

School ties: keeping students with chronic illness connected to their school learning communities

Karina J. Wilkie, *k.wilkie@pgrad.unimelb.edu.au*

ICT in Education and Research, Melbourne Graduate School of Education,
The University of Melbourne

Anthony J. Jones, *a.jones@unimelb.edu.au*

ICT in Education and Research, Melbourne Graduate School of Education,
The University of Melbourne

Abstract

Participation in their school community provides children and young people with opportunities for interaction and collaboration, benefiting them educationally and socially. Their involvement and sense of belonging can be disrupted significantly by the experience of chronic illness, not least because of prolonged or recurrent absence from school. Given that there are increasing incidence of and survival rates for chronic illness, schools are more likely to have students who are enrolled but are absent from lessons for significant periods of time owing to a chronic health condition. Helping these students stay connected to their school communities - strengthening their school ties - is essential, not only for psychosocial reasons, but to minimize their educational disadvantage and the impact on their quality of adult life and employment prospects.

Although on-site hospital schools seek to address the educational needs of hospitalized children and young people, decentralized healthcare and improved medical treatment mean that they have less access to those students who are only hospitalized for short periods of time and receive treatment or recuperate at home. Out of the reach of hospital schools, these students also may not be attending their own schools, increasing the likelihood of disconnection and isolation.

Children and young people themselves have indicated their social and academic concerns about absence from school and their desire for maintaining connections with their teachers and peers. Increasingly flexible communications technologies, such as videoconferencing, online whiteboarding, and interactive whiteboard (IWB) application sharing, provide opportunity for facilitating such connections. This paper describes the investigation of technology-mediated communication between students and their schools in the context of a research project funded by the Australian Research Council and in its third year of data collection across a number of schools in the state of Victoria. It explores some of the impediments to the successful implementation of technologies, highlighted by a collective case study of several students and their teachers. It presents a model for the linear and cyclic process of connection between students and teachers. Data suggest that ambiguity about their role and management of communications technologies in a school setting are significant challenges for teachers who have a student absent for significant periods owing to chronic illness.

Keywords

Technology-mediated communication, school absence, chronic illness, educational continuity

INTRODUCTION

Incidence and survival rates for chronic illness in childhood and adolescence are both on the increase (Australian Institute of Health and Welfare, 2007, 2009), making it more likely for schools to have such children and young people enrolled as students. Chronic illness does not have an agreed-upon definition (Australian Institute of Health and Welfare, 2005) but O'Halloran, Miller and Britt (2004) suggest the following four qualifying criteria: chronic illness 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 long-term nature of a chronic health condition distinguishes it from temporary illness.

Research has found that keeping life as normal as possible for children and young people with chronic illness increases their sense of control, decreases their anxiety, 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: interaction with teachers and peers, classes and learning activities are typical day-to-day experiences that occur within the familiar school environs. Being removed from this and losing contact over time may create apprehension about falling behind academically and disrupted friendships (Charlton, Pearson, & Morris-Jones, 1986; Sullivan, Fulmer, & Zigmond, 2001). In an Australian study of adolescents with chronic illness, Shute and Walsh (2005) report that parents perceived schools as less supportive of students' academic progress during extended absence. Shiu (2005) also highlights a pattern of declining support from schools for students with high absenteeism owing to chronic illness.

If students no longer feel that they belong to their school communities, they may become reluctant to attend school later on (Bessell, 2001; Haas & Fosse, 2008; Rynard, et al., 1998). Future employment opportunities are strongly influenced by educational attainment, so it is also important to find ways to minimize the impact of prolonged or recurrent school absence on academic outcomes. This article highlights current research undertaken in a number of secondary schools in the Australian state of Victoria to explore the use of communications technologies to maintain connections between students with chronic illness and their school learning community. The following section provides details on the context for the project by describing traditional educational support for children with chronic illness, and previous research on the use of technologies in similar contexts.

CONTEXT FOR THE RESEARCH PROJECT

Children who are hospitalized for a significant period of time often receive educational support from an on-site hospital school that provides bedside teaching or lessons in a classroom. Hospital schools traditionally had little to do with patients' schools of origin (Fels, Shrimpton, & Robertson, 2003), but in recent years have increasingly liaised with them to develop learning plans and resources consistent with programs from school. Decentralized approaches to healthcare and improvements in medical treatment mean that patients are less likely to spend lengthy periods of time in hospital, often recuperating and receiving some types of treatment at home (Potas & Jones, 2006; Royal Children's Hospital Education Institute, 2008). Therefore children and young people with chronic illness have less involvement with, and receive less support from, hospital schools. Tutors may visit them at home but eligibility for funding and availability vary across educational sectors (Shaw & McCabe, 2008). In the state of Victoria, the Visiting Teacher service provides only one hour per week for students enrolled in government schools. Those students whose absence from school is recurrent rather than prolonged are likely to receive no interim educational provision.

Students have indicated their desire to remain connected with their own school community and to continue their learning during absence (Campbell, 2005; Hedström, Ljungman, & von Essen, 2005; Lightfoot, Mukherjee, & Sloper, 2001; Potas, 2005). The advent of increasingly flexible and powerful communications technologies has provided the opportunity to consider their application in this context: to keep children and young people with chronic illness connected to their school communities.

Perez-Berkoff (1998) reports on trials of early videoconferencing technology in Sweden to connect a student with cancer to his school and classmates. The experience of being involved virtually with his class reduced his fear of falling behind academically, and access to recorded lessons allowed him to work at any time of the day or night when he felt well enough.

A Canadian project in the 1990s developed a robot named PEBBLES (Providing Education By Bringing Learning Environments to Students) located in a classroom and able to be controlled remotely by a hospitalized child. Classmates were able to communicate via the robot's screen (Telbotics, 2006). Research highlighted the benefits of its synchronous facilitation of group discussions, presentations and participation in classroom activities (Fels, Weiss, Treviranus, & Smith, 1999). Later research found that conventional desktop videoconferencing was just as effective and significantly less expensive (White, 2003).

A regional education department in France developed a program to fund the temporary provision of equipment and Internet access to primary students with chronic illness, enabling them to videoconference with their school. The Paris education authority has developed a project to provide instruction in physics, chemistry and biology using videoconferencing for secondary students (Ministry of Education Higher Education and Research, 2008).

Initiated in 1993, the Kav-Or program utilises a variety of technologies to support children across 27 hospitals and children's departments in Israel, including online connection between students and teachers (Kav-Or, 2002).

The Royal Children's Hospital (RCH) Education Institute in Melbourne, Australia, conducted two pilot studies that aimed to maintain connections between students with a chronic illness and their school community. Commencing in April 2004, the *WellCONNECTED* project targeted senior secondary students from 20 schools who had been absent for extended periods during 2003/2004 and intended to continue their education by enrolling in subjects with state-wide external examinations (Potas, 2005). As part of the project, schools opted to trial one of three communication models. The most popular model, chosen by 18 schools, utilised a web-based course management system called 'Manhattan Virtual Classroom' which had a closed email system, discussion groups, electronic submission of work and a chatroom. A key finding was that 100% of the students recommended its use for others in a similar position to themselves (Cook, 2005). This project ran until the end of the 2005 academic year, and enabled some students to complete subjects that would not have possible otherwise.

The second pilot project, *Back on Track*, was funded by a charity and involved students absent from school following a diagnosis of cancer (St Leger & Campbell, 2008). The levels targeted were students transitioning from primary to secondary school and senior secondary students. Participating students were provided with a laptop computer, and if necessary internet connection through an Internet Service Provider. Work for students was provided electronically by schools, and monitored

by education advisors from the RCH Education Institute. Unfortunately this project concluded in 2008 when funding was withdrawn by the charity as a direct consequence of the global financial crisis.

RESEARCH DESIGN

The current *Link 'n Learn* project at the RCH Education Institute aims to produce evidence on the types of digital technologies suitable for mediating effective communication between students and their school communities. Specifically, the project is investigating the use of laptop and notebook computers for videoconferencing, emailing, texting (SMS), and online chat as well as online learning resources and school learning management systems, within the context of maintaining academic engagement for students unable to attend school owing to chronic illness. It is anticipated that guidelines for implementation, together with a framework of appropriate communication technologies, necessary infrastructure to overcome potential health-related barriers for students, sustainable learning and teaching approaches in this context, and key issues for students and teachers, will be generated.

The duration of a student's involvement depends on his or her health condition and prognosis, so while some may provide data over the life of the project, others will be transient. Students who complete a period of convalescence or rehabilitation and then return to school during the data collection period are included. Each student's school is contacted, and the infrastructure and support needed from both the hospital and the school are ascertained. The student's learning needs are discussed with the student and one or more teachers, either by visits, telephone, or electronic communication. The majority of data have been collected through the traditional ethnographic formats of recording conversations and interviews, and describing the setting and activities that are part of the project. A subset of eleven Years 10, 11 and 12 students and their Mathematics teachers were additionally asked to complete an initial questionnaire about their subject-specific concerns, learning and teaching needs and their communication media preferences. Other data, registering who uses the computers, how often and for how long, are collected electronically.

A range of possible teaching and learning approaches are being investigated, depending in part on the level of schooling and needs of students. The type and frequency of digital communication between students and teacher has varied immensely, and this will be discussed later. This has implications for the types of data collected as well as for methods of analysis. Electronically recorded conversations and interviews are transcribed, and NVivo software used to explore the data through interpretive coding and to examine possible relationships through pattern searching and graphical modelling (Bazeley, 2007; Stake 1995). Researchers maintain field notes of visits to schools and hospital wards, and also for telephone conversations. These data are also transcribed and examined using NVivo.

DISCUSSION

When a young person is first diagnosed with chronic illness, energy is directed towards necessary medical intervention and their physical welfare. The initial shock of diagnosis, learning about the symptoms, prognosis and treatment of chronic illness, whether or not a cure is possible, adaptations to daily routines, and financial outlay are all part of the stressful and often traumatic process of coming to grips with chronic illness - for the young person as well as their family. Over time, concerns about what having a chronic illness may mean educationally and psychosocially, and its impact over the long-term, begin to surface. The discussion explores these concerns and how they have been addressed by technology-mediated connection

between students and their school communities: seeking and arranging connection, actually making a connection and then sustaining connection over time. A model visualizing this linear and cyclical process is presented at the conclusion.

Absence from school for significant periods of time - prolonged, recurrent or intermittent - is often unavoidable. Young people with cancer often undergo repeated cycles of chemotherapy and recuperation that require prolonged absence from school, often for several months or even more than a year. Absence may also be recurrent; for example, those who require regular treatment such as haemodialysis every few days may attend school for less than five days per week. Young people such as those with asthma or allergies may require intermittent hospitalization and absence from school. Appointments with medical specialists often involve lengthy periods spent in waiting rooms. Treatment regimes can interfere with a young person's routine of attending school each day. Those who are hospitalized experience variable routines that prioritize their medical needs.

Seeking connection

Being away from school can result in significant anxiety about losing contact with peers and about not knowing what is happening at school. Young people also worry about their schoolwork and often have a strong desire to continue learning and studying despite hospitalization or treatment. Several students in the research project listed *not finding out about class work being set* as a high concern. One student explained, 'Teachers told me not to worry about my schoolwork, but I *want* to continue with Maths' (G, 17/2/2009).

For some young people with chronic illness, continuing study despite absence from school is a helpful distraction from the imposition of medical treatment. For others it is an opportunity to exert control and exercise choice. Some young people worry about the future and are determined to utilise their time during treatment to at least achieve some educational progress. Responses when asked why students in the research project wanted to continue study included:

'To get a better understanding and to prepare myself for VCE' (Victorian Certificate of Education: Years 11 and 12) (A, 9/5/2008)

'To keep future opportunities open for me' (D, 15/08/2008)

'I have nothing to do' (G, 17/02/2009)

'So I am up to date with maths when I sit my school certificate exam' (H, 19/03/2009)

'I love Maths' (J, 23/04/2009)

'As a possible pre-requisite for uni studies' (K, 17/03/2009)

Some students may be keen to continue study but may not know how to follow this up realistically and effectively. Familiar with relating to teachers at school and within the classroom setting, they may be unsure of what to do when removed from their usual mode of face-to-face interaction. They may also be too unwell at that time to deal with their concerns about schoolwork and their desire for maintaining connection to school. Others try to study on their own using a textbook. Some students in the research project described their efforts:

'The textbook work looks really complicated when no-one's there to explain.' (A, 9/5/2008)

'On my own, like if I needed help, I couldn't just ask the teacher.' (B, Q6.4, 27/11/2008)

'Just not having the teacher there, so that I can you know, learn, like be shown how to do stuff.' (C, Q6.4, 24/11/2008)

When a teacher discovers that one of their students is absent, either for a prolonged period of time or recurrently, some time may elapse between noticing their absence and being informed of the reason. This may be because parents or the student are reluctant at first to disclose medical information, or perhaps because contact with the school is initially restricted to a student welfare coordinator. When a teacher does find out, their usual professional focus of relating to students in an educational domain shifts to consideration of medical concerns - likely to be unfamiliar in their role as educators. Of course student absence owing to temporary illness is regularly handled by teachers, but chronic illness is often of a more serious nature with absence from school of longer duration.

A number of teachers in the research seemed hesitant to initiate contact, particularly if their student had already been absent for a lengthy period of time. Teachers appeared cautious and uncertain about what to do, which seemed out of character when compared to a teacher's usual interactions with students at school. One interpretation of teachers' apparent lack of involvement is that they want to be supportive but do not know whether that means encouraging the student to continue with their studies (academic support) or to focus on "getting better" (emotional support). Should they view their involvement with such students in terms of *wellbeing* or in terms of *teaching and learning*? Because health issues, often of an extremely serious nature, become a priority for students with chronic illness, teachers want to demonstrate their care, but may not know how to do so within their usual role as "the teacher". Since they may not know what the student needs or wants, and do not want to interfere during a life crisis, they are likely to be hesitant in initiating contact, preferring to wait for further instruction or guidance from the family or school coordinator.

For some teachers involved in the research, finding out (usually from a hospital education advisor) that their student with chronic illness actually *wanted* to continue study came as a surprise to them:

'I just felt for the kid, to be honest. I thought, "Why are you doing this stupid Maths when you're so ill?" to be quite honest. And I thought, "Well maybe the research might say it's best to try to be as normal as possible. But is that really avoiding the issue? You're undergoing this serious medical intervention and you're worrying about your vectors." So I found it a bit difficult to understand.' (Mr A, Q6, 30/10/08)

'I suppose at the start of our contact, my thinking of, well, I suppose, probably my first thoughts were, well, why, why would Gareth or his family or like, why would they want to be doing this? Like, who cares about Maths - in that situation [chuckle]? Or who cares about, your, your schooling in that situation? What, what does it matter? You know, put it off for a year or two.' (Mr G, Q4.2, 16/10/2009)

Despite assurances from his student's hospital education advisor of the student's intention to study during treatment, one teacher suspected that his student's parents were behind the interest in continuing study and he remained reluctant to keep in regular contact. Even when he did telephone his student on occasion, it was to provide emotional support rather than academic support. Another teacher, once he was convinced that his student *himself* wanted to continue study, was happy to provide assistance. Most teachers of a student with chronic illness intend to support them, but feel uncertain about their responsibilities now that their student is absent, and whether it is even appropriate for them to be involved. They might be concerned about being privy to personal medical information and about the risk of blurring the line between professional and personal involvement. In this sense, they have an ambiguous role, which could be related to their subsequent hesitancy to seek connection.

Arranging connection

A teacher's usual interaction with their students at school involves face-to-face communication and a focus on educational issues for cohorts of students, individuals but in classes together. When a student is absent owing to chronic illness, a teacher has considerably less, if any, direct communication with them. Interaction is often mediated by a school welfare coordinator, hospital education staff, parents, or even medical personnel. It may not be a simple matter for a teacher actually to *find out* from the student what support they would like from them during their absence.

In the research project, teachers were contacted and invited to participate once the student had communicated their interest in continuing study to a hospital education advisor. The student and teacher each indicated their communication media preferences for connection, such as email exchanges, school intranet use, telephone conversations, text messages, video recording of lessons, videoconferencing during lessons, or outside of lessons for one-on-one tutoring. Only those communication media that both the student and teacher were comfortable with trialling were utilised in the research project. Some students were keen to use any possible communication media whereas others, particularly those with cancer, were concerned about the use of cameras. Some did not want to consider videoconferencing at all; others were willing to try if the camera was switched off at their end. Most teachers were comfortable with email exchanges and telephone conversations with their student. Only two teachers were comfortable with video recording lessons for the student to view at a later time. Several teachers agreed to trial videoconferencing even though it was a technology with which they had little or no experience. A number of teachers declined to consider its use at all, despite offers of training and support such as a school visit, telephone tutoring, quick start PDF guides, and provision of resources and equipment.

A general observation when arranging connections between a student and a teacher was that the students were comfortable with more types of communication media than their teachers, and that students had to content themselves with whatever types of interaction their teacher was willing to trial. Because email exchanges, telephone conversations, or videoconferencing still act as intermediaries between a teacher and absent student, they make communication a step removed from typical face-to-face interaction in lessons and that much more challenging.

Making a connection

For one successful connection to be made between a student with chronic illness and their teacher at school, it emerged that a number of conditions had to be met first. For even a simple telephone conversation, the teacher needed to feel confident

enough that their call would be viewed as welcome by the student, rather than an intrusion. The student needed to be well enough and to be available at that time to take the call. Being generally asynchronous, email exchanges were more likely to occur over time, although often teachers lamented that it was difficult to find the time to write them. They also seemed to struggle with the concern that their involvement, and their focus on teaching and learning, might be viewed as *unkind* given the student's health condition. During a visit to the hospital, the State Minister for Education spoke with a student about his videoconferencing and a television reporter asked the student if he thought that 'teachers [were] mean [making him] do work' while he was in hospital. He shrugged, shook his head and replied, 'I don't like doing schoolwork, but I want to finish school' (F, 20/05/2009). It seemed that teachers needed frequent reassurance, usually from hospital education advisors, that their continued involvement was indeed beneficial for, and welcome to, students. Some teachers were quite sensitive to a lack of response by the student to their emails, which in some cases reduced their motivation to send subsequent emails.

Videoconferencing tended to involve several conditions, any of which, if not met, could jeopardise the success of the actual connection. Was the student available at that time (not in an appointment with a medical specialist or asleep)? Were they well enough to discuss their schoolwork with their teacher? If in hospital, did they have their textbooks and work at hand? Was equipment available to use? Was the teacher free at that time either to videoconference during the lesson or during their release time? Was their current workload manageable or did they have too many other demands at that time? Were they feeling comfortable and confident enough in their relationship with the student (which tended to fluctuate throughout the year)?

Even if all these conditions could be met and a planned connection initiated, technical issues interfered at times: an audio headset did not work properly; a particular ward in the hospital had poor wireless network coverage; or the sound delay was too long to communicate effectively. On occasion a school's network had firewall issues to be resolved; some had insufficient bandwidth to allow any connection. One school could only get into the videoconferencing website from within their classrooms on newer computers that had sufficient processing power (for the teacher) but not from the boarding house (for the student with a laptop). Nevertheless one teacher had great success videoconferencing all year during lessons with a student in hospital twice a week, despite having little experience or confidence with technologies. He attributed this success to a supportive school IT department that responded promptly to any issues, and the involvement of other students in the class who set up his laptop and showed him what to do:

'Oh yeh, so if, if I was stuck, you know, they'd be the first to "Yeh, this is how you do it, Sir!" So they, they actually virtually took over, they just wanted to set it up. And they couldn't wait actually to, to link up with Faraji. So, but in terms of videoconferencing, everything went well.' (Mr F, Q3.2, 22/10/2009)

'But if there were technical difficulties, I'd, I'd talk to our ICT guys and, and they'd sort of fix it, sort it out. So there was always help there.' (Mr F, Q3.2, 22/10/2009)

Sustaining connection

In order for students to maintain their involvement in their school learning community, they needed frequent connections. To support teaching and learning, these connections needed to be sustained over time - to be regular enough that the

student could maintain their studies through repeated interaction, and to be flexible enough to handle the fluctuations in both the student's routine and medical treatment, and the teacher's timetable and workload at school.

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 study reported here have also referred to lack of time as an issue.

Managing the prolonged or recurrent school absence of such students - providing work schedules and a realistic learning program, providing additional tuition, supporting the student emotionally, and arranging part-time school attendance as appropriate - all in the context of classes full of other students, a considerable teaching workload, a school with its policies and procedures, and the expectations of anxious parents - can be understandably daunting for a teacher. Some teachers in the research project saw their involvement as "part and parcel" of their role:

'I'm happy to, to continue on and, and if it helps the, the students and especially, you know, when, in a situation like that, I'm, I'm really happy to do that, you know. I mean, that's what it's all about, that's why we're teachers you know.' (Mr F, Q6.8, 22/10/2009)

'No look, I didn't actually feel that anything I was doing for Kody was out of the ordinary. I've had other sick children before. I have been teaching for 38 years now and I just did what I considered was normal practice for a teacher supporting a student.' (Ms K, Q4, 21/08/2009)

Other teachers agreed in principle but struggled to manage in practice:

'I would like to help if I get some extra time from school. I would like to support these kinds of students.' (Mr B, Q6, 11/11/2008)

'It was just quite hard considering I don't have that face-to-face contact all the time, and remembering to supply him with stuff and managing to get it to him is another hard part.' (Mr E, Q2, 4/11/2009)

If a student does develop a life-threatening condition or is terminally ill, which occurred a number of times in the research project, there are additional challenges for the teacher in responding to the possibility of death, coping sensitively with the student, their family and other students at school in addition to managing their own response (Leaman, 2000).

The use of communications technologies for a connection between a student absent from school with chronic illness and their teacher at a particular moment is certainly achievable, but *sustaining* connection over time remains a challenge. For those students and teachers who did manage to sustain connection over time for effective teaching and learning interaction, the teacher's perception that their role included connection to a student even during absence, and their determination to maintain regular contact, appeared to be a significant facilitator:

'You know, so I just kept making sure that he knew, ok he can't do this now, we'll swap some of the topics around, something he can do now... I'd email him and say, "Look, this is what the class is doing now." Umm, then I'd get in touch with him, "Look, the class have sat for the test. It's attached now. Sit for it when you can. Email me questions when you're ready", you know. And then, "Have you done that one? Is there anything I can do to help with it?"' (Ms K, Q3.4, 4.4, 21/8/2009)

The students' self-motivation levels, supported by regular interaction with their teacher, also appeared to facilitate sustained connection:

'No, I enjoyed the experience because it's nice to see, you know when you've got a student like that, to see them lap up the information and learn the information and - I find it quite enjoyable. With her, like, it wasn't a burden, it wasn't, it was actually very easy, you know, yes. She's a very easy child to work with so it was pleasant, yes.' (Ms I, Q7.1, 30/7/2009)

'I knew that, well, he's going to try, regardless of whatever his condition is, I know he's going to try. He's that type, type of kid that you don't need to push, you know... So he is pretty self-motivated sort of a kid and that helps so I thought, "No, he's going, he's going to make it." (Mr F, Q5.5, 22/10/2009)

A number of students were very keen to continue with their studies at the start of their treatment and absence from school, but over time appeared to become disheartened, perhaps by their struggle to learn on their own when unwell, or by the increasing isolation and lack of involvement at school. If their teacher lacked the resolve or confidence or time to connect with them frequently, the student tended to give up on study:

'I used to try, I did a bit of Commerce work and a bit of Maths work myself but I found it too hard so I just stopped... Make sure you keep up on your work, even if it's just little bits, try and work as much as you can, because I didn't work, like at all, for the year and sort of regret it now because I'm further behind.' (H, Q2.1, 9.1, 13/11/2009)

The model in Figure 1 was created and developed to capture the initial linear process of seeking and arranging connection, and the continual, tentative, cyclical process of making each individual connection and then sustaining connection over time through making repeated connections.

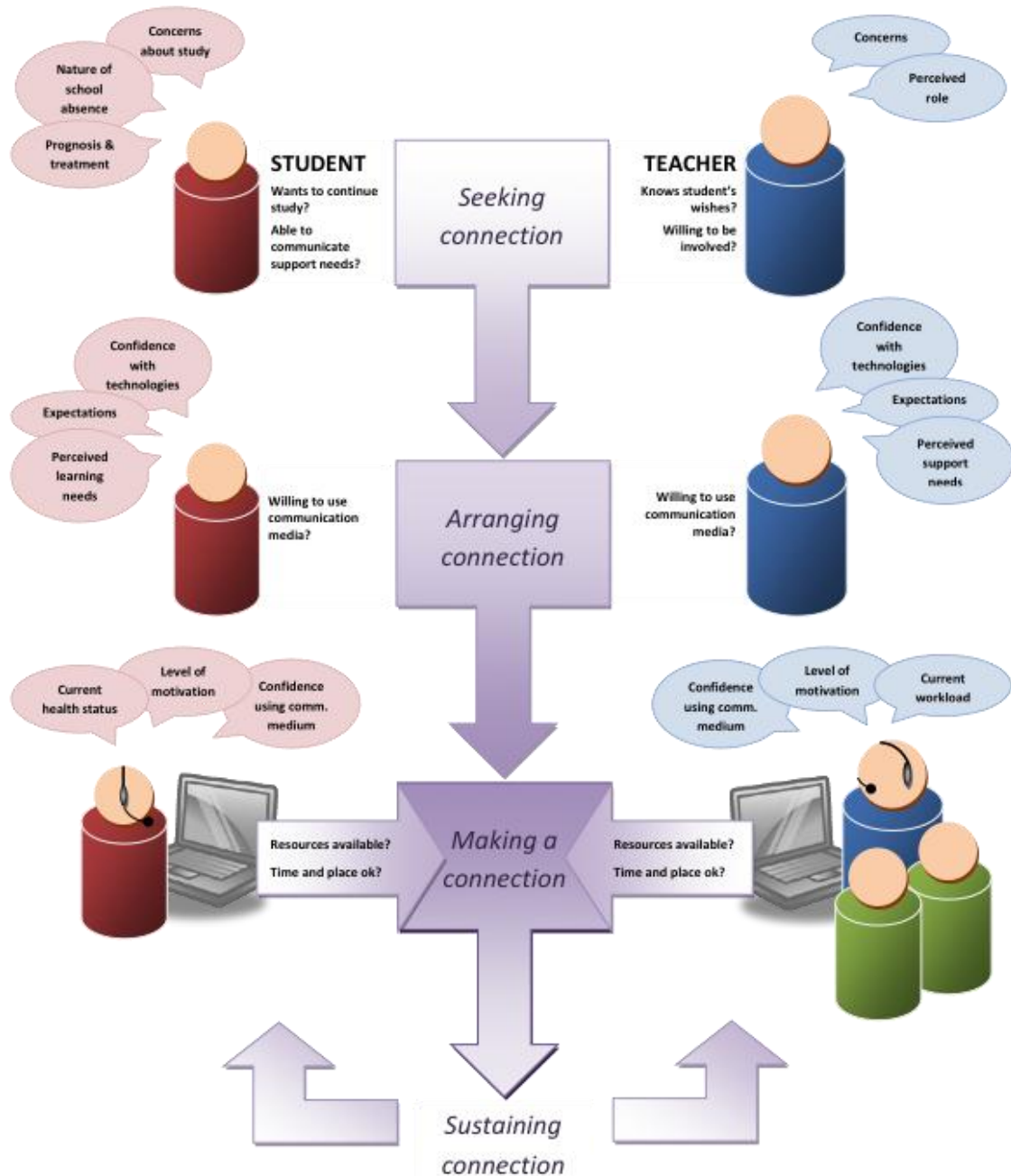


Figure 1: The process of connecting students with chronic illness to their school learning communities

CONCLUSION

There are complex issues to consider in aiming to establish and sustain supportive learning communities for students with chronic illness through connection to their own schools during absence. Surprising to some is that students themselves both want and need such connection with their teachers and peers, despite the imposition of chronic illness: strengthening their school ties benefits them psychosocially and minimises their educational disadvantage. This paper has discussed the possibility that a teacher's perceived role and potential ambiguity decreases the likelihood of their seeking connection with a student absent from school. It has also highlighted the challenges in trying to utilise communications technologies in a school setting, which may impede sustainable connection over time. Yet a teacher's determination, responsive school IT departments, the

involvement of peers and the student's self-motivation may overcome these. The research project continues to seek insights into how students with chronic illness may be kept connected to their school learning community and supported educationally during absence from school.

REFERENCES

- Australian Institute of Health and Welfare (2005) *Selected chronic diseases among Australia's children* (Bulletin No. 29) Canberra: Australian Government.
- Australian Institute of Health and Welfare (2007) *Young Australians: Their health and wellbeing*. Australian Government.
- Australian Institute of Health and Welfare (2009) *A picture of Australia's children* (National Statistical Report) Australian Government.
- Bazeley, P. (2007) *Qualitative data analysis with NVivo*. London: Sage.
- Bessell, A. G. (2001) Children surviving cancer: Psychosocial adjustment, quality of life, and school experiences. *Exceptional Children*, 67(3), 345--359.
- Brown, R. T., & Madan-Swain, A. (1993) Cognitive, neuropsychological, and academic sequelae in children with leukemia. *Journal of Learning Disabilities*, 26(2), 74--90.
- Campbell, L. (2005) *Evaluation of the Royal Children's Hospital Education Institute's Back on Track program: Preliminary literature review*. Melbourne: Centre for Program Evaluation, University of Melbourne.
- Charlton, A., Pearson, D., & Morris-Jones, P. H. (1986) Children's return to school after treatment for solid tumours. *Social Science & Medicine*, 22(12), 1337--1346.
- Chekryn, J., Deegan, M., & Reid, J. (1987) Impact on teachers when a child with cancer returns to school. *Children's Health Care*, 15(3), 161--165.
- Cook, R. (2005) *Evaluation of the WellCONNECTED pilot project: The use of Information and Communication Technologies in secondary schools in Victoria to maintain and strengthen the connection to school for senior students with a chronic health condition*. Melbourne: Royal Children's Hospital Education Institute.
- Fels, D., Shrimpton, B., & Robertson, M. (2003) Kids in hospital, kids in school. *Proceedings of the World Conference on Educational Multimedia, Hypermedia and Telecommunications 2003*, Honolulu, Hawaii, USA.
- Fels, D., Weiss, P., Treviranus, J., & Smith, G. (1999) *Videoconferencing in the classroom: Children's attitudes*. Retrieved from <http://www.ryerson.ca/pebbles/publications/cyberg99full.pdf>
- Haas, S. A., & Fosse, N. E. (2008) Health and the educational attainment of adolescents: Evidence from the NLSY97. *Journal of Health and Social Behavior*, 49, 178--192.
- Hedström, M., Ljungman, G., & von Essen, L. (2005) Perceptions of distress among adolescents recently diagnosed with cancer. *Journal of Pediatric Hematology/Ontology*, 27(1), 15--22.
- Kav-Or (2002) *Distance learning for children in hospital* Retrieved September 29, 2008, from http://www.kavor.org.il/kavor/internet/p_about/about_en.asp
- Leaman, O. (2000) Schools and death. In A. Closs (Ed.), *The education of children with medical conditions*. London: David Fulton.
- Lightfoot, J., Mukherjee, S., & Sloper, P. (2001) Supporting pupils with special health needs in mainstream schools: Policy and practice. *Children & Society*, 15, 57--69.
- Ministry of Education Higher Education and Research (2008) *Integration of all pupils: Children with special needs, and sick and disabled children* Retrieved February 29, 2008, from www.educnet.education.fr/eng/secondaire/integration.htm

- Mukherjee, S., Lightfoot, J., & Sloper, P. (2000) The inclusion of pupils with a chronic health condition in mainstream school: What does it mean for teachers? *Educational Research*, 42(1), 59--72.
- O'Halloran, J., Miller, G. C., & Britt, H. (2004) Defining chronic conditions for primary care with ICPC-2. *Family Practice*, 21(4), 381--386.
- Perez-Bercoff, E. (1998) *An educational support program: Learning at a distance for children suffering from serious diseases or accidents* Retrieved February 5, 2008, from http://www.icccpo.org/articles/general/educational_support_program.html
- Potas, T. (2005) *WellCONNECTED pilot project final report*. Melbourne: Royal Children's Hospital Education Institute.
- Potas, T., & Jones, A. (2006) A change model - Supporting the educational and social needs of Victorian Certificate of Education students with a chronic health condition. *Proceedings of the Imagining the future for ICT and education IFIP WG 3.1, 3.2, 3.3 Conference*.
- Royal Children's Hospital Education Institute (2008) *About the Education Institute* Retrieved February 5, 2008, from http://www.rch.org.au/edinst/index.cfm?doc_id=10385
- Rynard, D. W., Chambers, A., Klinck, A. M., & Gray, J. D. (1998) School support programs for chronically ill children: Evaluating the adjustment of children with cancer at school. *Children's Health Care*, 27(1), 31--46.
- Shaw, S. R., & McCabe, P. C. (2008) Hospital-to-school transition for children with chronic illness: Meeting the new challenges of an evolving health care system. *Psychology in the Schools*, 45(1), 74--87.
- Shiu, S. (2005) Enhancing the educational experience for children with chronic illness - what parents want educators to know. Paper presented at the 10th National Conference of the Association for the Welfare of Child Health. Retrieved February 24, 2008, from http://www.awch.org.au/2005%20con/06_SHIU,%20Shiona_paper.pdf
- Shute, R. H. (1999) Childhood chronic illness and the school. *Australian Journal of Guidance & Counselling*, 9(1), 109--121.
- Shute, R. H., & Walsh, C. (2005) Adolescents with chronic illnesses: School absenteeism, perceived peer aggression, and loneliness. *The Scientific World Journal*, 5, 535--544.
- Stake, R. E. (1995) *The art of case study research*. Thousand Oaks, CA: Sage.
- St Leger, P., & Campbell, L. (2008) Evaluation of a school-linked program for children with cancer. *Health Education*, 108(2), 117--129.
- Sullivan, N. A., Fulmer, D. L., & Zigmond, N. (2001) School: The normalizing factor for children with childhood leukemia. *Preventing School Failure*, 46(1), 4--13.
- Telbotics (2006) *PEBBLES* Retrieved February 29, 2008, from <http://www.telbotics.com/>
- White, R. E. (2003) Telepresence goes to school: An evaluation of the PEBBLES™ videoconferencing system for ill children. Unpublished Master of Arts Thesis, Carleton University, Ottawa, Canada.

Biographies



Karina Wilkie is a PhD candidate at the University of Melbourne, Australia. She holds a Master of Information Technology from Deakin University, Australia. She has a career in primary, secondary and tertiary education and in educational consultancy. Her research interests include mathematics teaching and learning, curriculum design, and technology-facilitated teaching and learning



Anthony Jones is a Senior Lecturer and Leader of the ICT in Education and Research Group within the Graduate School of Education at the University of Melbourne, Australia. He has been a primary school teacher and later mathematics teacher in secondary schools. His research interests focus on empowering learners with the assistance of digital technologies.

This paper was presented at the IFIP Workshop *New Developments in ICT and Education* held at The Université de Picardie Jules Verne, Amiens, France between the 28th and 30th June 2010.

Copyright

This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivative Works 3.0 unported License. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/3.0/>.