Student and Teacher Perceptions of Online Student Engagement in an Online Middle School

Nathaniel Louwrens, CORE Education
Maggie Hartnett, Massey University

Abstract

While our understanding of student engagement in the compulsory schooling sector is well developed in face-to-face contexts, the same cannot be said for online and distance learning environments. Indeed, most of what is currently known about online engagement has come from research with older students in tertiary education contexts. This study directly addresses this gap in the research by exploring student engagement in an online, middle school in a New Zealand distance education context. By considering three key dimensions of student engagement—namely, behavioural engagement, cognitive engagement, and emotional engagement—this in-depth investigation explores what engages middle school students when they learn online. Data collection techniques comprised student and teacher interviews, online asynchronous discussion transcripts, and statistical data from the learning management system (LMS). Results found that students in this study tended to engage behaviourally (i.e., do what was expected of them) with all required activities. Cognitive engagement (i.e., students' personal investment in their own learning) was evident in the giving and receiving of feedback as well as the interest and relevance certain activities generated for learners. Emotional engagement was elicited through the design and facilitation of the activities, and through the ongoing development of a learning community in which students felt safe to contribute.

Introduction

E-learning at compulsory schooling levels of education is growing exponentially worldwide (Barbour, 2013). New Zealand is, however, still in the emerging phase of e-learning implementation (Barbour et al., 2011). This is despite the Ministry of Education's support for e-learning initiatives since the early 2000s as a means of improving student achievement through increased engagement (Ministry of Education, 2006). Student engagement is recognised as an important component of all teaching and learning (Dixson, 2010). While multiple studies have explored online student engagement in higher education (e.g., Jeffrey, Milne, Suddaby, & Higgins, 2012; Kahu, 2011; Ross, 2010; Shu, Zhao, & Wan, 2012), fewer studies have explored e-learning at the compulsory schooling level (Means, Toyama, Murphy, Bakia, & Jones, 2009; Parkes, Zaka, & Davis, 2011). The research that has occurred has tended to focus on teacher or administrator perceptions rather than student perceptions and experience (Barbour, 2010).

Furthermore, existing online student engagement research has tended to focus on behavioural engagement. Emotional and cognitive engagement in e-learning contexts has rarely been considered. This paper addresses a gap in the research by examining the online engagement of school-age students from online behavioural, emotional and cognitive perspectives.

Literature review

The use of e-learning (learning online with the aid of the internet and digital devices such as computers and mobile technologies) within the compulsory schooling sector, both in New Zealand and around the world, is gaining momentum (Barbour, 2013). As a result, the need for educators to develop an understanding of e-learning practices that lead to increased student engagement is gaining importance. Dixson (2010) identified student engagement as an important component of all teaching—whether face to face or online—and "therefore it is imperative that we learn what engages students in order to foster effective online learning environments" (p. 1).

Student engagement

The term 'student engagement' is used frequently but is not always well understood. Harris (2008) stated that "while there is general agreement that student engagement produces positive outcomes, defining the concept is problematic as there is disagreement about what counts as student engagement" (p. 58). Lack of a clear definition makes it difficult to know how student engagement could and should be measured (Parsons & Taylor, 2011). Notwithstanding this range of understanding of student engagement, there is some commonality within the literature. Many researchers agree that student engagement is a multi-faceted construct, encompassing three key dimensions—behavioural, cognitive, and emotional engagement (Fredricks, Blumenfeld, & Paris, 2004; Gibbs & Poskitt, 2010).

Behavioural engagement generally refers to students' attendance at school (and class) and their doing what is required to follow the rules and meet teacher and school expectations. It also includes participation in extra-curricular activities (Fredricks et al., 2004; Gibbs & Poskitt, 2010; Harris, 2008). *Cognitive engagement* refers to the personal investment students make in their learning, such as understanding complex ideas (Fredricks et al., 2004; Harris, 2008), and is characterised by deep, focused, strategic thinking. Cognitively engaged students regulate their own learning by planning, monitoring, and regularly reviewing their progress. Cognitive engagement is sometimes measured as 'time on task'. *Emotional engagement* occurs when students react positively to their school or class environment—the teachers, other students, and the institution—as well as their learning (Gibbs & Poskitt, 2010; Harris, 2008). It involves students' "interest, belonging and attitude towards learning" (Shu et al., 2012, p. 350). Meyer and Turner (2006) suggested that the learning environment plays a critical role in emotional engagement. Gibbs and Poskitt (2010) argued that students need to be behaviourally engaged (i.e., in class) and emotionally engaged (i.e., feeling comfortable and connected) before they can become cognitively engaged.

Online student engagement

Despite acknowledgement in the wider literature that engagement is a multi-dimensional construct, research exploring online student engagement has tended to view it as a unitary construct. Furthermore, there is a view that online students learn more, are more engaged, and achieve more than traditional students (Dixson, 2010). However, this increase in engagement and achievement may be due to the greater emphasis placed on online students to self-engage with their learning (Wickersham & Dooley, 2006).

Differences between online and face-to-face students notwithstanding, a range of factors that support student engagement in online contexts have been identified. Many of these

considerations fit within Garrison, Anderson, and Archer's (1999) community of inquiry model, which incorporates social presence, cognitive presence, and teaching presence.

Social presence is the degree to which online participants feel connected to one another (Swan & Shih, 2005). Barbour and Bennett (2013) identified that building strong online relationships with students was deemed important by teachers because it helps to develop social presence. Positive social presence or connectedness leads to students feeling emotionally comfortable and therefore emotionally engaged in the learning environment. Gibbs and Poskitt (2010) argued that this was a requirement for cognitive engagement.

Cognitive presence is "the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication" (Garrison et al., 1999, p. 89). Cognitive presence is closely related to critical thinking and focuses on higher-order thinking processes that include creativity and problem solving (Garrison, Anderson, & Archer, 2001). Importantly, interaction and collaboration are key to establishing cognitive presence, which supports both emotional and cognitive engagement. The quality and frequency of interaction has been shown to be related to student completion (Hawkins, Graham, Sudweeks, & Barbour, 2013). Collaboration has been identified as an important factor in increasing student engagement (Chen, Lambert, & Guidry, 2010) and achieving learning outcomes (Garrison, 2006). But although interaction is recognised as important in engaging students, it is not a guarantee of cognitive engagement (Garrison & Cleveland-Innes, 2005).

Teaching presence encompasses the design and facilitation of the educational experience (Garrison et al., 1999). Activity design incorporates the level of difficulty, how it promotes student interest, and the purpose of the activity. Student disengagement can occur when activities are too easy for learners (Burger, Nadirova, & Keefer, 2012; Ministry of Education, 2008). Designing activities that students enjoy has been found to positively influence student engagement (Wood, 2012); disengagement occurs when tasks are uninteresting or irrelevant (Burger et al., 2012). The teacher in an online course also plays an important role in encouraging students to engage by facilitating their learning.

Facilitation is the role not only of the teacher (Garrison et al., 1999). Although peer feedback cannot always replace the feedback of the 'expert' teacher, it is a useful technique in facilitating learning. Gielen, Peeters, Dochy, Onghena, and Struyven (2010) argued that students require training on how to give appropriate feedback to peers. Developing social presence and connectedness with students, providing feedback, provision of scaffolding, and availability (Ertmer et al., 2007) have all been shown to support emotional engagement (Bolliger & Inan, 2012; Dixson, 2010).

Measuring student engagement

Student engagement is a difficult construct to measure, partly because of its multi-dimensional nature, and partly because of the overlap between the three engagement types and other constructs such as student conduct and on-task behaviour, student attitudes, and student interest and values (Fredricks et al., 2004). This complexity has led to debate over what data is most appropriate to measure engagement (Carter, Reschly, Lovelace, Appleton, & Thompson, 2012). As a consequence, several instruments have been developed to measure student engagement in face-to-face contexts, and most of these instruments focus on the students' self-report data (Appleton, Christenson, Kim, & Reschly, 2006; Carter et al., 2012).

Online engagement has been measured in different ways and to varying degrees. Data about learners' online activity is captured by the learning management systems (LMSs) that are used in many educational institutions, including schools (Ali, Hatala, Gašević, & Jovanović, 2012). This data includes low-level statistics such as the number of 'hits' on a webpage or the number of

discussion forum posts read or made (Xu, 2010). It comes as little surprise, then, that early research generally conceptualised engagement as participation, focusing primarily on quantity of webpages accessed, and discussion forum posts read and authored (Hrastinski, 2009). While generally not acknowledged as such, these indicators of online participation can also be considered to be indicators of behavioural engagement.

While online statistics have been used as measures of online behavioural engagement, an in-depth view of the content of discussion fora is necessary to find evidence of cognitive and emotional engagement (Marra, Moore, & Klimczak, 2004). Zhu (2006) stated that the discussion forum is "critical for constructing new understanding and knowledge" (p. 451). It is therefore necessary to analyse the place where new understanding and knowledge is demonstrated to find evidence of cognitive engagement.

The current study goes beyond existing research by exploring distinct types of behavioural, cognitive and emotional engagement to develop a greater understanding of what engages students online. Behavioural engagement was considered in terms of students choosing to go online and doing what was required of them by their teacher. Cognitive engagement was considered by looking at students' deep or critical thinking in online activities. Emotional engagement was considered by exploring how students reacted to their learning environment, and included an evaluation of their interactions with other students and their teacher.

The study

The aim of this study was to explore the factors that lead to increased student engagement by middle-school students learning online in a New Zealand distance education school. The following research questions were used to guide this research:

- What do teachers perceive engages students in online courses, and why?
- What encourages students to engage in online activities?

Case study

Case study was deemed an appropriate methodology for this study because it allows exploration of a particular phenomenon of interest—in this case, student engagement in online activities—in a bounded system (Creswell, 2013). The bounded system or case in this instance was the Year 7 to 10 (children aged 11 to 15) integrated studies programme, incorporating three distinct online classes delivered online at Te Aho o Te Kura Pounamu – The Correspondence School (Te Kura). Each class was independently managed by a teacher. Similar content or topics were covered in all of the classes, but individual teachers, and in some cases the students, could choose how the content was delivered and how work was completed. Similar activities were given to students in each class.

Context and participants

Te Kura has been the principal distance education provider to primary and secondary students in New Zealand since 1922. The school was set up initially to teach students in remote areas but now supports a range of students, many of whom have disengaged from the mainstream New Zealand schooling system. The school also delivers the New Zealand curriculum to New Zealand citizens living overseas (Davis, 2015). In 2008, Te Kura began to blend online learning with their printed materials (Davis, 2010), and introduced fully online courses where appropriate. Courses are continuing to be developed and implemented in the LMS. Students studying with the distance education school were supported not only by the teachers at the school but also by supervisors (usually parents) and others at home. While it is acknowledged that the support of supervisors

may have an effect on student engagement, data on supervisor support was not gathered as part of this study.

The integrated studies programme offered teaching and learning in particular topics or contexts across core curriculum areas (i.e., English, Social Studies, Science, and Mathematics). The school integrated as many of the core curriculum areas as possible in each topic. Students worked independently, usually at home, with a parent's supervision. The classes were hosted in the *Desire2Learn* LMS (Desire2Learn, 1999), which the school used as their online environment. Teachers also asked students to use a variety of other openly available online tools such as *VoiceThread* (http://voicethread.com/) and *Google Docs* (http://docs.google.com/).

Four teachers and 10 students agreed to participate in the study. Two of the teachers were team-teaching in one online class. The student participants ranged in age from 11 to 15, and each school year (7 to 10) was represented. Seventy per cent of the students had been learning online for at least one year, indicating that they had some prior online learning experience. Some students were living overseas at the time of the study. During the investigation period, students were given a range of activities to complete. These included creating wiki presentations, asynchronous discussions that focused on the Olympic Games, drawing, and writing activities which they submitted through the discussion forums.

Data was collected on only one specific aspect of the school for a 5-week period during 2012. Te Kura has continued to adapt its online programmes and practices since then (Davis, 2015).

Data collection

Data collection procedures comprised individual semi-structured student and teacher interviews (Berg, 2009). Student interviews were conducted over Skype. They focused on students' perceptions of their engagement in their online class, and practices they felt facilitated their engagement. Face-to-face interviews were conducted with the teachers and focused on how teachers had set up their online class, and their perceptions of online student engagement. Discussion forum comments from both student and teacher participants were collected for analysis to determine types of student engagement in the activities and for data triangulation purposes. Statistical data relating to the number of discussion forum comments read and authored were considered to determine behavioural engagement.

Data analysis

The steps outlined by Creswell (2013) were followed when analysing the qualitative data. Interview transcripts were coded using the web-based qualitative analysis program, dedoose (http://www.dedoose.com/). Both inductive and deductive analysis occurred in this research investigation. While behavioural, cognitive, and emotional engagement provided sensitising concepts with which to explore the qualitative data, an inductive approach geared to allowing additional patterns, themes, and categories to emerge also occurred (Blumer, 2006). The themes were then analysed further to determine the types of engagement that were being represented. A framework for analysis of discussion forum transcripts was developed after consideration of the studies by Henri (1992) and Rourke (1999). Emotional engagement was seen in discussion forum comments, for example, as students showing a sense of belonging or having identified with the activity by using emotive language; behavioural engagement was evident when students participated in an activity by writing an appropriate forum comment; and cognitive engagement was identified, for example, by students responding appropriately to other students' comments, or demonstrating deep thinking or a synthesis of ideas.

Results

What do teachers perceive engages students in online courses, and why?
Several themes emerged from the teachers' perceptions of what engaged students online. These are reported below, starting with the most salient.

All four teachers identified that students engaged highly in activities that were undertaken outside the LMS, typically using Web 2.0 tools. The teachers believed that, rather than this being because of the tools themselves, the activities the students engaged in were student-centred, giving student ownership as well as some control and choice over the activity.

> Where they've got more control over how they can display content . . . you do seem to see more involvement. (Teacher 3, interview)

> Students did it on Glogster and some did it on PowerPoint and others . . . printed them out. It was a, you know, variety of different ways. (Teacher 4, interview)

In addition to student-centred activities, peer and teacher feedback (including praise of students) was highlighted by two teachers as helping to increase online engagement.

> A big part of it being that peer assessment. When they, their peers are coming in and, making nice constructive comments and, working towards that praise and, for them it's lifting their level. (Teacher 1, interview)

> I think the more that you can, praise and comment on what certain students have done . . . praising that student but giving other students the idea of some other ways that they might be able to do something. (Teacher 3, interview)

While their focus was on factors that supported online student engagement, the teachers also identified activities that resulted in lower levels of student engagement, as indicated by the lack of online interaction. A range of reasons were suggested such as a lack of teacher engagement in the activity given to students: "what made it not work was, I guess, my enthusiasm. I didn't drive it with some reminders" (Teacher 1, interview); students wanting a sense of anonymity and privacy: "I don't know whether it was because they are more comfortable in having, in some ways, a little bit of anonymity in an online classroom" (Teacher 3, interview); and tasks being too difficult: "one of the things may be that they find questioning by audio or video quite hard" (Teacher 2, interview).

Teachers were also asked what they did to foster engagement in their online classes.

All four teachers invested time in *building relationships* with and between students to foster engagement, build confidence, and ensure students knew support was available. Most of this relationship building happened on a regular, personal level, via Skype or phone as highlighted by the following comments.

> Try to get to know the kids a little bit. Know a bit of their background so that you can have the non-work related conversations with them, try to talk to them regularly on a, what do you call it, personal level. (Teacher 2, interview)

> Building up their confidence. . . . That's kids – you've got to show an interest . . . that they'll show an interest [in], and they'll share stuff with you. And, ah, it's building up that relationship. (Teacher 1, interview)

> When I've got new students, just trying to help them with the navigation side of things, hopefully have a Skype session with them because I do find that's one of the best ways that I've found to get them . . . to see where different things are. (Teacher 3, interview).

The teachers also fostered engagement by *encouraging interaction* among students by connecting with them "behind the scenes".

> Sometimes we might have had a student that's put something in as a discussion that doesn't seem to have had any response so we might actually do some behind the scenes stuff to try and get some of that [interaction], coming across. (Teacher 3, interview)

Teacher 2 illustrated the importance of interaction with a story of a boy who had been working in the class for 3 years but had not got to know any of his classmates.

> It's been my goal and he knows it, to get him to know the other kids better. . . . Well, the result is he is interacting more with the other kids. He is talking to them a lot on Skype, you know, directly and with other students. . . . So here is a kid who now is going in chatting with others and appearing, it's quite obvious, that he knows the other kids more and he's much more engaged in the tasks that we are doing as a result of it. (Teacher 2, interview)

Teacher 2 viewed *feedback* as another factor that helped to increase engagement but indicated that it wasn't always recognised by the student. This is illustrated by their recount of a conversation with a Year 10 student:

> I said to her, 'I give you a lot of feedback, don't I?' and she said, 'Oh yes', and I said, so I had to actually ask her what it was and where . . . 'Oh you mean the comments you give me?' 'Yes. Do you do you find those comments useful?' 'Oh yes'. (Teacher 2, interview)

Scaffolding was also viewed by teachers as a way to foster engagement. The term was used by teachers in two ways: breaking down larger activities into smaller portions for students to build on; and providing structure and support. Scaffolding was provided to individual students as they needed it, rather than to the whole class.

> If it's a matter of them needing more scaffolding you can do that by a Skype session or an email or something like that to break it down further than . . . another student might need. (Teacher 3, interview)

> Scaffolding's possibly done more on a one-to-one basis. (Teacher 2, interview)

Peer expectations were identified by two of the teachers as encouraging student engagement. The teachers set up activities in which students needed to work together, creating expectations that students would participate and engage in the activity.

> You get kids working together, you know. So it's put the pressure on them to . . . work in teams, to work in little small groups. . . . So it's getting, buying into, not letting down their classmates. (Teacher 1, interview)

> We also have a check list in Google Docs that has all the kids named…. And they're supposed to fill it in when they've completed an activity . . . that [way] they can see what others are doing and it might be a bit of a wakeup call to them or it might not. (Teacher 3, interview)

What encourages students to engage in online activities?
Students' perceptions of what influenced their engagement online was another important focus of this investigation. An in-depth analysis of the student comments in the discussion forums was considered, along with their comments from the interviews.

The *students' relationships* with their teacher and other students emerged as an important factor in supporting student engagement. The importance of building relationships was particularly evident when students described the support they received. Two main types of support were identified by students in their online classes: support from the teacher (primarily in the form of

feedback) and support from other students. Both teacher support and student support were identified by the students as beneficial to learning. For example, student 6 favourably compared the support received from their teacher and other classmates in their online class with the support they received in a face-to-face, traditional classroom setting.

> If I was in just a normal school the teacher would be focused on like a whole bunch of students, not just me . . . But [online], with the activities I could, um, get a lot of attention from [the teacher] or if I needed help I could just ask another classmate. (Student 6, interview)

This comment indicates that the timely support received from the teacher (or from others) was beneficial to both behavioural and cognitive engagement.

Student 9 found support from their peers important in an activity in which learners created an ID card and shared a little about themselves.

> Just looking at the other students ID cards was, ah, I got to learn about them and then, ah, when I commented on one, ah, ID card they replied and told me a bit more about . . . where they lived and what they'd put on the ID card. (Student 9, interview)

When probed about the activity and whether learning about their classmates helped them learn throughout the year, he responded by explaining that the connections helped him identify who to approach for help.

> It also helped to know which people I would ask for help in different situations because some of them are good at transferring files. . . . And some of them are good at ah, other things as well. (Student 9, interview)

Another student commented that collaborative work gave them opportunities to learn from each other.

> Everybody's always helping each other . . . telling them how they could probably improve and what they could do better. (Student 3, interview)

Students also supported their peers by giving feedback in the discussion forums, although it wasn't clear whether the intended recipients engaged with it. The students felt safe to provide positive comments on classmates work in the open forum, but found it more difficult to suggest ways to improve.

> Wow that is a really great story you wrote . . . I think that how you used deathly silent in your story it made the story hook people in so that story was well written I don't think you could do anything better. (Student 5, discussion forum comment)

One student did add some constructive feedback in the discussion forum; however, this was not common.

> You used lots of describing words. You didn't describe in a sentence what was actually 30–40ft deep. I think you could of added what it was before you wrote the depth. (Student 4, discussion forum comment)

Students also identified a range of *feedback practices* that fostered engagement in the online classes. Two broad types of feedback were identified—feedback that focused on the individual and feedback that focused on the task.

When asked what the teacher did to encourage or motivate them to work through an activity, students identified individual feedback. This feedback and support occurred predominantly outside the LMS in Skype or phone conversations, but was also evident in the discussion forums.

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> When I'm in need of help with an activity we usually call her or Skype her something and usually she gives us a little pep talk to keep us going. (Student 7, interview)

> I really like your mindmap [student] the lay out is excellent you have shown you can follow instructions well. (Teacher 1, discussion forum comment)

One student did not initially recognise the benefit of the constructive, task-oriented feedback. When he received feedback that indicated there was room for improvement he was disappointed, but then realised that this information could help him.

> At the beginning of the year I got feedback from something and it said, 'great job for your first assign, for your first bit of work', and then later on there was one bit of work that, ah, she said I needed to improve on and at first I thought, 'ah I didn't get it right, I can't do this'. But then I realised that [the teacher] had given me some good information and if I did that activity again then I could probably do it better than if I did it the first time. So I think feedback from the teacher I have, good or bad, or good or improvement needed, is, quite nice to have. (Student 9, interview)

Students indicated that their *interest in and the relevance of* activities were important to their engagement. During the investigation period, the Olympic Games were a current event that had personal relevance to the students.

One activity, in which students were asked to write as though they were a spectator at an Olympic Games event, showed a high level of behavioural engagement. In Class 1 there were 49 posts written by the entire class (16 by the teacher) and in Class 2 there were 45 posts written in total (12 by the teacher). The activity had relevance for the students because it was about a current event at the time and captured their interest. High behavioural engagement in the activity also suggested that the students enjoyed reading their peers' writing.

Furthermore, there was noticeable cognitive and emotional engagement during this activity. In the following example, emotional engagement is evident through the use of the word "liked" and the phrase, "gives me the shivers". Thinking about what hooks the reader in is an indication of cognitive engagement.

> I really liked how you said the sun reflecting off the extensive bright blue pool it was a good hook. . . . I really liked how you said my toe crunched backwards because I just imagined your toe going snap that gives me the shivers. (Student 5, discussion forum comment)

Related to interest and relevance is the idea that activities needed to be *fun and be enjoyable*. Enjoyment or fun was highlighted as important by several students in helping them to learn, therefore increasing the likelihood of engagement.

Two students talked about activities they felt were fun. One explained that if an activity was fun they found it harder to give up, even if it seemed difficult.

> Yeah, because the more fun an activity is the more I like to do it and so that makes it hard to stop doing an activity and say I don't want to do this anymore … when it's fun it makes it impossible to say I don't want to do this, it's too hard. (Student 9, interview)

Student 8 suggested that if an activity was not enjoyable she was less likely to want to engage in it at all. She mentioned that if it was not enjoyable it became "just a thing that you have to do" (Student 8, interview).

Other students stated that they do all of the activities, regardless of whether they enjoy them.

> I completed it. I complete all of the online activities that I need to. (Student 3, interview)

> I always attempt them. If I'm given work, there's no doubt about it, I always attempt it. (Student 6, interview)

The *design of learning activities* also emerged as influencing engagement. This was evident throughout the discussion forum activities in the LMS. Many of the activities were written in a way that encouraged engagement from and interaction between students. For example, in one activity, the students were given two excerpts describing two characters in *A Christmas Carol* by Charles Dickens. The students were then asked:

> What is your first impression of these characters written by Dickens? How does his choice of words help you form a vivid picture of each? Give examples. (Class 1, discussion forum activity)

The second part of the activity asked the students:

> Would you like to meet either of these characters? Why/why not?" (Class 1, discussion forum activity).

These questions encouraged students to engage emotionally and cognitively with the activity because it asked for emotional and cognitive responses—students had to analyse the excerpts and explain what made them feel this way about the characters. This activity demonstrated students' high cognitive and emotional engagement, as is seen in the following example. In the first part of her response, student 8 explained what elements in the excerpts made her believe the characters are as she describes, and she then questioned what might have caused the woman to be where she is now.

> I get the impression that the first character is a criminal, possibly exiled from a place. I think he has been in prison, but has escaped, hence the great iron on his leg. He definitely does not seem like a nice person, especially after grabbing . . . by the chin. . . . I think the woman was to be wed quite a long time ago, but her fiancé left her standing at the altar, possibly because of an accident?

In the second part of her response, Student 8 showed emotional engagement by using emotive words.

> I feel that she is still waiting for her wedding and she wears the dress to keep her hopes up. . . . I would hate to meet the first character, but I wouldn't mind to meet the second. (Student 8, discussion forum comment)

Discussion

There was evidence from both students and teachers that undertaking activities outside the LMS was highly engaging. The teachers believed this was because the activities and the Web 2.0 tools gave students opportunities to experience control, choice, and ownership over what they could do and present which were not available to students in the LMS. These opportunities resulted in an increase in behavioural engagement, but it is not clear whether there was an increase in emotional or cognitive engagement. These findings are in line with Deci and Ryan's (2008) research that showed autonomous motivation, which can result from being given opportunities to exercise control and make choices, and can lead to increased student engagement.

The support that comes with developing good relationships was viewed by both students and teachers as important for engaging students in their online classes. By carefully planning activities that helped students to get to know their peers and develop their social presence, the teachers developed a safe online learning environment. The students believed that the relationships they built with their peers enabled them to feel comfortable to ask each other for

help and support when required, instead of always approaching the teacher, and this was something they valued. This sense of belonging, which was developed through connectedness (Barbour & Bennett, 2013; Bolliger & Inan, 2012) and social presence (Hughes, 2010), supported the students' emotional engagement. As a result of the increase in emotional engagement, behavioural and cognitive engagement was encouraged (Gibbs & Poskitt, 2010) because students felt comfortable enough to ask for help when they needed it.

Feedback, which was given to students by their teachers and other students, was also regarded by both students and teachers as important in their online courses. Receiving feedback, accepting the critique, and acting on it appeared to require students to have a degree of emotional engagement. They also needed to have a certain level of cognitive engagement to interpret the feedback and make the appropriate changes to their work. Two broad types of feedback were given by teachers and other students. The first type fostered emotional engagement that focused on building students' self-esteem and confidence. Hattie and Timperley (2007) described this type of feedback as feedback about the person. The second type of feedback focused on the task that provided students with relevant information about the activity. Task- and process-focused feedback is more likely to lead to higher achievement than feedback that praises the student.

Students who gave feedback to their peers demonstrated cognitive engagement in their critiques. This suggests that the process of giving feedback to a peer by having to read, process, and understand the work, helped their own learning, as has been identified in other research (Reese-Durham, 2005). Giving peer feedback also required students to be emotionally engaged and was only possible by having a safe environment in which they felt comfortable enough to critique each other's work. It was noted, however, that there was little evidence of students suggesting how peers could improve their work. This may be due to a lack of maturity, knowledge, and skills because of the age of the students. Gielen et al. (2010) argued that students need training to give appropriate feedback and that peer feedback cannot replace the feedback of an expert, usually the teacher.

Students agreed that activities that were interesting or relevant to them were more engaging. Relevance refers to the activity having some personal meaning or importance to the student (for example, a current event such as the Olympic Games or a particular hobby and passion of the student). Renninger and Hidi (2011) used the term "meaningfulness" to describe personal relevance to the curriculum.

All three types of engagement were apparent in activities that were interesting or relevant to students. Interest in a topic could help a student engage emotionally with the activity because they had a positive connection. These emotional connections were evident in the student comments describing how the text made them feel. While Renninger and Hidi (2011) acknowledged that interest is an important part of increasing student engagement, Harris (2011) argued that too much emphasis on students' individual interests could be at the expense of cognitive engagement. Teachers need to find the balance between engaging a student through individual interests, and engaging them in required learning (Renninger & Hidi, 2011).

Activities perceived as being fun or enjoyable also engaged students. The importance of relevance and fun to engagement has been highlighted in a previous study (Wood, 2012) which found that activities that were fun were harder to give up on. Skinner, Kindermann, Connell, and Wellborn (2009) argued that enjoyment, fun, and satisfaction are part of the make-up of emotional engagement. Some students indicated that although not all activities were enjoyable to them, they would still complete them. Students completing work because it was required by the teacher is an example of behavioural engagement (Fredricks et al., 2004; Gibbs & Poskitt, 2010). It is possible the students completed these activities simply because they were good students, or

to avoid negative consequences of not completing them; this would be an example of extrinsic motivation (Deci & Ryan, 2008).

Three of the four teachers indicated that, at times, low student engagement was the result of their own lack of engagement in certain learning activities. They found that if they did not remain focused on student activities (reminding them to participate, and encouraging and motivating them) student engagement could be low. They indicated that it was necessary for them to remain focused on an activity and to ensure they were interacting with the students and providing appropriate guidance, support, and encouragement if and when required. Hartnett (2015) also found that when students did not feel supported by teachers there was a decrease in student engagement and motivation.

Conclusion

Student engagement is recognised as an important component of all teaching and learning. Yet few studies have explored online learning in the compulsory schooling sector. This study has identified that various types of student engagement can be encouraged, depending on the nature and design of online activities and the context in which the learning takes place. Web 2.0 tools, which provided learners with opportunities to exercise choice and control, encouraged behavioural engagement. Relationships between students, and between students and teachers, promoted emotional engagement among the learners. The presence of a supportive learning community was a necessary precursor for these relationships to develop. Activities that were perceived to be fun and enjoyable also supported emotional engagement. Cognitive engagement was enhanced by feedback processes built into the online activities. Furthermore, activities that were perceived by learners as interesting and relevant encouraged the expression of all three types of engagement.

This study therefore makes an important contribution by exploring what engaged 11–15 year-old school students when learning online in a distance school setting. By drawing on student perspectives, as well as teachers' views, a fuller, more comprehensive picture of online engagement has emerged than has been previously reported. Finally, by not treating engagement as a single construct, but adopting the well-established constructs of behavioural, emotional, and cognitive engagement from the wider education engagement literature, a more nuanced and complete picture of the factors that influence online engagement has emerged.

The results of this research have important implications for K–12 teachers and schools involved in online teaching—not least of these is the need for teachers to develop a deeper understanding of the nature of online engagement. Teachers of online courses need to consider the three types of student engagement as they design their courses and learning activities. All three types of engagement can be encouraged by designing activities that are relevant to students. Teachers need to provide students with some choice and control over their learning because this helps to increase behavioural and cognitive engagement. Giving students choice and control over their learning could be achieved by allowing students to decide on the most appropriate way to present their learning. Developing an online environment in which students feel safe to contribute their thoughts and ideas is necessary to increase emotional engagement. Teachers need to develop activities that encourage social presence early in the course. Social presence can be nurtured by incorporating activities that encourage interaction among students, such as activities that ask students to share personal stories. Cognitive engagement can also be encouraged by having students give peer feedback, because this requires students to read, process, and articulate their understanding of the work.

It's important to note the limitations of this study. While it was small in scale and focused on one distance education school in New Zealand, its value lies in the in-depth understanding of engagement that has emerged. Future research needs to build on these initial findings and explore online student engagement across a wider range of online learning contexts in New Zealand schools and overseas. Exploring differences between patterns of engagement of students in fully online school programmes and those in more traditional school settings is another important area for further investigation.

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Biographical notes

Nathaniel Louwrens MEd
nathaniel.louwrens@gmail.com

Nathaniel is an e-learning facilitator at CORE Education, New Zealand. He works in schools and online to support educators who are teaching and learning with digital technologies.

Maggie Hartnett PhD
m.hartnett@massey.ac.nz

Maggie is a senior lecturer in the Institute of Education at Massey University, New Zealand, where she teaches in the areas of e-learning and digital technologies. Her research interests include motivation and engagement in digital environments, teaching and learning with digital technologies, electronic portfolios, support for digital learners, digital places, and spaces of learning. Maggie is also an Associate Editor of the *Journal of Open, Flexible and Distance Learning*.