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To the Committee Secretary,

I am writing in response to the Senate Committee's inquiry into Academic Standards of School Education. My client, St. Josephs Catholic College, East Gosford, is an educational institution with first hand knowledge of educational standards in Australia. It has come to the attention of my client that Australia is entering a new phase in which technological knowledge and Internet skills are highly sought. St. Josephs Catholic College employs predominantly mature aged staff, many of whom have little to no experience with technology and the Internet. Therefore the challenge for the school is how to engage older staff in technological teaching and learning, to meet the needs of students in our increasingly technological society.

The attached submission intends to examine the current state of technological education in N.S.W and in St. Josephs Catholic College, discuss the need to embrace technological learning in Australian schools, and highlight the issues surrounding greater technology use in Australian schools.

We would appreciate any information about the outcome of the Senate Committee's consideration of this submission.

Regards, Gemma der Kinderen

Inquiry into Academic Standards in Schools

Submission

St. Josephs Catholic College

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1. Executive Summary

In recent years computers and the Internet have become a major global growth industry. Computers are used in the day-to-day running of many Australian businesses and workplaces, and in addition they assist people to function in society. Many Australians now do their banking, shopping and communicating online, and as Bitter and Pierson point out in today's technologically oriented economy, people who do not possess computer and Internet skills will be disadvantaged. Therefore it seems only logical that computer and Internet skills be taught and developed in Australian schools, to give students the best chance at success in society and the workplace.

Currently N.S.W schools operate under the Pedagogical model of teaching and learning, and by syllabus guidelines set by the N.S.W Board of Studies. However, these guidelines assume that students have access to computers and the Internet at school or at home. The reality is that many N.S.W schools have a limited supply of computers, which are subject to availability and bookings. As in the case of St. Josephs Catholic College, East Gosford, many students do not have access to computers or the Internet in classrooms and teachers do not possess the skills to teach technological applications. As a result, students have little opportunity to cement their computer skills or utilise the benefits of computer and Internet use. Financial support for technology, screening programs and maintenance is a major barrier for St. Josephs Catholic College, as no doubt it is for many other N.S.W schools. However, improving technological or computer-based learning in Australian schools would go a long way in improving standards of education in Australia.

For this reason we call on the Senate Committee to:

- Acknowledge that Australia is entering a new phase where technology will dominate the workforce.
- Realise that technological skills are of much importance to the individual in the modern society.
- Consider the potential technology has for improving education in Australia
- Take action to incorporate technology to a greater extent in Australian schools; and
- Consider the technological challenges faced by St. Josephs Catholic College and other N.S.W schools.

2. Introduction

St. Josephs Catholic College East Gosford, prides itself on quality education and support for students. However, it has become apparent to the school's principal Mr. Stephen Walsh that in order to maintain this quality education and support there is a need to embrace technology to a greater extent in teaching practices. LaMont Johnson, Maddux and Willis state, "Although schools have been slow to adopt computers, this technology has become incredibly powerful in cultures across the globe and is probably unstoppable in schools" (LaMont Johnson et al, 2001, 5). It is not enough for students to have basic technological skills anymore, the days of simple word processing and *Microsoft Encyclopedia* research have gone, and the age of the Internet and the World Wide Web has arrived.

The following submission aims to address the Senate Committee terms of reference:

- The effectiveness of current curriculum guidelines
- Factors bearing on teaching quality
- The effects of cultural and technological change on how students view the acquisition of skills and knowledge; and
- Any attitudinal changes that might have been measured or perceived in the way students and teachers value knowledge

The key issues covered in the submission are

- An overview of the current guidelines in the N.S.W education system
- The need to embrace technological or computer-based teaching and learning in Australian schools; and
- The barriers St. Josephs Catholic College and other schools face in embracing such practices.

The submission was written on behalf of St. Josephs Catholic College East Gosford and in consultation with St. Josephs' principal Mr. Stephen Walsh. Research was carried using both primary and secondary sources including: the Internet, books, interviews, and journal articles.

3. Current teaching guidelines

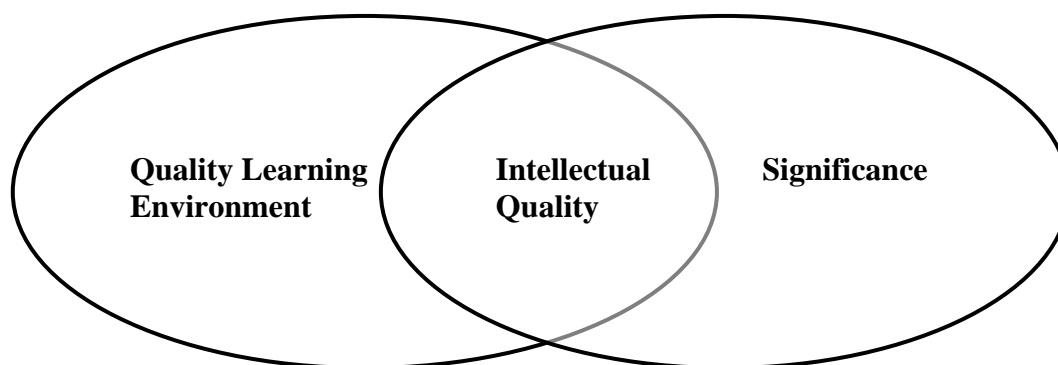
3.1 The State sphere: Education in N.S.W

3.1.1 The model for pedagogy: N.S.W Department of Education and Training

This model of pedagogy was developed by Dr. James Ladwig and Professor Jennifer Gore from the University of Newcastle in consultation with and on behalf of the N.S.W Department of Education and Training. According to the Department's discussion paper *Quality Teaching in N.S.W Public Schools* (2003), "The model for pedagogy has been developed as a framework for teachers' professional self-reflection and for school improvement practices in N.S.W public schools" (pp 4).

The model involves three dimensions:

- Pedagogy that is fundamentally based on promoting high levels of **intellectual quality**
- Pedagogy that is soundly based on promoting a **quality learning environment**
- Pedagogy that develops and makes explicit to the students the **significance** of their work



In this model intellectual quality is considered the central element, however all three elements are essential for students to benefit from intellectual quality.

The pedagogical model makes no direct reference to use of computers and the Internet in public schools, however the three dimensions of pedagogy are broad enough to assume that these technologies could be incorporated into the curriculum to enhance the model.

3.1.2 The Board of Studies and technology use guidelines

The N.S.W Board of Studies sets core school curriculums by developing syllabuses, and provides some support materials for teachers and parents. The Board of Studies website contains syllabuses for public and private schools across N.S.W for primary and high school level. Each of these syllabuses has guidelines on computer and Internet use. For example, one of the outcomes of the stage 2 syllabus for PDHPE is “communicates with students in a buddy class using e-mail to find out their likes and dislikes,” and another is “uses clip art and word processing to develop merit certificates that acknowledge achievement (sporting, academic, social)”. In a high school setting students are also required to familiarise themselves with technology. For instance, the stage 4 syllabus for English states, “responds to and composes texts in different technologies,” and the stage 5 syllabus states, “selects, uses, describes and explains how different technologies affect and shape meaning”. However, these syllabuses work on the assumption that students have access to computers and the Internet at school. The Board of Studies website also provides a list of materials that teachers can choose to utilise for class preparation, including CD ROMs and various websites.

3.2 St. Josephs Catholic College

St. Josephs Catholic College currently accommodates approximately eight hundred girls, and has limited classroom access to computers and the Internet. Components of various subjects, such as computer studies and mathematics, do incorporate computer and Internet use, however use of the sixty odd computers is subject to availability and bookings. Most teachers do not use technological teaching practices.

4. The need to embrace technological learning in schools

4.1 Technology use in the twenty first century

In recent years the Internet and technological devices have become a major global growth area. LaMont Johnson, Maddux and Willis even go so far as saying that the Internet and Web could represent the most important development in human communication in modern times (LaMont Johnson et al, 2001, 3). In their book *Educational Computing: Learning With Tomorrow's Technologies* they note, "A joint study by Inktomi and NEC Research in February of 2000, estimated that the Web had grown to one billion indexable pages (Sullivan, 2000), with at least 67, 000 new sites being added each day" (LaMont Johnson et al, 2001, 2). This marked increase in Internet popularity may be attributed to a boom in individual computer ownership, with hardware and software becoming evermore affordable. Also, today computers and the Internet enable users to perform a vast amount of functions, including, creating spreadsheets, writing word documents, online banking, electronic mailing, and many more. McCann, Christmass, Nicholson and Stuparich note, "The availability and use of advanced communications and multi-media technologies has increased at a rapid rate in Australia, with an increasing use of home computers" (McCann et al, 1998).

4.2 The benefits of embracing technology/ Internet in schools

Increasing use of computers and the Internet has many important implications for Australian schools. McCann et al write,

"There is continuing debate about the value of communications and information technologies in teaching, but as these technologies improve and proliferate in Australia and overseas, they promise to assist in providing better and more flexible delivery of education across the country" (McCann et al, 1998).

Greater use of computers and the Internet in schools would enable students to master computer skills necessary to function in society, offer them a window into the world, and better prepare them for university study.

4.2.1 Computer assisted learning

Computers have many applications that are useful for school education. Computers enable students to:

- Write word documents on various programs
- Create spreadsheets, databases and tables
- Create class presentations on programs like Microsoft PowerPoint
- Practice mathematical applications on programs like Microsoft Excel
- Use educational learning programs or CD ROMs
- Learn computing skills such as speed typing, cutting and pasting or inserting images into an original document; and
- Take, scan and manipulate photographs or images

Students who are computer savvy are more likely to possess the skills to compete and function in Australia's highly technological society and work force. According to LaMont Johnson et al,

“Computers have the potential to revolutionise teaching and learning. This potential exists for the same reason that they have already revolutionised many other aspects of modern living – because they are uniquely effective tools whose power is so flexible that it can be applied to an almost unlimited variety of problems associated with many human endeavors” (LaMont Johnson et al, 2001, 1).

4.2.2 The Internet as a window into the world

Current school teaching in Australia is generally confined to the classroom, where the most advanced form of technology is the blackboard. However, the Internet can offer students access to the outside world and a wealth of information from local, national and international sources. Via the Internet students can receive regular news updates, converse with people from all nationalities and backgrounds, and do research for assignments with instant and accurate search results. The Internet also enables students to search for academic resources, such as journals, that may even be more up to date than the books in their school libraries.

4.2.3 Preparation for university study

Much university study today requires students to have sound knowledge of computers and the Internet. University assignments are generally typed rather than hand written and often involve intensive research on the Internet. A student who enters university without computer and Internet skills may be disadvantaged and have little time, support or resources to up date these skills. According to McCann et al,

“Australian universities are now making significant investments in educational technologies... James and Beattie (1996) state that, ‘indications are...that computer-mediated communication and the Internet will soon take a major role in the delivery of postgraduate course work’ (vii)” (McCann et al, 1998)

Therefore, computer based learning at primary and high school level would better prepare students for university study.

4.3 Technology and the work place

In the modern work place computers and the Internet are commonly used for day-to-day operations, whether it be in administration, record keeping or data finding. An *Australian Bureau of Statistics* study of business use of technology in 2004-2005 found that in Australia 89% of businesses used computers and 77% used the Internet for completion of work. Computer based education in Australian schools would therefore give students a competitive edge when they enter the workplace. Bitter and Pierson state, “In a technologically oriented economy, people with more computer experience will obtain higher salaries. On the other hand, those with little or no computer experience will be disadvantaged” (Bitter and Pierson, 2002, 324).

5. Where the problem lies

5.1 In a general context

In terms of embracing technology in Australian schools the question is not whether to embrace it but how. As afore mentioned, it is inevitable that schools will need to adopt computer-based learning to a greater extent, however it is evident that certain problems may be faced in doing so. Such problems include, funding, equity, bandwidth, site blocking and Internet safety.

5.1.1 Funding

There is no doubt that the main barrier for Australian schools in terms of embracing technology is funding. Private schools receive funding for such endeavors through a combination of means including: religious systemic structures such as Catholic Education Offices, school fees levied from the parent body, fundraising from P & F associations, the state and federal governments. State public schools receive funding from the state government and voluntary fees. However many primary and secondary schools still lack the funds necessary to incorporate adequate and up to date technology into their teaching practices. Marginson notes, “The education system [in Australia] is growing rapidly...but the finance to pay for it properly is not being provided” (Marginson, 1993, 83). It could be said that lack of funding for technology in schools may not only stunt students’ learning but may also contribute to the division of schools and students based on financial or technological wealth. According to Bitter and Pierson,

“Although student-to-computer ratios are steadily improving, many low socioeconomic schools have limited access to computers and the World Wide Web, especially classroom access...A new type of poverty – information poverty – has emerged from this gap or *digital divide*. Educators are concerned that this digital divide will create a form of technological elitism” (Bitter and Pierson, 2002, 324).

5.1.2 Equity

In embracing technology to a greater extent in Australian schools it is important to consider that some students may not have access to computers or the Internet at home. An *Australian Bureau of Statistics* study of technology ownership in 2005-2006 found that 30% of Australian households did not have a computer, and 40% did not have access to the Internet. A student without access to a computer or the Internet at home may be disadvantaged should they be required to complete a computer based assignment outside of school hours. Bitter and Pierson state, “Equity issues are a major concern of educators utilising technology...Educators have a responsibility to ensure that all students have sufficient access to computers and the Internet, regardless of gender, ethnicity, socioeconomic background, and disability” (Bitter and Pierson, 2002, 324).

5.1.3 Bandwidth

Bandwidth refers to a channel’s capacity for information transmission. A small bandwidth affects the volume of data that can be transferred at any given time. Therefore, the more people using the Internet from the same connection, the slower that data is transferred. In schools time is an important issue due to the fact that,

especially in high schools, only a certain amount of time is allotted to various subjects. A slow Internet connection would be a hassle in a class of only forty minutes because it could mean that a student spends half of that time simply waiting for data to be transferred. Therefore, greater use of the Internet in schools would only be useful if the school could obtain a large bandwidth and fast Internet connection, such as broadband. This is a particular problem for St. Josephs Catholic College.

5.1.4 Blocking of unsuitable material

The childhood and teenage years are a time of much growth both physically and mentally. Many would say that children and teenagers also have impressionable minds. Therefore, schools have a moral responsibility to parents and students to ensure that students are not exposed to harmful or undesirable material. Should a school embrace technology to a greater extent, there is a need to install some form of blocking device on unsuitable material, for example *NetNanny* or *CyberPatrol*. However, this could in fact be a problem for a school, since material may be difficult to filter and Internet use difficult to police. LaMont Johnson et al note,

“Many schools, for example, have had to contend with the fact that computer and Internet connection that give eighth grade students access to 50 or 60 sites about volcanoes can also be used by an enterprising student to view hundreds of sites with pornography and erotica” (LaMont Johnson et al, 2001, 88).

What it all boils down to is whether or not it is worth taking the risk that these programs may not work one hundred per cent of the time.

5.1.5 The dark side of the Internet

Apart from the potential of stumbling upon pornographic sites, the Internet also has other dark sides, including:

- Sexual predators: Internet users who target young and inexperienced people in order to obtain their trust or convince them to do certain things.
- Fraud and deception: According to LaMont Johnson et al, “The Internet has become a popular method for crooks to separate people from their money” (LaMont Johnson et al, 2001, 89).
- Hate groups: Such as anti-religious or anti-political sites. *HateWatch* is a program specifically designed to filter such sites.
- Virus propagation: Electronic vandalism, for example cookies. Anti virus software such as *Norton* is designed to prevent computer viruses.
- Hackers: Internet users who possess the criminal expertise to access your personal information; or even
- Addiction: It is not unheard of for users to become addicted to chat rooms, online gambling or cyber pornography.

Although these occurrences are uncommon, screening programs would be useful for schools to ensure they are never encountered.

5.2 In a St. Josephs Catholic College context

5.2.1 How to engage older staff and encourage younger staff

St. Josephs Catholic College employs predominantly mature aged, experienced staff. Since the Internet has only become a global sensation in recent years, many of these staff members are unfamiliar with the technology and may have trouble using it. Therefore, the school faces the added challenge of how to engage these staff members to employ computer-based learning to a larger extent in their teaching. Yelland, Grieshaber and Stokes state,

“Applications of technology need to be utilised in graduate programs so that practicing teachers become used to viewing technology as a valuable part of their lives and learning, and may be stimulated into incorporating it into their own teaching programs” (Yelland et al, 2000).

Furthermore, there is the challenge of how to encourage younger staff to use computer-based teaching methods, given most of their older colleagues are not using them. If teachers are unwilling to embrace technology there may also be less pressure on the relevant funding authorities to allocate appropriate resources to embrace such endeavors. According to Ainley and Searle,

“Roschelle et al (2002) argues that the use of technology as an effective learning tool is more likely to take place when embedded in a broader education reform movement that includes improvements in teacher training...and a school’s capacity for change” (Ainley and Searle, 2005).

5.2.2 Student considerations

St. Josephs Catholic College is an all-girls school, and this has certain implications for greater technology use at the school. Bitter and Pierson note, “Research has documented that boys are more interested and involved with technology than are girls” (Bitter and Pierson, 2002, 324). In this light, it may be more of an issue for St. Josephs to engage their students in computer-based learning than it is for a mixed-gender or boys school. Burke and Murphy state,

“A report by the *American Association of University Women* (1998) concluded that, as technology is increasingly integrated into the education system, educators need to ensure that females gain ground and become more involved in technology fields in order to achieve economic independence in the industries of the twenty first century” (Burke and Murphy, 2004).

6. Conclusion

It is clear that in the future technology will become a major part of the Australian society and workforce. If we are to adequately prepare Australian children and teenagers for this highly technological future, there seems little question that schools need to embrace computer-based teaching and learning to a greater extent. However, such a move would require the government and other funding bodies to allocate more resources for schools to buy computer equipment and Internet devices, and to the maintenance of these technologies. St. Josephs Catholic College, East Gosford, and no doubt other N.S.W schools, currently do not have classroom access to computers

or the Internet. As observed, employing computer-based learning to a greater extent may have some negative outcomes. However applying technology with caution would go a long way in improving education standards in Australia.

7. Recommendations

1. That the Senate Committee acknowledges that Australia is entering a new phase where technology will dominate the workforce.
2. That the Senate Committee realise that technological skills are of much importance to the individual.
3. That the Senate Committee considers the potential technology has for improving education in Australian schools.
4. That the Senate Committee takes action to incorporate technology to a greater extent in N.S.W schools.
5. That the Senate Committee considers the unique challenges faced by St. Josephs Catholic College, East Gosford, in improving computer-based education.

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