



Using Twitter in Higher Education

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The use of the social networking tool Twitter was incorporated into a first year education studies course to support the Universities development of First Year students' academic culture, connectedness and resourcefulness. A hashtag was created using the course code where students were encouraged to paraphrase, question and provoke thinking during face to face and individual study time. Student tweets were analysed qualitatively using three types of interaction; learner-learner-instructor; learner-content & learner-interface. The tweets offer insight into both the social and cognitive engagement of student during their first year of university study.

Keywords: Higher Education, Twitter, active learning

Introduction

An initiative was conceptualised as part of strategic approaches to engage and support student learning and belonging within the roll out of a new Bachelor of Education Primary Program offered across three campuses at an Australian University. The university has a set of directives to guide programs and initiatives for the development of student success and retention. These directives are symbolised through student senses. There are five senses- capability, connectedness, purpose, academic culture and resourcefulness. The initiative was titled- 'Let's Tweet to learn' and was targeted at a student's sense of connectedness in supporting the building of relationships with peers and academic staff; a student's sense of resourcefulness in enabling their ability to access and use knowledge systems, and a student's sense of academic culture in guiding their approaches to study.

Twittering and learning in Higher Education

Twitter is part of the social networking phenomenon of Web 2.0 technologies. Twitter can be thought of as the SMS of the Internet as it allows its users to send and read text-based messages of up to 140 characters. Twitter users post messages, 'tweets', read by users who follow that person or use the same twitter hashtag (Anderson, 2011). A tweet can include text, links to photos or videos and can also be 're-tweeted' for further distribution among followers. In an educational context, tweets can be constructed to express an idea, paraphrase or critique a concept, provide a level of discourse in a virtual space that supports dialogue occurring face to face (Sweeney, 2012). The twitter stream can also provide a record of the event (lecture, presentation, meeting) from the perspective of the participants.

Twitter is a tool that is considered popular with today's students (Taylor & Keeter, 2010) who use technologies as part of their seamless social interactions. Today's students are known by several labels including the 'Millennials' (Oblinger, 2003). These students work and live in different ways. They prefer learning

environments that use technology, utilise innovative 'modern' techniques, and involve active learning and multitasking (Gardner, 2006).

Universities are responding to these diversifying needs of student cohorts. In support of the Millennials, described by Hilton (2006, 60) as the "born digital crowd", the notion of what constitutes learning is different than that considered by mature age students. Learning for the Millennial is an active process with students the producers of knowledge rather than gatherers of information. They learn through social interaction and are 'wired' or connected to technology as part of their lives. Whereas learning for mature aged students is characterised as a passive, step-by-step process, that occurs in isolation disconnected from technology (McNeely, 2005). These diversified learning styles place greater importance on the need for learning to be accessible 24/7 and having to compete with work, social and family commitments. Catering for these types of learners requires pedagogical shifts in education. Hilton (2006, p.59) describes this shift as the "perfect storm" implying that the nature of learning amongst Millennials are disruptive forces bearing down on higher education, but that these forces should also generate new teaching opportunities. In today's market, learning is expensive and required on demand. Embedding new technologies into course work suggests a response to the divergent needs for learning and learners.

Stead (2006, p.14) suggests that the best way for an academic to understand the use of new technologies such as Twitter is "to try it out for yourself", and goes on to claim that "most of the learning for tutors and students can take place on the job". This learning dynamic where university tutors and students learn together is a new approach within higher education, and one that is being proposed to harness the digital generation (Hilton, 2006; McNeely, 2005; Oblinger & Oblinger, 2005) and to move learning to spaces that are not confined to physical structures such as lecture theatres or workshop environments. Harnessing learning that can occur at anytime or place is about understanding the nature of learning enabled through mobile gadgets such as laptops, digital cameras, phones and iPods. It shifts the focus of learning to the mobile student and brings together global resources of the information world and of learning communities in what Sharpe (2006, p.16) describes as "a more appropriate moment to an individual".

The use of Twitter in Higher Education is in its infancy (Betrus, 2012). Reuben (2008) suggests that there is great potential in education for the use of social networking tools such as Facebook and YouTube, however, higher education has not yet found the right niche for Twitter. In the domain of health and medicine, Fox & Varadarajan (2011) incorporated Twitter as a way to encourage interaction between students themselves, with the academic teaching staff and with the content of the course. In this instance, tweeting was an assessable item. In a teacher pre-service education course focused on understanding how to use technologies in the classroom, Turcsanyi-Szabo (2011) reported the use of Twitter as an important part of students building a Personal Learning Network. Other studies have investigated live-tweeting during lectures and tutorials (Croxall, 2010; Parry, 2008) while others have examined twittering as a tool to support informal learning beyond the classroom (Ebner, Lienhardt, Rohs & Meyer, 2010; Kassens-Noor, 2012). There is also focus on the students' social development through the use of this tool such as students getting to know one another, sharing feelings and developing community (Reid, 2011).

Research Context

A newly designed Bachelor of Education Primary program was implemented in 2012. I was the Program Convenor. The program consists of four courses each semester with 420 students across three campuses enrolled in first year. The Education Studies course in which Twitter was trailed was implemented for the first time in second semester. It is a core course and one that involved the students in 13 weeks of lectures and tutorials plus a 10 day classroom practical experience. There was no precedence for course implementation and I was the course convenor.

Mid semester 2012, I attend a study tour in the United States. On this tour I was introduced to Twitter. Having never used the social networking tool before I was intrigued at the opportunities it afforded learning. There were 30 academics on the tour. We used Twitter to share our thoughts on the workshops, events, schools and presentations we attended. It provided us with a dynamic level of interaction for stimulating and extending our thinking. The back channel made our thoughts public. Discourse was active through opportunities for peers to agree or re-tweet posts, add to, question or provide scenarios that related ideas to different learning contexts. In a significant way, the tweets became more powerful than the presentations we were watching, as the discussion occurring between us, in this virtual space, was complex, critical and consuming. Upon return I wanted my students to have the same experience with this tool that I did. I thought this was important for two reasons. Firstly, I wanted the students to engage with Twitter for the purpose of learning rather, to enable critical

discourse. Secondly, as a pre-service teacher, they need to be confident with technologies, understand the educational power of the tool and the opportunities it provides for their own virtual presence and learning networks.

I had never used Twitter as a tool in a university course and considered myself a novice. I adopted the approach exposed by Stead (2006) to try it out and learn together with the students. I wanted the students to be active learners as expressed by McNeely (2005) rather than passive recipients in a lecture and I wanted them to experience what I had and to realise that the learning in a lecture comes from what they are thinking about, how they are reshaping what I am saying and how they are relating it to the course content. Learning can be an isolated process in a University. Providing opportunities in which students can make their thoughts known, build on each others ideas, collaborate and co-construct, should empower and benefit all students, even those who are just reading the tweets. I also wanted thinking and tweeting about the course content occurring at any point in time across the week in the lecture, in the tute, when the student was reading course material, when they were seeing something in action. I wanted to encourage tweeting 24/7 so that learning was as Sharpe (2006, 16) describes at a “more appropriate moment to an individual”.

Methods

Twitter was implemented to support the University’s First Year Experience program specifically to address students’ sense of connectedness, academic culture and resourcefulness. The theoretical framework used to analyse course tweets draws upon the types of interactions that occurred through Twitter amongst the students, with the interface and with the course content. The types of interactions espoused by Moore (1989) and Hillman, Willis & Gunawardena (1994) have been enlisted to analyse course tweets and are presented in Table 1. This approach looks at the substance of the tweets for types of interaction rather than the number or quantity of tweets that occurred as part of the course. In this way we can establish if the tweets served the purpose of enabling connectedness, academic success and resourcefulness.

Table 1- Types of interactions and student senses

Type of interaction	First Year Program Targeted student senses
Learner-learner-instructor: interaction occurs between the students, alone or in a group and or with the lecturer	Student’s sense of connectedness in supporting the building of relationships with peers and academic staff;
Learner-content: interaction occurs when the student intellectually engages with content resulting in changes in understanding	Student’s sense of academic culture in guiding their approaches to study
Learner-interface: interaction occurs with a focus on the technology as an intermediary between the student and the content	Student’s sense of resourcefulness in enabling their ability to access and use knowledge systems

Unlike Fox & Varadarajan (2011) and Turcsanyi-Szabo’s (2011) use of Twitter as an assessable item in their courses, this course did not mandate the use of Twitter. I encouraged and advocated for its use in lectures, discussed its relevance as a revision tool and an active thinking tool. I did not provide any training on how to tweet. I did set up the twitter hashtag and reminded students to tweet during the lectures. At no point were the students marked as part of assessment for the course. All tweets posted during the 13 week course were collated and analysed for evidence of three types of interaction- Learner-learner-instructor; Learner-content and Learner-interface.

Results and Discussion

Learner-learner-instructor interaction: Tweets that fall into this type of interaction include- student's individual tweets, re-tweets, students' tweeting to student followers and students' tweeting to the lecturer, as well as the lecturer tweeting individuals and the student group. At the onset of the course I was the main instigator of the tweets, which were mainly focused on encouragement to have a go (Figure 1).



Figure 2: Encouraging Tweets by Lecturer

Following this I tried to stimulate tweets by tweeting a question to the student body based on what we covered in the lecture, see Figure 2 as an example. Student rarely answered these stimulus questions. Rather, questions constructed by the students, see Figure 3, were more common. Initially I answered these, which would be considered the typical student-teacher dialogue. However, as Twitter is a social networking environment, I began to leave student questions unanswered to see if other students would respond, supporting learner-learner interaction. This did not occur even as we progressed through the course when students were becoming more familiar with the medium. There was also a lack of re-tweeting, where a student would re-tweet a fellow student's tweet to emphasis a good point. This indicated a lack of learner-learner interaction in this context.



Figure 3:
Lecturer question

Figure 4: Student initiated question

There was also evidence of disengagement by students when I asked a direct question that puzzled them as evident in Figure 4. When a student posted a tweet that demonstrated some confusion with the course content and I responded in a manner to extend thinking, disengagement occurred. This could indicate that this environment does not enable the channels for deep thinking rather that content complexities may be better dealt with in a face to face setting, as evident in other online communication tools (Prestridge, 2010). However, thinking about this in a different way, Twitter illuminated what content students were having trouble with which could then inform future teaching. The learner-instructor interaction was minimal when content confusion occurred.



Figure 5: Student confusion

As the course progressed substantive interaction between the students and myself occurred as evidenced in this 12-tweet conversation that occurred over 5 days (see Figure 5). The topic was covered in the lecture. The student was stimulated by further reading and continued to post her understanding of the concept outside of contact time. The learner-instructor dyad is evident here. It was learner initiated followed by instructor questioning to enable the student to explore the concept in relation to the course content.

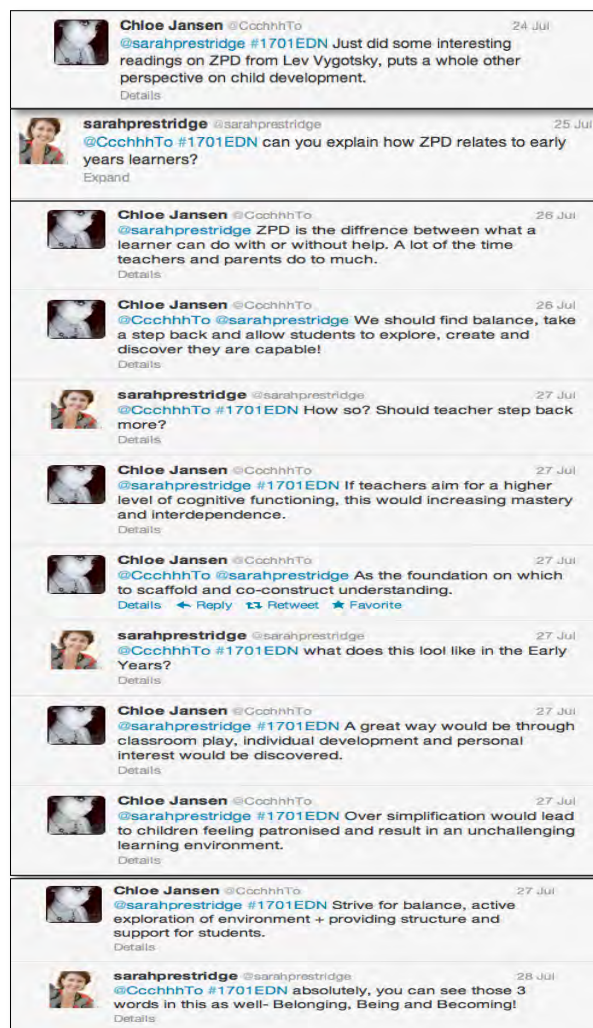


Figure 6: 12 tweet learner-instructor interaction

Learner-instructor interaction was the most evident form of interaction. The interaction was based on student direction and interest with support and direction provided by the instructor. Twitter was not found to support high levels of learner-learner interaction other than student tweets to the student body. Student tweets to nominated students to further explore course concepts or re-tweet posts were not evident. Instructor lead

questions, instructor-learner interactions, were also not evident. This indicates that a student’s sense of connectedness was found in the student-instructor interaction, meaning that it was initiated by the student, based on their needs and interests and supported and extended by the lecturer in this context.

Learner-content interaction: Enabling students to be active learners, to interact with course content to support their sense of academic culture is a defining characteristic of education. Paraphrasing was a common way the students tweeted course content as indicated in the two tweets in Figure 6. These tweets show that the students were building knowledge and understanding of the course content by paraphrasing key points during lectures. This commonly occurred throughout the lecture series.

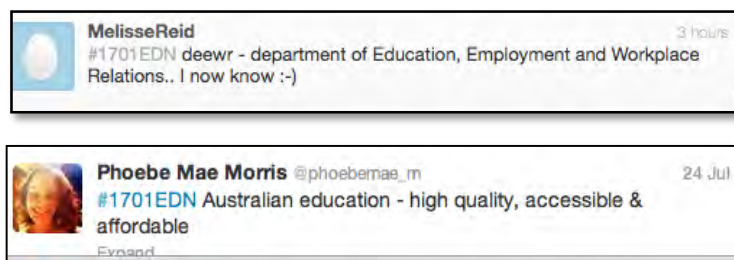


Figure 7: Paraphrasing

It was suggested in a lecture that one way to explore the meaning of a set of Teacher Standards was to create a Wordle and identify the key words in the resultant image. During the lecture students actioned this idea and posted it on Twitter straight away (see Figure 7). This tweet was re-tweeted by other students indicating its value.



Figure 8: Re-tweeted Wordle

Other ways that the students interacted with content moved from paraphrasing what was said in the lecture to applying the content to a situation and tweeting it (see Figure 8). In this tweet the student states the key points and expresses direction and application of the content.

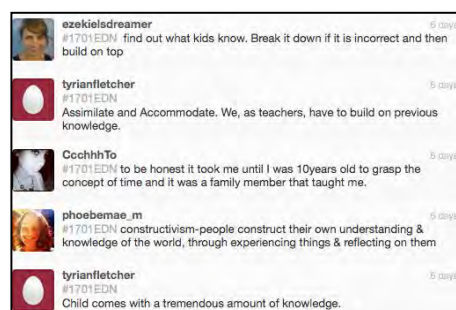


Figure 9: Redesigning the content

Students’ paraphrasing, actioning and applying the content to their own understandings evidenced learner-content interaction. Paraphrasing lecture content was common whereas the application of content by students

began to emerge as the course progressed. The movement from paraphrasing to applying the content indicates an engagement with a student's sense of academic culture.

Learner-interface interaction: This type of interaction focuses on the technology as the learner must have the ability to mediate the technology to engage with the course content and other students. The learner must also understand specific communication protocols to be an active participant and must not disengage, be fearful and or be persistent enough not to give up. The literature reviewed indicated that the students in this course, characterised as Millennials, prefer learning with technologies, actively and by multitasking. Tweets indicate that students struggled with the functionality of Twitter (see Figure 9) and did not apply the correct academic protocols to the environment (see Figure 10).

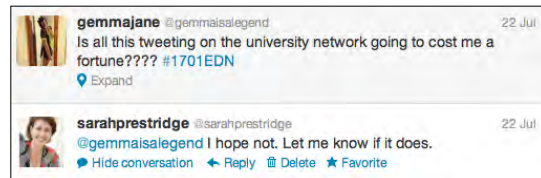


Figure 10: Twitter functionality



Figure 11: Incorrect protocols

Students expressed to me after the lectures that they were having trouble 'getting on' and often gave up, became frustrated and missed important content given in the lecture. This was also evidenced in one student's tweet stating that she did not like to multitask by tweeting and taking notes (Figure 11). This indicates that students did not see tweets as a form of taking lecture notes. Students did not recognise that the tweets during the lectures provided an account of the main ideas plus peer discourse about the content. This represents an emergent phase of understanding of functionality of Twitter and a lack of understanding of Twitter as a learning tool. Also it indicates that Millennials do not always multitask effectively.

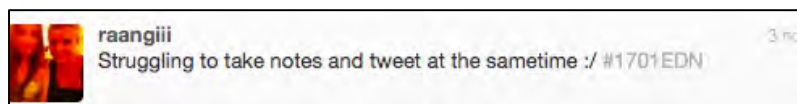


Figure 12: Frustrations with Twitter

Further frustrations were evident in student tweets when dialogue was misinterpreted (see Figure 12). The example provided was a series of tweets started by the student representing learner-instructor interaction (which was established as the dominant form of interaction previously). Ebonie Jane became 'lost' in the dialogue when my response questioned her post to try to extend her thinking. This might have been based on a lack of confirmation of her tweet. There is evidence here of a frustrated response to learner-interface interaction which could be based on the restrictions imposed by tweets- 140 character limit and by the lack of other sensory input that restricts the flow of conversation through digital communication tools. It could also indicate that reaffirming responses rather than questioning or challenging responses would be better served through this medium.

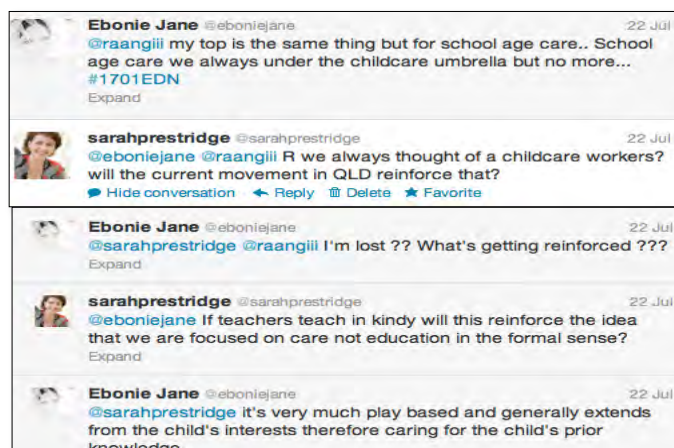


Figure 12: Display of student misinterpretation

Interestingly, as the course progressed, students were able to tweet their lack of understanding of course content on Twitter as in Figure 13. This indicates a greater confidence in the Twitter environment.

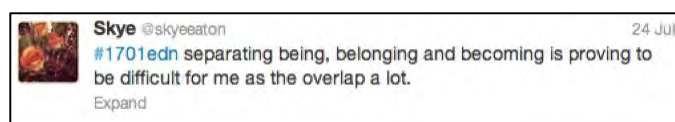


Figure 13: Display of lack of understanding of content

Learner-interface interaction is important to both conceptualise the type of discourse supported by the technology and the quality of the discourse. As evidenced here, students did not conceptualise tweets as valuable peer constructed lecture notes, they became frustrated with the interface, the discourse was misinterpreted and confused and academic protocols were not always applied. However, as the course progressed and the use of Twitter became more familiar, it was evident that more risk taking with critiquing of content occurred. This indicates that a student's sense of resourcefulness was not effectively developed to use Twitter to engage fully with course content and other students virtually.

Conclusion and Implications for future practice

This paper has explored the use of Twitter as a tool to engage students in an active learning, multi-tasking, and information producing approach to learning in a University course. Twitter was implemented as a tool to learn with, as a co-constructive approach that was encourage for its educational potential not through required assessment. This approach is considered richer for learning but harder to enable. Three types of interaction were analysed to identify if students' senses which frame the Universities' First Year experience program could be supported through Twitter. The three student senses that aligned to the types of interaction were learner-learner interaction with connectedness; learner-content interaction with academic culture and learner-interface interaction with resourcefulness. A student's sense of connectedness and academic culture were supported through the use of Twitter, however, their resourcefulness restricted and limit their engagement.

'Connecting' as a university student was illustrated predominately through learner-instructor interaction where the student posted a tweet about something of interest and the instructor responded in a manner that supported the flow-on of discourse. In this way the learner chose the concept to discuss and the instructor was responding to their needs. It was evident that 'connecting' did not occur through a question tweeted by a student or by an instructor, and little student-student interaction occurred. Academic culture was exhibited in tweets through paraphrasing of lecture content. Paraphrasing was identified as the beginning phase of knowledge development and was considered a vital opportunity to support this process. As the course progressed, students demonstrated active learning processes by tweeting images, links, re-tweeting and eventually applying knowledge to their own contexts. Developing resourcefulness within the university electronic system was evident in student's interaction

with the interface of Twitter itself. It was found that the majority of students struggled both with the functionality and conceptualisation of Twitter as a learning tool. Students had trouble getting on, applying academic protocols, were limited by the 140 characters and found it difficult to multitask, ie, tweeting and taking notes. Students did not conceptualise tweets as lecture notes and missed this opportunity to be collaborative active learners.

Realisations that emerged from the use of Twitter include an understanding that complex concepts that are presented in lectures can be simplistically dealt with in tweets in encouraging ways as part of the learning process but complexities need face to face exploration before they can be critiqued in this environment. This illustrates the development of understanding and knowledge construction that occurs through the life of a course and can be supported in students' tweets moving from paraphrasing to applying content. Importantly, for Twitter to be an active learning tool, lecturers need to ensure that students conceptualise it as a way to collaborate with their peers academically, as a learning process, and as a way to facilitate thoughtful engagement with course materials that will aide all students.

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