grip, run up, delivery stride, positioning) and Fielding (gathering the ball, throwing).

Background

Students' cricket ability levels in this group are vastly different. Within the group some students play representative cricket, while others are picking a cricket bat up properly for the first time. The lessons may be personalised to cater for differing ability levels

Curriculum Areas

- Physical Education

Number of lessons

6 x 75 minutes

Teaching and learning strategies

The unit is designed around approximately 30 minutes of iPod based work per 1hr 15min lesson.

Develop simple vodcasts of cricket skills and concepts including: Batting, (grip, stance, preparation and equipment); Bowling, (grip, run up, delivery stride, positioning) and Fielding (gathering the ball, throwing).

Students upload the vodcasts onto their iPods from a virtual learning environment, school intranet or network.

In groups or pairs, students study and discuss the individual techniques (eg, Batting) on their iPods and then practise the techniques a number of times, giving support to each other for improvements. Each student then takes still photos of other group members practising the relevant techniques.

Students upload the still images to their iPods. Individually and in groups, they compare and contrast their action with that of the teacher. Students work out the different levels of performance and rating themselves.

This can also be done with digital cameras videoing the techniques.

Follow the same process in successive lessons as you move through the different skills and concepts.

Technologies used

- MacBooks
- iPods
- Digital Cameras
- Studywiz (a learning content management system)

Notes for teachers

It is important to ensure that students understand and adhere to an iPod Acceptable Use Policy and that students are aware of appropriate care of the iPod including the requirement that their iPod is charged and ready to use in class with the relevant content uploaded on to it.

Evaluation

Discuss with students the development of a rubric for assessment which they work on in groups, including the finer points of bowling, batting, fielding techniques and how they performed as a group. Students self-evaluate and evaluate each others' performance in their groups.

Resources

- MacBooks
- video cameras (the video feature of many digital still cameras is suitable)
- school sporting equipment
- video cameras
- Studywiz.
- Teacher prepared podcasts demonstrating batting, bowling and fielding techniques.

Appendix F: Teacher Interview Questions

IPODAGOGY: USING IPODS AND VIDEO PODCASTING FOR LEARNING RESEARCH PROJECT QUESTIONS FOR DISCUSSION WITH TEACHERS

The purpose of this interview will be to generate information to help build a case study about emerging technologies and teacher pedagogy, student engagement and learning. This interview will take the form of a general discussion, focusing on the following questions:

Name:.....

1. How do you feel about being involved in the iPodagogy project?

Hot Warm Cool

2. How has it changed the way you teach?

3. Does an iPod for each student promote greater independence and engagement in learning?

4. What is the amount of time you have spent on curriculum as opposed to ICT skills?

5. Does the technology enable deeper integration of ICT across the VELs?

6. Does Studywiz & Equella facilitate

- delivery and submission of assignments to students?
- discussion with students?
- ease of content management?

7. How did you manage assessment?

8. What are the benefits of using iPods, podcasting, Studywiz?

9. What issues did you experience?

9. Is it sustainable long term and how would you organise it?

Appendix G: Student Interview Questions

**IPODAGOGY: USING IPODS AND VIDEO PODCASTING FOR LEARNING
RESEARCH PROJECT
QUESTIONS FOR DISCUSSION WITH STUDENTS**

The purpose of this interview will be to generate information to help build a case study about emerging technologies and student engagement and learning. This interview will take the form of a general discussion, focusing on the following questions:

Name:.....

1. How do you feel about being involved in the iPod project?

Hot Warm Cool

2. What skills have you learned?

iPods Reflecting on video Podcasting Studywiz

3. Have you discovered anything new about yourself and the way you learn?

Hot Warm Cool

4. Would you use teacher podcasts for learning?

Hot Warm Cool

5. Are there any of the technologies you used in the project, that you would recommend for other students and schools?

iPods Reflecting on video Podcasting Studywiz

6. Are there any technologies you use at home that you think should be used in schools?

7. What problems or issues did you experience with the iPod project