

SUBMISSION NO. 5

I would just like the opportunity to confirm to the inquiry the importance and convenience of wireless in the Education sector. I work in the Facilities and Services Directorate of the Department of Education in Western Australia. Our section is responsible for the building and refurbishment of new primary and secondary schools.

Almost all of our new schools (12 in the last 2 years) have been built with optic fibre, Cat 5E and 802.11b access points. Why? We have had terrific success with 'narrowband' wireless in ordinary classrooms (see below for a more detailed description of benefits). Wireless offers huge flexibility for both students and teachers alike. The benefits of wireless have resulted in our new schools moving from less than 10% of school computers being laptops to over 60% laptops in one of our new primary schools. Note that unlike private schools the school laptop computers in WA government education are shared by multiple students or staff (with the exception of the Notebooks For Teacher program).

Although we currently use the relatively low performance 802.11b standard we would be able to offer higher quality educational services to students in more locations if broadband wireless was available at an affordable cost. At present all high bandwidth uses require the students or staff to plug in to a data outlet.

A key concern is the health and safety of our students. It is essential that wireless broadband meets very high safety levels as the students will be subject to radiation in the school environment for about 12,000 hours of their lives (assuming 5 hours per day, 200 school days per year, 12 years at school). As during part of this time students will be going through puberty, parents require assurance that their students are not at risk. Rather than state that it theoretically complies with Australian Standards, some documented testing of any broadband wireless would be reassuring - this was the reason for the testing described below.

TESTING IN WA

Testing of 802.11b wireless networking radiation levels was carried out in early August 2001 at Quinns Beach Primary School and Sevenoaks Senior College. The testing indicated that wireless networking equipment used in these West Australian schools had radiation levels 400 times lower than the Australian Standards. Measurements were made by Radhaz Consulting. The measured levels near an actively transmitting base station were less than 0.0005 mW/cm² at all sites for distances greater than 10 cm (the test equipment used could not provide valid measurements for distances less than 10 cm). Measurements at Sevenoaks SC were made with a Cisco 340 base station and Windows laptop with protruding Cisco wireless PC client adapter card. Measurements at Quinns Beach PS were made with a Lucent Orinoco AP-1000 base station and Apple iBook1 with internal Airport wireless card.

BENEFITS IN WA

Students using wireless laptop computers in a classroom show much greater integration of the technology with lessons than desktop computers - even those in collaborative clusters. Wireless networks provide great freedom for the users - offering anytime, anywhere learning. It allows students greater movement, permits easy showing of work to fellow students and offers greater opportunity for collaboration. Students can use wireless laptops inside at desks, in bean bags or on the floor. They can use them outside on benches, on the grass or under a tree - wherever they are learning! Wireless networks provide constant access to critical information (e.g. for teachers to access student assessment and attendance records). A combination of laptop computers and wireless networking provides great flexibility for different class sizes and multi mode teaching spaces (e.g. in middle schooling). Wireless networks allow smaller, more mobile devices that are less intrusive and save space in the classroom. They also help reduce the tangle of cables. Another advantage is that wireless laptops require less change by the teacher to classroom routine. Teachers who have been reluctant to use technology often find the advantages now outweigh the disadvantages. Wireless laptops can be used in a variety of different ways so are suitable for a range of teaching styles. Teachers appreciate the easy visual supervision of students - no longer are heads obscured by clunky desktop computers or monitors. The laptop computers are small, light and can be easily shifted around the classroom.

The above points are made from a Facilities and Services point of view. It is important that we design and build new schools with adequate provision for future technologies including wireless. I look forward to hearing of the outcome of the inquiry.
Many thanks, Keith

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