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Link and learn: Students connecting to their schools and studies using ICT despite chronic illness

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Abstract

In principle there are societal consensus and government approvals for equitable and inclusive education of children. This proves, however, to be a considerable challenge in practice, particularly for students unable to attend school for substantial periods because of chronic illness. Research indicates that continuing their education benefits students' ability to cope, maintaining a sense of normalcy and control. It is also crucial for minimising educational disadvantage and its impact on their future quality of life and prospects for employment.

Two pilot projects, 'WellCONNECTED' and 'Back on Track', conducted by the Royal Children's Hospital (RCH) Education Institute in Melbourne have investigated alternatives to the traditional hospital-centred model for meeting the educational needs of children with chronic illness: school-centred and community-based approaches that rely on a student's own school to maintain contact for educational continuity and on multidisciplinary support for students and their families. This paper describes a new research project, funded by the Australian Research Council, which aims to build on the findings of these pilot projects. It seeks to investigate the uses of Information and Communications Technologies (ICT) to help students maintain social and academic links with their schools during hospitalisation, treatment, and recuperation at home. The qualitative research project involves the participation of more than fifty students diagnosed with cancer, their teachers and their education advisors from the RCH Education Institute.

Findings from previous research and preliminary data collected from the current project highlight a significant concern about absent students missing out on important learning opportunities occurring within the classroom context. The potential for this project to examine possible ICT strategies that address this issue, such as interactive whiteboard technology combined with application sharing and videoconferencing, are discussed.

Key words

Information and Communication Technologies

INTRODUCTION

Australian statistics indicate increasing rates for chronic illness, including cancer have become a National Health Priority Area; incidence rates for adolescent cancer alone have increased 30% over the last decade. Nationwide, around 10% of children have a chronic illness (The Children's Hospital at Westmead, 2006) and in Victoria alone 180 children and 400 adolescents are diagnosed with cancer every year. Australia does not have a generally agreed-upon definition for chronic illness (Australian Institute of Health and Welfare, 2005) but O'Halloran, Miller and Britt (2004) suggest the following four qualifying criteria for chronic illness: it lasts for at least six months; has a pattern of recurrence or deterioration; has a poor prognosis; and impacts on an individual's quality of life.

The major chronic diseases among Australian children are asthma, diabetes and cancer. Some children are born with chronic illness; others are diagnosed in infancy or childhood. Asthma is the most common and often results in hospitalisation. Australia has one of the highest incidence rates of childhood asthma in the world (Shiu, 2004). Advances in medical treatment mean that survival rates for chronic illness are increasing and a childhood diagnosis of cancer is no longer a terminal one (Eiser, 2000). In Australia, around 70% of children with cancer can be cured (Chronic Illness Alliance, 2007). Therefore there are increasing numbers of Australians who have experienced childhood chronic illness.

Research is paying attention to the long-term effects of childhood chronic illness and longitudinal studies are finding that a significant proportion of children entering adulthood after treatment are encountering cognitive, social, emotional and behavioural difficulties (Brown & Madan-Swain, 1993; Hudson et al., 2003; Zebrack et al., 2002). Quality of life over the long term has become of considerable concern. Because children's future employment opportunities are strongly influenced by their level of educational attainment, it is imperative that the impact of chronic illness and prolonged or recurrent school absence on academic achievement is minimised.

LITERATURE ON EDUCATING STUDENTS WITH CHRONIC ILLNESS

The severity and long-term effects of the educational disadvantage suffered by children with chronic illness have resulted in attempts to address their needs through the establishment of hospital schools (Jones, Robertson, & McDougall, 2005). Depending on their physical state and energy levels, hospitalised children are given a number of hours each week to receive bedside lessons and to use the resources of a classroom within the hospital. Traditionally there is little or no ongoing involvement with a child's school of origin (Fels, Shrimpton, & Robertson, 2003) but there are indications that this is gradually changing in recognition of the central role schools can play in supporting students effectively during treatment. Keeping things as normal as possible actually decreases students' anxiety, increases their sense of control and helps them cope better with treatment (Bessell, 2001; Brown & Madan-Swain, 1993; Rynard, Chambers, Klinck, & Gray, 1998; Shute, 1999). And school is a big part of normal life for them – their 'work'. Their learning, interaction with teachers and peers, classes and school activities are all day-to-day experiences that occur within the familiar school environment. Being removed from this and losing contact with people in this environment for significant periods of time may create anxiety and fears about disrupted friendships and falling behind academically (Charlton, Pearson, & Morris-Jones, 1986; Sullivan, Fulmer, & Zigmond, 2001).

Improvements in medical treatment and decentralised approaches to healthcare mean that children with chronic illness are less likely to spend significant periods of time in hospital; they are often able to recuperate and receive some types of treatment at home (Potas & Jones, 2006; RCH Education

Institute, 2008). Therefore children have less access to academic support from hospital schools, although in some situations visiting teachers may be available for home visits. Providing effective educational continuity for students receiving treatment or recuperating at home and who are unable to attend school is increasingly a focus of concern, as is providing social interaction with friends and minimising isolation (Lightfoot, Mukherjee, & Sloper, 2001).

The potential of technology-facilitated links for learning

Technological advances have enabled the development of strategies which allow children with chronic illness to maintain contact with their schools, teachers and peers during hospitalisation, treatment and recuperation. These include mobile telephone conversations and texting, emailing, web-based interaction, internet chatroom discussions, and videoconferencing.

Despite significant and ongoing issues about the practicalities of developing school-centred and community-based approaches that successfully support the educational development of students with chronic illness, there is nonetheless considerable effort both internationally and nationally to find ways of achieving educational continuity and keeping such students involved with their schools of origin. The many technological advances, which are revolutionising the ways people in society live, learn, work, play and communicate, are also playing a significant role in this domain.

Schools increasingly have access to technologies with the potential to affect how they educate their students. Computer labs or laptops for every student are becoming more commonplace as schools recognise the importance of providing students with not only the skills for handling technologies but with multimodal ways of learning. Students increasingly own their own mobile telephones, and handheld technologies such as BlackBerry™ and iPhone 3G are becoming less expensive. In the years 2006-07, 64% of Australian homes had Internet access and 73% had access to a home computer (Australian Bureau of Statistics, 2007). And the capabilities of computers are increasing exponentially as greater processing power allows for the development of highly sophisticated software.

It makes sense to utilise such technological advances in education and to develop new and effective ways for students to learn and communicate. Many schools have developed their own intranets which allow remote access by students via login and password. Teachers can post assignments and notices, and facilitate class chatroom discussions about school work. Students who are absent or at home have remote access to information posted on their school's intranet and to digital files stored on the school network. Increasingly, schools are making use of this capability to provide online access to assessment reports for parents. They can view their child's results and academic progress at regular intervals. Schools are recognising the benefits of technological communication on the education of young people for whom the future is being shaped by continual increase in ICT use. The Victorian Government has developed the UltraNet project, proposed for rollout in 2009, in which a centrally hosted, web-based system is to provide an online intranet environment for all state schools. Its implementation aims to improve student educational outcomes, reduce the future cost of education and improve access to education for regional, rural and remote students (Department of Education and Early Childhood Development, 2006).

Previous research has shown that technology enables learning to take place beyond classrooms and timetabled periods, and Passey (2000) notes that establishing ICT links between home and school enables autonomy and individualised learning for students and encourages the involvement of parents. For students who are unable to attend school, such communication strategies are vital for maintaining contact and involvement both socially and educationally (Becta, 2001). Other studies suggest that disengaged and de-motivated students can be re-engaged through online learning (Duckworth, 2001;

Harris & Kington, 2002), and that students who are disaffected with schooling can show increased self-esteem, confidence and motivation when ICT is used (Passey, 2000). If such strategies are easy to use and reliable, they can help motivate students to continue with their studies (Jones et al., 2005). ICT can enable communication with peers and teachers (Detheridge, 1997; Waddell, 2000), improve independent access to people and learning materials (Moore & Taylor, 2000), and increase learners' technological confidence, motivating them to use online technology for both educational and leisure purposes (Waddell, 2000).

A comprehensive report conducted by the Deakin Centre for Education and Change (Blackmore, Hardcastle, Bamblett, & Owens, 2003, pp. 208-211) states that there appears to be very little research in Australia on students who are disadvantaged in terms of access to education and the long-term implications for post-compulsory school-aged students in particular (Years 11 and 12). It makes recommendations for research on: the modes of communication used by young people that can be exploited by teachers as a point of connectedness; computer-mediated learning that allows students with disability to be better integrated into group processes; and ways to support their learning effectively. Research over the past decade at the RCH Education Institute has focused on investigating technologies to gauge their effectiveness in improving the educational outcomes of students with chronic illness.

BACKGROUND AND CONTEXT

Perceiving the need for research into the potential use of technologies to maintain contact effectively between students with chronic illness and their schools, not only for social wellbeing but potential educational continuity and academic progress, the Royal Children's Hospital in Melbourne closed its hospital school in 1999 and established the RCH Education Institute. The new paradigm was a fundamental shift away from a stand-alone special hospital-based educational program to a school-of-origin-based approach that gives children continued access to learning programs at their own schools and contact with their own peers. The *WellCONNECTED* and *Back on Track* pilot programs conducted by the RCH Education Institute over the past few years (Campbell & St Leger, 2006; Cook, 2005; Fels et al., 2003; Potas, 2005) have explored the nature of the connections between these children and their schools, with a focus on the types of technologies to consider, the infrastructure required and the feasibility and sustainability of such an approach. They are described in the following section.

***WellCONNECTED* pilot project**

In April 2004, the RCH Education Institute initiated a pilot project called *WellCONNECTED* for 18 months. Its purpose was to investigate the effectiveness of ICT to support Victorian Certificate of Education (VCE) students with chronic illness through connections with their schools of origin. Funding was provided by Multimedia Victoria and broadband connections for Internet access by Telstra Country Wide. The Web-based connection was established by the use of a virtual classroom package called 'Manhattan', through which twenty VCE students and their school teachers maintained contact with each other (Potas, 2005; Potas & Jones, 2006) and which the RCH Education Institute administered. Although capable of much more, Manhattan was found to be used mainly for email contact with teachers and classmates, and also to complete assignments and tests.

In a detailed evaluation of the pilot project, Cook (2005) highlighted teachers' inadequate ICT skills as a major problem. Only a few teachers were able to use Manhattan effectively to communicate with their absent student and to provide online learning interactions with the whole class. Students, however, were positive, with 100% recommending it for others in a similar position to themselves.

They reported feeling more motivated to succeed. Their use of Manhattan demonstrated a higher level of understanding and greater sophistication of ICT use than their teachers. Several students made references to the difficulties their teachers experienced with using Manhattan successfully. Despite an expensive and intensive professional development program, it was concluded that Manhattan was too complex and therefore unsuitable for this type of use. The teachers themselves reported that they actually found the training inadequate and that their workloads were too high for them to invest in the time needed to master ICT skills required for Manhattan. They also felt that they could not justify allocating so much time and attention to the support of only one student.

The key finding of the pilot project was that the schools with a 'stronger ethos about inclusion and individual student welfare' (Cook, 2005, p. 27) supported their absent students and used Manhattan most effectively. For those schools who provided less support, it was thought that organisational structures and very tight constraints on teachers' work and time were key factors rather than the personal commitment of any individual teacher.

***Back on Track* Pilot project and ongoing program**

Back on Track was originally initiated as a pilot project in 2005, and after a detailed evaluation (Campbell & St Leger, 2006), was adopted as a continuing part of the services of the RCH Education Institute. Plans were made for ongoing research into its implementation and educational effectiveness. The program in its present form is funded by the Bone Marrow Donor Institute (BMDI – now called the 'Fight Cancer Foundation'). The RCH refers school-aged children with cancer to *Back on Track* education advisors. Their main role no longer includes substantial bedside teaching in hospital or lessons in a hospital classroom. Staff play an advisory support role with the following responsibilities:

- Organising meetings with schools of origin to help them develop modified learning programs;
- Overseeing the provision of laptops and Internet access in hospital and at a student's home, setting up student and school login access to the RCH Education Institute's online system;
- Suggesting avenues of communication between school, hospital and home and how ICT might be used for maintaining contact;
- Assisting with applying for other services such as the Visiting Teacher Service, Ronald McDonald Learning Program, and Red Kite educational grants. For VCE and VCAL ('Victorian Certificate of Applied Learning') students they activate special provision strategies;
- Maintaining regular contact with the student, family and schools to monitor progress and facilitate ongoing collaboration.

One finding from the evaluation of the *Back on Track* pilot project specifically related to the program's use of ICT to support learning was that strategies must be tailored individually to a student and their school context so that they can be flexible and responsive to the technological infrastructure that already exists (e.g., school intranets, firewalls, and ICT-use policies about MSN). The teachers interviewed frequently commented on the considerable addition to their workload, and that their schools did not provide release time or other resources to help them handle the extra effort involved in supporting their absent students.

The *Back on Track* pilot project also highlighted issues about training and ICT support for teachers, parents and students. It is important to note that Manhattan was still being used at the time of the evaluation but has recently been replaced with Adobe® Connect™ (formerly Macromedia Breeze), an Internet-based communications system. Nicknamed 'Shhlink' ('School, Hospital, Home Link'), this system provides for online collaboration with meeting rooms, whiteboarding, file and application

sharing, conference calls, and Web-based videoconferencing. It is understandably more reliable and easier to use than previously trialled virtual classroom software programs.

Despite a number of challenges which continue to be addressed, the overall finding of the evaluation after nearly one year of operation was that this model does have the potential to support children and young people with chronic illness absent from school for prolonged periods during treatment and recuperation. The ongoing *Back on Track* program has recently been introduced to the Peter MacCallum Cancer Centre for adolescents (named 'onTrac@PeterMac') and has also been implemented at the Children's Hospital Education Research Institute at Westmead in New South Wales (RCH Education Institute, 2007). There is increasing momentum for the development of a nationwide program based on similar approaches.

RESEARCH DESIGN AND METHODS

In the second half of 2007, researchers from the University of Melbourne and the RCH Education Institute were awarded an Australian Research Council (ARC) Linkage grant to continue research into the feasibility of school-centred and community-based models to support the education of students with chronic illness. The new project, currently underway, focuses on the use of ICT in these approaches. It aims to investigate the beliefs and perceptions of key stakeholders in the ongoing *Back on Track* program about the demands placed on them in trying to use ICT to maintain contact and continue students' education during prolonged absence. The key stakeholders in this research are the students, their parents, staff from the RCH Education Institute and RCH, teachers and schools.

The research is being undertaken with more than fifty students with cancer from middle primary to VCE levels who are referred to the *Back on Track* program. Participants in the research are those students, teachers at school with whom they have contact, and education advisors from the RCH Education Institute. These participants will be interviewed and followed over the period of each student's treatment and recuperation. Up to ten of the participating students will be asked to maintain a video diary for a period of 3-4 weeks. It is planned that the medium for recording the video diaries will be the previously mentioned 'Shhlink' communications system used by all students referred to the RCH Education Institute. As necessary, students will be provided with a webcam for this aspect of the project and for videoconferencing sessions.

This project asks:

- (1) Students how they have used ICT to participate in school work during their periods of absence;
- (2) Students, teachers, tutors, hospital staff and parents about the demands involved in assisting students to remain connected with their school and studies;
- (3) Schools and the RCH Education Institute what technical support is required to assist with online communication and interaction;
- (4) Teachers what extra professional development and technical support are required by them to be able to maintain contact with their absent students;
- (5) Whether this approach could be feasible for others who are unable to attend school on a regular basis.

This research project has national significance because of the increasing interest from other Australian hospitals and because it investigates a means of reducing the social and financial costs often present when students recuperate from serious illness in isolation from peers and teachers. ICT will be used to establish several different modes of formal and informal electronic contact with a focus on its

effectiveness for supporting the educational needs of absent students and preparing them to return successfully to mainstream schooling.

The project will generate information about necessary infrastructure, appropriate communication strategies, effective teaching approaches, and the key issues for teacher professional development in relation to this type of program. Based on these findings, guidelines will be prepared to enable utilisation of ICT for school engagement in other hospital-based settings and in contexts where students are unable to attend school for other reasons.

As noted previously, the 2006 census indicated high levels of access to computers and the Internet in Australian homes. A recent survey of school aged young people (Australian Communications and Media Authority, 2007) shows even higher levels of computer access (98%) and Internet access (91%). In this project we assume that students are computer literate, but that they might not have their own computer. Student participants will be offered access to laptop computers and a broadband connection so they can email, chat online or videoconference with RCH Education Institute staff, volunteer tutors, class peers and teachers. If possible participants will include students from Year 5 to VCE, across all educational sectors and regions catered for by the RCH. The duration of a student's involvement will depend on his or her condition, so while some may be able to provide data over the full data collection period, others will be transient. Students who complete a period of convalescence or rehabilitation and actually return to school during the data collection period will be included. Each student's school will be contacted to ascertain the infrastructure and support required by both the hospital and the school for successful interaction. The student's learning needs will be discussed with the student and their teacher(s) through visits, telephone, or email, depending on the school's location. Much data will be collected through the traditional ethnographic formats of recording conversations and describing the setting and activities that are part of the project. In addition a substantial amount of data will be collected electronically; for example the system will record who uses the computers, how often and for how long.

At the commencement of the project, participating students will be interviewed about their perceptions of the effect hospitalisation has had on their schooling, confidence in technical proficiency, and attitudes to learning. Teachers will respond to a questionnaire about their technical proficiency, teaching style preferences, and perceived needs for professional development about online teaching and learning.

During the project, roughly in the middle and end of a school year, individual and focus group interviews lasting approximately 30 minutes will be conducted with students in order to collect data on which aspects of the project are perceived to be working well or are problematic for students or teachers. All interviews will be audio-recorded.

The previously mentioned online communications system 'Shhlink', utilised by the *Back on Track* program, will be used to record and store messages sent and received by all users who are participants in the project. Both synchronous and asynchronous communications are possible, and this will provide a significant amount of qualitative data. In particular, information will be provided on:

- Interactions between students and teachers or tutors; data collected on these interactions will include the number, initiator, length, date and time (to look at frequency and synchronicity), and content;
- Requests from teachers for support from the RCH Education Institute and the nature of responses;

- Communications between teachers and RCH or university researchers.

Ethnographic and interview data will be selectively transcribed, and where appropriate returned to interviewees to check for accuracy. This data will then be searched for core categories that represent higher-level abstractions (Strauss, 1987). The Miles and Huberman (1994) technique of using matrices to display interrelationships among variables, participants and situations will be employed to organise data and find relationships.

PRELIMINARY RESULTS AND DISCUSSION

The research project currently underway was begun in early 2008 and will continue for a three-year period. The results of initial *WellCONNECTED* and *Back on Track* pilot projects and preliminary data collected for this project have highlighted the key issue of enabling students to maintain connections not only with their teacher and peers but with the learning opportunities taking place within the classroom context. A number of students have lamented that although they receive regular updates from their teacher(s) about work to be completed, they miss out on their teachers' explanations in class and on discussions with their peers. They feel that their lack of access to such crucial teaching and information cannot be replaced by references from a textbook. A potential avenue for investigation in the project to address this issue specifically is the use of technologies that enable absent students to participate synchronously in the learning activities conducted by their teachers in classrooms. Interactive whiteboards (IWBs) in combination with application sharing via videoconferencing are one promising possibility. These are discussed in the following section.

Connections to the classroom

The original *Back on Track* pilot project aimed to provide educational support across a number of curriculum areas but emphasised Literacy and Numeracy. For secondary students, their Mathematics and English teachers were generally the staff recruited into the program (Campbell & St Leger, 2006). Although these teachers made the effort to keep in touch with their students via email, telephone and Manhattan, they struggled with the amount of time involved and the inadequacy of trying to explain what was happening in classes to the absent students, including contextual information, visual displays, notes, and discussions as well set tasks and learning activities. Some students and their teachers found that the detailed explanations required for many activities could not be communicated via email or Manhattan chatrooms. Students needed to hear explanations that accompanied written solutions or diagrams on the board. Particular issues with demonstrating graphing techniques in Mathematics were highlighted.

Similar concerns were raised in an earlier evaluation of the *WellCONNECTED* pilot project (Cook, 2005). Teachers explained that important teaching and learning occurs within the interaction and explanations between teachers and students in class. Although they were able to list exercises and set work via Manhattan or email, teachers found it difficult, time-consuming and burdensome to try and summarise in writing the teaching, discussions and interactions that occurred in each of their lessons. Requiring teachers to review and adapt their teaching practices involved considerable time commitments outside of lessons that inevitably caused concern and some resistance.

This new project provides the opportunity to consider the use of ICT strategies which specifically address the importance of absent students still being able to access the learning and interaction occurring in class. Giving these students a 'window into their classrooms' and providing opportunities to interact and collaborate with their teachers and peers provides another way of minimising the impact prolonged absence from school has on their learning. The communications system 'Shhlink' supports synchronous videoconferencing with recording of online sessions for later access.

Synchronous and asynchronous applications are being investigated in the project, particularly with students at VCE levels, to gauge their feasibility and sustainability in a school environment. They can use the system to communicate in real-time with their teacher and classes, allowing them to see visual information presented, hear explanations and participate in discussions. These interactions provide opportunity to examine the students' development of social and cognitive presence (Garrison & Arbaugh, 2007) and the effectiveness of online learning in this unusual context. Those students who may be at a medical appointment or too unwell to videoconference synchronously are able to access recorded class sessions at another time. Students have commented positively on the potential to watch a recorded lesson and their 'teacher in action' with the ability to pause and re-play (or fast-forward!). These strategies aim to address concerns raised by both students and their teachers about absent students missing out on key learning opportunities occurring within the classroom.

Interactive whiteboards and application sharing

Given the potential for IWBs in educational settings and the increasing number of schools implementing them in the classroom, the project discussed here is also investigating the ways in which they could be combined with the online communications system to provide effective application and file sharing via videoconferencing. Visual information, notes, interactive applications, and graphing demonstrations all displayed on an IWB, along with teacher and peer discourse captured by a wireless microphone, offer an exciting potential for more effective ways of enabling the absent student to participate in key learning opportunities in the classroom through online access.

Research published in the UK suggests that classroom use of an interactive whiteboard (IWB) can change aspects of pedagogy through increasing the variety and amount of ICT used for teaching and learning. IWBs are reported to be much easier to use than computers for whole-class teaching, while also allowing for the re-use and sharing of resources. Students can benefit through increased opportunities for active participation in lessons and easier collaboration with peers. IWBs make it easier to cater for the multiplicity of learning styles present in any class through the use of a variety of resources, materials and approaches.

Much has been claimed about the potential of IWBs, including greater interactivity between teachers and students, and increased pupil engagement, motivation and enjoyment, all potentially leading to improvements in pupil attainments (Hall & Higgins, 2005). A recent review of research on the introduction of IWBs in UK classrooms (Smith, Higgins, Wall & Miller, 2005) revealed a clear preference for their use by both teachers and pupils, noting that the government too is keen to promote this technology. This was substantiated by Cogill (2002) who stated that all the teachers in her study were enthusiastic about the tools this new technology offered, to help structure their lessons, to save time scribing, to attract and retain children's attention and to provide large attractive text and images.

Technical trials undertaken at the beginning stages of the research project have demonstrated that videoconferencing software (such as Adobe® Connect™) can be combined successfully with the use of an IWB, webcam and wireless microphone to provide interactive audio and visual access to the applications open and files displayed on the IWB for a person located elsewhere but with Internet access. These technological possibilities for linking an absent student to the learning opportunities taking place in their classes, however, relies rather heavily on the ability, confidence and willingness of the teacher – their technological skills in managing the IWB and videoconferencing software in addition to using the IWB for teaching their class and for connecting with their absent student at the same time. Using the IWB in class for simple visual demonstrations is challenging enough in itself for

teachers still learning to utilise the technology without the additional pressure of managing online interaction.

Lack of teacher expertise with IWBs, especially when used in an online environment as is being investigated in the current project, appears to be a major impediment to successful IWB use. The professional development offered by suppliers provides the basic technological skills for using an IWB system. This, however, has not been found to provide the needed pedagogical knowledge for integrating IWB use effectively into the curriculum and the classroom. Smith et al. (2005) report that teachers who were already confident ICT users tended to become enthusiastic 'early adopters', able to experiment and develop their own IWB use following initial training while teachers with less confidence and experience with ICT preferred instead more sustained and individual guidance on a 'need-to-know' basis or as part of more structured continuing support. As IWBs become an increasingly widespread and familiar tool in the classroom for teachers to utilise, hopefully present concerns surrounding effective professional development, digital-resource development and technical support will be addressed.

The unique advantage of IWB technology lies 'in the opportunities this technology holds for collective meaning making through both dialogic interaction with one another and physical interaction with the board' (Smith et al., 2005, p. 99). In their review of literature on IWB use, Smith et al. stress that research is needed to collect empirical evidence so that the processes of teaching and learning with this new technology are more fully understood. The project presented in this paper is designed to address this need for evidence, albeit within a non-standard classroom context.

Since the implementation of IWB technology in Australian schools appears to be on the increase, it behoves those involved in this research project to consider how it might be utilised successfully to improve the educational connections between schools and their students who are unable to attend and participate in classes because of chronic illness. The issues surrounding such ICT use, however, intersect complex education and health contexts and as such extend far beyond the mere technical potential of new technologies. Over the next few years, this project aims to investigate such complexities with the aim of maximising the effectiveness of educational support for this group of children and young people.

CONCLUSIONS

The RCH Education Institute alone supports over 1500 students with chronic illness each year. Given both the increasing incidence rates and higher survival rates for childhood and adolescent chronic illness, there are many Australians who have experienced serious illness and whose education is likely to be adversely affected by prolonged absence from school. Advances in medical treatment mean that young people with chronic illness might no longer need to spend considerable lengths of time in hospital, receiving outpatient care and treatment at home instead. Consequently they will have less access to schooling traditionally provided by hospitals. 75% of the students supported by the RCH Education Institute spend less than 3 weeks in hospital. It is evident that a few hours of home tutoring by a visiting teacher is often inadequate. Some students do not even have this option, as funding within the different educational sectors varies and access is limited.

Technologies continue to become more affordable, accessible and powerful, providing the impetus for this research project to investigate harnessing their potential to connect students with their schools and studies during absence. There is gathering momentum for the introduction of similar programs, based on school-centred approaches using ICT, in hospitals across Australia. Findings of this research have

the potential to influence decision regarding their implementation. In addition, there are other groups of students unable to attend school and this project may provide valuable insight into supporting their educational needs.

There continue to be many practical and procedural issues to address, which is not surprising given the complexity of the infrastructure and coordination required for such an undertaking, and the number of stakeholders working together – schools, homes and hospitals. But the importance of connections for students with chronic illness, both socially and academically, and the desire to minimise the educational disadvantage imposed on them provides motivation enough.

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