CREATIVE CONNECTIONS TO SCHOOL: TEACHERS SUPPORT THE LEARNING OF STUDENTS WITH CHRONIC ILLNESS DURING ABSENCE

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Abstract

Educational research spanning many decades has sought to answer the question, ‘What makes a student learn effectively?’ The advent of increasingly flexible communications technologies offers both the need and opportunity to consider their application for effective learning. A research project, currently underway in a number of schools in Victoria and funded by the Australian Research Council, is investigating the use of communications technologies to address educational needs of students who are absent from school for prolonged or intermittent periods owing to chronic illness yet continue with their school studies. Early data from the project have demonstrated the desire of students to maintain contact with their own schools and the potential for continued learning and teaching, using videoconferencing, online whiteboarding and interactive whiteboard (IWB) application sharing. All these require particular resources and infrastructure, sustainable processes and support for teachers. This paper explores issues surrounding the educational application of technologies in a context where online interaction is being considered for the learning support and academic continuity of students unable to attend school.

Introduction

Research has highlighted the challenges of providing sustainable educational support for students during hospitalisation and recuperation at home (Ashton & Bailey, 2004; Bolton, Closs, & Norris, 2000; Brown & Madan-Swain, 1993; Shiu, 2001). These children and young people, often undergoing intrusive medical treatment that interferes with the normal trajectory of their schooling, not only need but want academic continuity: consistent access to opportunities to learn effectively so that they progress academically despite disruption to their full-time attendance at school. Addressing their learning needs and educational interests minimises their educational disadvantage and the impact of chronic illness on their future quality of life and employment prospects (Charlton, Pearson, & Morris-Jones, 1986; J. Lightfoot, Wright, & Sloper, 1999). It also gives students a sense of normalcy, the chance to make choices, exert control and experience hope. For many children and young people, opportunities to continue their learning and education also give them a welcome distraction from the imposition of medical treatment (Bessell, 2001; Jane Lightfoot, Mukherjee, & Sloper, 2001; Rynard, Chambers, Klinck, & Gray, 1998; Shute, 1999).

The severity and long-term effects of the educational disadvantage suffered by children and young people with chronic illness have resulted in attempts to address their needs through the establishment of hospital schools. 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, at least in policy if not practice (Office for Standards in Education, 2003). Teaching programs and resources tend to be the domain of the hospital school rather than the children’s own schools (Acevedo & Gilchrist, 2007), although some countries do require them to abide by nationally prescribed curricula.

Previous research has highlighted the desire of students to remain connected to their own schools, teachers and peers (Campbell, 2005; Hedström, Ljungman, & von Essen, 2005; Jane Lightfoot, et al.,
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Successful school re-entry is more likely if schools have maintained consistent contact with their students (Haas & Fosse, 2008; Shiu, 2005; Shute, 1999). Given their inability to attend school full-time owing to chronic illness, students need other means of interaction; the utilization of communication media has the potential to facilitate this. This research project is exploring the use of technological strategies in terms of their ability to meet the diverse learning needs and wants of students effectively, and their feasibility and sustainability in achieving academic continuity. This paper highlights a number of issues encountered in the research using one of the project’s case studies of a Year 12 student and his Mathematics teacher.

The following section provides the context for the project by describing the findings of two previous pilot projects that explored the use of technologies to support students with chronic illness during absence from school.

Background: Previous pilot projects

Within the past five years, the Royal Children’s Hospital (RCH) Education Institute, Melbourne undertook two pilot projects to investigate the potential of technologies for maintaining contact effectively between students with chronic illness and their schools. The Back on Track pilot project aimed to provide educational support for students with cancer. For those at secondary levels of schooling, their Mathematics and English teachers were generally the staff recruited into the program (Campbell & St Leger, 2006). They made the effort to keep in contact with their students via email, telephone and ‘Manhattan Virtual Classroom’, a free web-based course management system which included a closed email system, a variety of discussion groups, electronic submission of assignments, and a chatroom. Yet they struggled with the amount of time involved and the inadequacy of trying to explain what was happening in lessons to the absent students, including contextual information, visual displays, notes, and discussions as well as 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 mathematical graphing techniques were also raised.

Similar concerns were raised in an earlier evaluation of the WellCONNECTED pilot project involving Years 11 and 12 students with a variety of chronic health conditions (Cook, 2005). Although their teachers were able to list exercises and set work via Manhattan or email, they found it difficult to summarise, in writing, instructions and explanations from each of their lessons. Such efforts involved considerable time commitments outside of lessons that inevitably caused teachers concern and some resistance. 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 the 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 research currently underway and described here is associated with a project funded by an Australian Research Council linkage grant for three years and undertaken by the RCH Education Institute and the Melbourne Graduate School of Education, the University of Melbourne (RCH Education Institute, 2007). The following section describes how the research was designed, the types of data being collected and the means of data analysis.
Research design: Connections between absent students and their teachers

The research involves the participation of approximately 30 students from Years 5 to 12 across all educational sectors and receiving treatment from the Royal Children’s Hospital for a variety of conditions including cancer, anorexia nervosa, renal failure, conversion disorder, multiple sclerosis and cochlear implant complications. Other participants include their teachers at school with whom they have contact, parents and teacher consultants from the RCH Education Institute. These participants are interviewed and followed for the duration of a student’s absence from full-time school attendance. Resources are provided as required (for example, notebook computers with Internet access during hospital stays, webcams for videoconferencing, graphics tablets, headsets, desktop microphones, and wireless microphones for teachers), initial training given, and trials organised. Some of these interactions have been and are being observed firsthand (such as in the hospital with a student or at school with a teacher and class) and supported and modified throughout the project.

This project asks:

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

The duration of a student’s involvement depends on his or her condition and level of health. While some will provide data over the entire data collection period, others are transient. Students who complete a period of convalescence or rehabilitation and actually return to full-time schooling during the data collection period will be included. Each student’s school is contacted to ascertain the infrastructure and support required by both the hospital and the school for online interaction. The student’s learning needs and wants are discussed with the student and their teacher(s) through visits, telephone, or email, depending on the school’s location. The project investigates necessary infrastructure, appropriate communication media, sustainable learning and teaching approaches, and the key issues for students and teachers. Based on these findings, guidelines will be prepared about the use of technologies for school engagement in other hospital-based settings and in contexts where students are unable to attend school for other reasons.

Sources of Data

To gather initial data in the least intrusive and time-consuming way whilst finding out sufficient information to set up computer-mediated interactions promptly, a questionnaire has been designed for students and for teachers, containing a variety of open- and close-ended questions with opportunities for additional comments. The focus during the interactive phase of the data collection is on providing as many opportunities as possible for students and their teachers and classes to connect, and to observe their experiences if possible and appropriate.

Although informal conversations throughout the interactive phase of the data collection are revealing valuable information, an individual interview, either at the end of the academic year or when a student has returned to school full-time, provides an opportunity for each student and teacher to reflect specifically on their experiences, learning issues and academic outcomes. These include: the nature, rate, frequency and regularity of learning and teaching interactions; the perceived effectiveness of such interactions from the
student’s and from the teacher's viewpoint; the student’s academic progress; the student’s resultant level of confidence and their plans for future study; the teacher’s perceived changes to their teaching practices; and further opportunity for students and teachers to give advice or suggestions on how best to provide support. A semi-structured interview schedule has been devised to allow students and teachers to articulate their views on specific issues, to raise their own issues, and for the interview to explore emergent themes.

**Data Analysis**

The computer analysis software program NVivo, originally called Nud.ist and developed by QSR International in Melbourne, was selected for interpretive coding, pattern searching and graphical modelling using data from students’ and teachers’ questionnaires and interview transcripts, and the researcher’s observations and reflections. It captures the progressive and iterative process of finding patterns through within- and cross-case analysis and theme development and forms an audit trail of how data are collected, recorded, retained, and analysed. Coding has been and continues to be undertaken throughout the data collection phase of the project to enable emergent ideas to re-shape perspective, improve instrumentation, and allow for additional data collection to fill in any gaps (Miles & Huberman, 1994). Findings of the project are to be based on data analysed through line-by-line coding and pattern searching and on direct interpretation of observations (Stake, 1995).

**Discussion**

A number of student-participants have lamented that although they maintain contact with their teachers about work to be completed during absence, (for example, via email, school intranet or SMS) they miss out on the actual teaching - their teachers’ explanations and tuition - and their class’s discussions. They believe that their lack of access to and participation in teaching and learning interactions is not effectively replaced by attempts at independent study using a textbook or website. An emerging understanding of the significant difference between computer-mediated contact for information exchange (for example, topics to study, exercises to complete, deadlines for assignments) and communication for potential collaborative learning and teaching, has led to a consideration of sociocultural perspectives on learning and a more focussed investigation of technologies able to facilitate them.

The following diagram was created to highlight that certain types of communication media are more likely to facilitate learning and teaching interaction rather than mere information exchange. A one-way arrow on the diagram has been used to represent audio and video recording because although it provides opportunity for teaching and learning, it is asynchronous and does not facilitate interaction. As a strategy, however, it does have its place for students who are unable to videoconference because of medical appointments or being unwell. The opportunity to watch lessons later when they feel like it and to replay excerpts has proven helpful.
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Figure 1. Types of technology-facilitated connections between a student and their school
Source: Wilkie, 2010

The following sections discuss a number of issues arising from the project as illustrated by interactions between a Year 12 student, Faraji, and his Mathematics teacher Mr Fabiano.

Choosing to study: Faraji and his Mathematics teacher

Faraji was in Year 12 and attended a state secondary school in an outer Melbourne suburb. He was highly motivated to receive his Victorian Certificate of Applied Learning (VCAL) that year and to then complete an apprenticeship in Information Technologies. Faraji had renal failure and required a kidney transplant. He spent every Monday and Friday hooked up to a dialysis machine in the hospital ambulatory ward and missed all his lessons at school on those days every week. Faraji was particularly keen to pass Mathematics. For VCAL studies, this was dependent on the amount of work he was able to complete, including a number of practical projects. Missing three lessons every week was a considerable impediment to him, particularly since Mathematics was not a subject he had a lot of confidence in and he relied on his teacher for regular input so that he could keep up with his work.

Mr Fabiano was a full-time Mathematics teacher with additional responsibilities at school. He had been teaching for 25 years. Faraji wanted to be able to access and participate in the teaching and learning interactions occurring in class during lessons while he was absent and in hospital. He spoke with Mr Fabiano about synchronous videoconferencing, which would enable Faraji to participate with his peers in
learning activities and to receive individual support, a significant feature of his Mathematics lessons. Mr Fabiano was happy to oblige Faraji and to trial videoconferencing as a means of communication during lessons on days when Faraji was in hospital.

The system being used in the research is Adobe® Connect™ (formerly Macromedia Breeze), an Internet-based communications system that the RCH Education Institute implemented a few years ago. Nicknamed Shhlink (‘School, Hospital, Home Link’), this system provides online meeting rooms, shared whiteboarding, file and application sharing, conference calls, and videoconferencing. Trials have been conducted to explore its use by students such as Faraji to communicate with their teachers and peers during lessons, allowing them to hear explanations and participate in discussions.

Figure 2. Faraji videoconferences with his school teacher and class from hospital
Source: Wilkie, 2010

Online interactions have provided the opportunity to consider their effectiveness for promoting collective learning and academic continuity, as well as the development of the absent student’s social and cognitive presence (Garrison & Arbaugh, 2007). Faraji’s classmates responded with enthusiasm to his involvement in lessons via videoconferencing. Unsurprisingly, initial sessions saw them pulling comical faces in the webcam and livening up lessons with their excitement, not dissimilar to people on camera behind a news reporter! Both Mr Fabiano and Faraji took this in their stride and it was not long before ‘FarajTV’, as nicknamed by the class, became a regular and undisruptive aspect of lessons.

Taking the time

Previous research highlights time pressure as a possible reason for teachers’ lack of contact with students who are absent from school with chronic illness (Chekryn, Deegan, & Reid, 1987; Mukherjee, Lightfoot, & Sloper, 2000). Teachers who participated in the Back on Track pilot project commented on the additional workload in maintaining weekly contact with their absent student, preparing personalised learning plans, administering schoolwork exchanges, and writing extra contextual information about classroom activities and set work (St Leger & Campbell, 2008). Teachers from the project described in this paper have also referred to lack of time as an issue; they expressed concern about not having enough
time on top of their teaching workload to provide support for their absent student. Mr Fabiano wrote in his initial questionnaire that ‘time is a problem’ (18/2/09); he taught a full-time allotment and his additional responsibilities included student activities during lunchtimes. Despite the extra work involved, however, teachers were explicit about their willingness to support their student (of all the teachers approached to participate in the project, only one declined, citing personal health issues as the reason).

One of the foci for this project is the consideration of how communication media might be used to minimise the amount of time outside of lessons teachers need to spend on supporting their absent student. Writing lengthy emails, an issue raised by several pilot projects, is an unsustainable use of teachers’ already tightly constrained time, and tends to be an ineffective teaching and learning strategy, particularly in those subjects requiring demonstrations and explanations, such as Mathematics. In Faraji’s case, Mr Fabiano needed extra time at the beginning of the project to get equipment set up and working, but because interactions with Faraji thereafter occurred during lessons, there was no further imposition on his time and work commitments. He was able, each lesson that Faraji was absent, to carry in his laptop and headset, set these up on his desk, and then spend a few moments logging on to the Shhlink website and entering the online meeting room. Because Faraji was able to participate in the learning activities synchronously from hospital and receive individual help from his teacher then and there, there was no need for Mr Fabiano to write subsequent emails.

Figure 3. Mr Fabiano teaches the class while Faraji listens and watches remotely from hospital
Source: Wilkie, 2010

Technology tutoring

Linking an absent student to the learning opportunities taking place in lessons via communication media relies significantly on the ability, confidence and willingness of the teacher – their technological and pedagogical skill in managing the equipment and videoconferencing software, communicating with their absent student, and teaching their class all at the same time. Some assert that a major barrier to the successful integration of technologies in schools has been teachers’ alleged reluctance to embrace new ways of doing things (Christensen, 2002). Research into the take-up of technologies by teachers has found a correlation between teachers’ attitudes toward technologies and the extent to which they implement them in the classroom. Chuang and Thompson (2006) state the commonly held belief that teachers dislike technologies because they don't know how to use them. Mr Fabiano was perhaps atypical in that although he reported a low level of technological ability, (one other teacher reported an equally low level of ability
and refused from the outset to trial videoconferencing) he was willing to be involved anyway. He indicated that he needed ‘to be shown how to access [the] technical side of things’ (18/2/09) but was happy to trial whatever media Faraji wanted. He also reported a high level of practical IT support from his school, unlike the other teacher previously mentioned.

For both students and teachers participating in the project and trialing videoconferencing, a written step-by-step guide was provided, giving information on how to access the online meeting room, set up the webcam and audio, and interact with the user interface. In Faraji’s case, he was already a keen user of technologies and picked up the necessary skills with ease, having been shown the system’s features one-on-one in the hospital. During initial online interactions, Mr Fabiano received assistance from an IT staff member at his school and from ‘just-in-time’ mobile telephone conversations from a research team member. Interestingly, Faraji’s classmates volunteered to help set up the laptop and login at the beginning of lessons so this eventually became one less task for Mr Fabiano to do.

Complexities with other cases

In comparing Faraji’s and Mr Fabiano’s situation with other cases in the project, issues influencing the potential for academic continuity continue to emerge. Faraji’s absence from school was intermittent and although he missed a significant number of lessons, he was able to sustain face-to-face contact with his teacher and peers. He was able to talk to Mr Fabiano himself about the project and ask him to participate. Students in other cases who were absent for prolonged periods of time from school may not have had a prior relationship or face-to-face contact with their teacher, increasing the challenge of initiating and maintaining involvement. A recent large-scale study conducted in Australia highlighted that the longer a student is absent from school, the more likely they are to receive declining support from their school (Shiu, 2005).

Despite the imposition of renal failure and the intensity of treatment required, Faraji was generally able to continue attending school for three days a week. Many students experience significant fluctuation in their levels of health, which influences their ability to even spend time on study or on interacting with others. For those students undergoing intense periods of medical treatment, such as chemotherapy or surgery, synchronous videoconferencing is not always viable. The use of audio- or video-recording of lessons for later viewing is an option being trialled but involves additional IT support, such as setting up of equipment, downloading files, and sending files to the student. Teachers have expressed concern about its use as a learning strategy because of the lack of interactivity but for some students, watching videos of lessons is preferable to reading a textbook on their own.

Faraji intended to receive his VCAL, a post-compulsory certificate that is based on the amount of work completed (formative assessment). In Victoria, most students apply to complete their Victorian Certificate of Education (VCE), which is based on summative assessment: external examinations and school-assessed coursework. The content of subjects for VCE is more rigid than VCAL and there is considerable time pressure for teachers and students to cover the required topics. This lack of flexibility and content-intense study adds to the difficulty for students with chronic illness, whose use of time is dictated by their medical treatment and current level of health. Yet if they intend to study at university, an ENTER (Equivalent National Tertiary Entrance Rank) is often required and this is derived from VCE subject scores rather than VCAL certification.

For Faraji and Mr Fabiano, once interaction in the online meeting room was established, there was very little need for further IT support. Some students and teachers from other schools, however, have experienced considerable disparity in their ability to use videoconferencing because of Internet-based technological issues (connection problems, firewall issues, lack of bandwidth on the school network). Older laptops lack the processing power to handle the audio and video requirements of the communications system. Such issues add to the challenge of implementing communication media to support the interaction between students and their teachers. Some problems may resolve over time given
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Continual advances in the power and utilisation of technologies. Yet the communication media themselves are only one part of the picture; this project highlights the uniqueness, complexity and transience of each student’s and teacher’s context. There does not seem to be an effective “one-size-fits-all” approach to educational support of students during chronic illness.

Conclusion

Owing to increasing incidence rates and survival rates for chronic health conditions, there are increasing numbers of adults whose level of educational attainment and employment opportunities have been directly affected by significant absence from schooling and the resultant educational disadvantage. Technologies continue to become more affordable, accessible and powerful, providing the impetus for research to investigate harnessing their potential to address such educational disadvantage by connecting students with their schools and studies during prolonged or intermittent absence. Children and young people themselves have indicated that they want to be able to do so.

There is gathering impetus in Australian hospitals for research into providing access to learning opportunities for all children and young people with health-related conditions, whether hospitalised or at home, whether absent from school for prolonged periods or intermittently. Findings of this research have the potential to influence decisions regarding the implementation of educational support models used by hospitals and schools. The new Royal Children’s Hospital in Melbourne is currently being built, and is scheduled to open in 2011. The development of a new environment provides a timely opportunity to consider the diverse learning needs of children and young people with chronic illness and how some might be met with technological innovation such as computer-mediated communication. Possibilities include videoconferencing, online whiteboarding and interactive whiteboard application sharing. Creative connections to schools, teachers and peers play a role in providing teaching and learning opportunities and it is anticipated that this research project will provide further insights into how best to sustain them.

References

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