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Student Perceptions Of Online Interactive Versus Traditional Lectures; Or How I Managed Not To Fall Asleep With My Eyes Open

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Abstract

Universities are increasingly experimenting with the online domain to connect with busy and digital-savvy students and counter the decline in face-to-face lecture attendance. More often than not universities are offering videoed lectures or PowerPoints with lecturer voice-overs as a way of delivering content. Evidence suggests that while these techniques may provide the flexibility required, some content needs more personalised delivery. In this article the authors explore the development and delivery of an online lecture format. Using a combination of video, text and interactive cell technology, this online offering was trialed in a unit focused on the education of students with disability in inclusive classrooms. Using the Attitude toward Computer Aided Instruction Scale (ACAIS) (Allen, 1986) the author's surveyed 159, 3rd year pre-service teachers and asked them to compare the online presentation format with a traditional face-to-face lecture. The students were enthusiastic about using the online format, with data analysis revealing eleven of the twelve ACAIS criteria were highly significant in favour of this approach. The results of the survey are presented and discussed critically in the context of the challenges and opportunities online delivery of course content presents to universities.

Keywords: online learning, online lectures, interactive, university, inclusion, disability

Introduction

It is midnight and all I want to do is to keep reading more.... extremely interesting lecture, which was made so brilliant with all the videos and pictures. One of the best lectures I have ever had! The student is referring to an online interactive lecture and, as much as this feedback from a 3rd year education student is encouragingly positive, the most telling comment from the authors point of view is, "it is midnight". Rosen (2010) describes today's tertiary students as, "anytime, anywhere, anyway... my way" (p. 205); and for higher education institutions this is a glimpse of the future. On the basis of anecdotal feedback, observation and clear research evidence, the traditional university lecture appears to be in trouble (Davis, Hodgson & Macaulay, 2012; Kelly, 2012).

Concern over lecture attendance has become fertile ground for research (Dolnicar, Kaiser, Matus & Vialle, 2009; Kelly, 2012; Massingham & Harrington, 2006), but to suggest that the traditional lecture

is dead would be presumptuous. In recent times lecturers have tried a variety of approaches and multimedia tools to increase the appeal of on-campus lectures by enhancing interactivity within these sessions (Berry, 2006; Mollenberg & Aldridge, 2010; Powell, 2003). These strategies include 'flipping' content to students beforehand so that they can address critical aspects of the material prior to attending the lecture, with the intention of students becoming more active participants in their own learning (Lancaster & Read, 2013; McCredden & Baldock, 2009; McDonald & Smith, 2013; Prunuske, Batzli, Howell & Miller, 2012; Riismandel, 2013). Other approaches include lecturers using 'clickers' or voting pads to allow students to canvas opinions in lectures, and subsequently demonstrate deeper understanding (Lancaster & Read, 2013) or, alternatively, embedding transformational learning techniques such as role-play or focusing on 'small groups within the larger group' to provide opportunities to enhance the effectiveness of lectures (Matheson, 2008). It appears, however, that many students prefer to access course information within online environments at a time convenient to them (Davis et al., 2012). As a result lecturers often find themselves in a situation where they are catering for attenders and non-attenders. While providing quality lecture material face-to-face and on-line is possible, it presents challenges for academics, especially at a time when workload demands are continually increasing (Nijhuis & Collis, 2005).

Universities are entering a challenging period in respect to how they deliver the skills and information necessary for their graduates to enter a rapidly changing workforce (Tapscott, 2009). Not only are university lecturers faced with pressures brought upon by strident student consumerism (Molesworth, Nixon & Scullion, 2009), but in real terms they must determine if their current methods of instruction are relevant to the net-generation (Prensky, 2010). Busy Australian students, who appear to be working more hours than any student generation before (ABS, 2013), are trading off face-to-face participation for on-line information that is readily available. To quote an Australian university student in research about online delivery of content: "You do what gets marks: essentially, as workloads increase, I choose to skip lectures and complete assessable tasks" (Gysbers, Johnston, Hancock & Denger, 2011, p. 29). So where do academic staff who want to both use their limited time effectively and maximize the learning opportunities of their students, turn?

In recent times, universities have seen delivery of online content as an encouraging way to engage students without "investing heavily into faculty resources" (Kini, 2011, p. 2). As a result, there has been a rapid growth in online delivery of content over the last decade in higher education institutions worldwide (Gosper, McNeill, Phillips, Preston, Woo, & Green, 2010; Schultze-Mosgau, Zielinski & Lochne, 2004; Williams, Birch & Hancock, 2012). Predominately this online material is either delivered via videoed lectures or voice accompanied slide presentations (Hahn, 2011); it is as though university lecturers are simply trying to create the traditional face-to-face experience and send it out via the Internet. In the online environment dominated by social media and entertainment, it is hard to imagine that slide presentations (Mollenberg & Aldridge, 2010; Schraw, Bendixen and Dunkle, 2002) and lecture videos can compete for attention. While there is evidence university students appreciate the convenience and style of web-based learning technologies (WBLT) (Taplin, Low & Brown, 2011; Williams et al., 2012), Bennett and Maniar (2007) found that students regarded videoed lectures as uninteresting, preferring the immediacy of the original event.

When Leeder (2000) transformed a medical sociology course into a Computer Aided Learning (CAL) package, she recognised the limitations in simply reproducing lecture content for online consumption and asserted the need to develop a new pedagogy to take advantage of the technology:

If we merely wanted to faithfully reproduce the lecture, we should make a video of it and distribute the tape to the students. It is clear then, that a multimedia production should take full advantage of the new medium that computers can offer (p. 222).

She described the transformation of lectures as "interactive self-directed multimedia modules ... removed from their time and place (p. 219). Leeder's project used a ratio of 300 production hours per hour of content (p. 219), but she believed: "future generations of Cambridge medics will be able to work through the material in their own time and space and at their own pace" (p. 220). Leeder and her team were both pioneers and innovators in their development of web and digital technology of the time.

A decade on, with university decision makers encouraging more representation online (Schell, 2004; Pittaway & Moss, 2014), research focused on improving the student experience utilizing even far more accessible technology appears to be overdue. Despite furtive attempts to introduce these approaches in Australian higher education settings, there is limited research exploring the efficacy of interactive online delivery of content, particularly from a student perception point-of-view (Williams et

al., 2012). Indeed, limited attention in academic literature has been devoted to whether tertiary students (and in this case pre-service teachers) are ready for online approaches, or whether face-to-face lectures are still the preferred option.

This research examines the reactions of pre-service teachers, enrolled in a unit about inclusive pedagogy and special education strategies, to an interactive on-line presentation with a view to establishing the feasibility and effectiveness of developing alternative modes of curriculum delivery. The authors of this paper work in the area of pre-service teacher education focused on diversity and inclusivity (see O'Rourke, Main & Cooper, 2008); and in recent times have explored the use of digital technologies to enhance student-learning opportunities (Main & O'Rourke, 2011; O'Rourke, Main & Ellis, 2012; O'Rourke, Main & Ellis, 2013). These two elements have combined within this study to address the following research questions:

1. Do pre-service teachers consider the *interactive wall* as efficient use of their time when compared to the traditional lecture mode?
2. Are pre-service teachers comfortable with the online technology that allows presentation of content via the *interactive wall* compared to content delivered in traditional lecture mode?
3. Do pre-service teachers find that the *interactive wall* online technology allows for creative and personalised delivery of content compared to the traditional lecture mode?

Delivering the message

It is the experience of the authors that lecturers working with pre-service teachers in the area of inclusive education strive to foster positive attitudes toward teaching students with disability, but the academic literature indicates that inclusive practice is traditionally difficult to sell to teachers (Scruggs & Mastropieri, 1996). Resistance may be due in part to the fact that inclusive education presents challenges to pre-service teachers' notions of pedagogy (McHatton & Parker, 2013), particularly if they enter specific courses with limited awareness and practical experience of people with disability. Silverman (2007), therefore, points towards a critical element of developing successful inclusive teaching; "high-level beliefs about knowledge and learning, or epistemological beliefs" (p. 43). To achieve these 'high-level beliefs', students need to be engaged in (a) complex and uncertain knowledge, (b) gradual, effortful learning, (c) focussed attempts to develop learning ability, and (d) support from knowledgeable educators who ensure that students are the active constructors of their own meaning (Schraw, Bendixen, & Dunkle, 2002). To create changes in attitude, today's students cannot simply be passive recipients of knowledge; rather, ways must be found to ensure they are sufficiently motivated and engaged to develop higher order thinking skills. Fitch (2003) suggests that it is necessary for students to grow in their capacity to accept inclusive concepts, if they are to be effective in the classroom. To simply hope that 'lecture truants' will follow up the notes on the university Learning Management System (LMS) seems to be a high risk if we are to create the skill repertoire necessary for tomorrow's teachers.

Within this study the reconstructed lecture was part of a core unit at Edith Cowan University (ECU) for pre-service K-7 teachers completing a Bachelor of Education and represented fundamental knowledge and skill development in inclusive pedagogy and special educational strategies. Given the diversity that exists in current Western Australian schools, it is essential that units assist in the development of teachers who understand the environment they are working in, and are mindful of what has led to this point. Placing further importance on creating influential programs for pre-service teachers is the awareness that, throughout Australia, a dramatic shortage of special education teachers exists (Forbes, 2007); as such, many current pre-service teachers who originally intended to become general educators will find themselves working within special education environments. As a result, there is much for lecturers working with pre-service teachers to contemplate, especially given the limited time devoted to notions of inclusion within Bachelor of Education programs (O'Rourke et al., 2008).

The challenge to influence attitude within core diversity units is critical because research indicates that teacher attitude and belief have a direct impact on inclusive teaching behaviours in the classroom (Schumm, Vaughn, Gordon, & Rothlein, 1994; Tait & Purdie, 2000; Trent & Dixon, 2004; Weiner, 2003). Conversely, if teachers leave university with negative attitudes towards the education of students with disability, then these attitudes are difficult to change (Sharma, Forlin, Loreman, & Earle, 2006). Further, deeper understanding of the history and context of schools, via more engaging pedagogy, allows pre-service teachers to develop a clearer sense of what exists in today's classrooms (Churchill, Ferguson, Godinho, Johnson, Keddie et al., 2011). Consequently, just as

museum curators have taken advantage of interactive technology to enhance visitor engagement with their installations (Campos, Campos, Pestana & Jorge, 2011); universities are beginning to move from traditional lectures to other mediums of knowledge delivery. This is partly a response to perceived learning style preferences of generation-Y students (Prensky, 2010), but also a sense that current technologies can enhance learning.

As with Leeder's (2000, p. 219) pioneering work, we sought to make use of the capabilities of existing technology to develop a self-directed, interactive module that would motivate students to engage with both the history and philosophies behind inclusive education. This was achieved using existing content from a PowerPoint presentation and transforming it using Windows interactive tiles technology to produce an online interactive presentation (see Appendix B).

Research plan and methods

Construction of the interactive online presentation

The 'history of disability in schools' lecture is a common feature of many pre-service teacher units focused on diversity and inclusivity. Typically these lectures are delivered early in the semester and they set the scene for specific learning that takes place later in these units. Within these lectures concepts such as the origins of prevailing societal attitude to disability, disability rights legislation, movements towards more inclusive societal viewpoints, initial forays into special education and the movement from segregated to inclusive schooling are discussed. The researchers in this study captured key themes from the existing lecture that related to an international, national and state-based context; and recreated it in a new digital presentation format, described herein as the *interactive wall*.

The *interactive wall's* development was based on (1) decreasing lecture attendance at universities (Kelly, 2012; Massingham & Harrington, 2006) but a pressing need to convey complex material about a rapidly changing world (Palfrey & Gasser 2008), and (2) universities need to adapt to the changing way students learn new information or face what Jukes, McCain and Crockett (2010) describe as a "crisis of relevance" (p.9). These challenges exist at a time when both lecturer workloads and student study/work/life balances appear difficult to manage (Nijhuis & Collis, 2005). The development of mechanisms to deliver complex material in engaging formats accessible to all students appears to be of critical importance to educators and it was felt that the *interactive wall* could provide a way forward.

The *interactive wall* was developed as a series of interactive tiles covering 'lecture' content (see Appendix B). Video instructions from the first author were provided at the top of the wall on how students could navigate their way through the *interactive wall*. Students were instructed to engage with the material following a gradient of colors (working left downwards and then across the screen to the right). Tiles could be activated by touch or mouse-click depending on the technology the students were using. The tiles included Internet links, images and specially developed videos to support the text-based information. For example, the concepts of normalization (Nirje, 1970) and social role valorization (Wolfensberger, 1995) were introduced and unpacked with a brief accompanying video from a community expert to provide a contemporary viewpoint on the concept. The individuals interviewed concluded their clips by looking into the camera and saying (for example); "This is my story, how do you think you could help someone like me?" (J. O'Rourke, personal communication, 24 June, 2013). This approach was taken to enhance engagement, as though the speaker was asking a direct question to the online viewer. These brief videos were produced by a video production company and were hosted within the *interactive wall* using unlisted YouTube clips, accessible only to those with the unit link.

While universities are looking to expand market share in online courses, it appears that a significant reason for choosing this option is the cost effectiveness of delivering courses in this manner compared to traditional 'bricks and mortar classes' (Rice, 2012). As such, it is important to address cost and time considerations when appreciating the construction of the *interactive wall*. The production of the *interactive wall* was funded by an internal university grant and employed the services of a professional video production company to create seven 2-3 minute videos. Production and post-production costs (which included hire of equipment, organizing venues for interviewees, associated research, editing, subtitling and final CD production) were just over AUS\$7000. Additionally, as this reflects a research project, considerable hours were devoted to the conversion of the existing content into the *interactive wall* format, via a research assistant with computer programming skills (at a cost of approximately AUS \$2000). While this cost is beyond that of typical online lectures, in accordance with Leeder's (2000) reflections on producing interactive online

material, the research team feel the *interactive wall* will be used for several years to come with only minor updating adjustments required.

Students and settings

In the study being reported in this paper, 159 students in their 3rd year of a 4-year K-7 Bachelor of Education undertaking a unit in teaching children with special educational needs, accessed the interactive wall and were asked to complete an online Qualtrics survey after viewing the content. These pre-service teaching students varied in age between 20 and 51 years.

Procedure and survey materials

The content included in the *interactive wall* was designated as the second lecture in an eleven-week lecture series. The students were provided with an electronic link on the lecture tab of their unit LMS and were asked to view this rather than attend their normal face-to-face lecture. After working through the content the students were asked to complete a modified online version of the Attitude toward Computer Aided Instruction scale (ACAIS) (Allen, 1986) (see Appendix A) to measure their perceptions on interactive online lectures at university. This scale was selected as it had been used previously to measure students' perceptions of computer aided instruction, and was focused on generic aspects of instruction that could be related both to the *interactive wall* and a traditional lecture. Using a seven-point scale, the students were asked to select how they rated the interactive wall for each descriptor (e.g. overwhelming-easy to control; impersonal-personal). Previous usage of the ACAIS has indicated that the content validity, factor structure and internal consistency have been reported as satisfactory (Allen 1986; Brudenell & Carpenter, 1990).

Following the week two *interactive wall* lecture, students attended a traditional face-to-face lecture given by the Unit Coordinator. The lecture presented content similar to the material conveyed the week earlier; using a variety of multi-media tools and ensuring an interactive lecturer/student style was maintained. After attending the week-three lecture the students were asked again to complete the ACAIS, so that comparisons between the two lecture styles on set criteria could be made. Additionally, to allow for a deeper analysis, students were asked to comment on why they rated specific criteria highest and lowest for both the *interactive wall* and the traditional lecture.

Results

A total of 159 survey responses were entered into an SPSS spread sheet for data analyses. An independent samples T-test was conducted to determine if there was a statistically significant difference on any of the twelve ACAIS criteria between the *interactive wall* and the traditional lecture (see Table 1 and Figure 1).

As shown in Table 1 the students were overwhelmingly in favour of the *interactive wall*. On eleven of the twelve criteria there were highly significant differences in the ACAIS criteria between the *interactive wall* and the traditional lecture. As highlighted in Figure 1 the most significant differences in student perceptions on the two forms of content delivery were in the criteria flexibility; ease of control; enjoyment and creativity. The final category (problematic - problem free) did not have a statistically significant difference, most likely due to technical issues such as internet speed while watching video material that some students reported. Despite this the mean score for this criteria for the *interactive wall* was still higher than the traditional lecture.

Table 1

Student perceptions on the Interactive wall v traditional lecture using the ACAIS

Category	Traditional Mean (SD)	Interactive Wall Mean (SD)	Significant difference
Rigid - Flexible	4.45 (1.49)	5.96 (1.05)	Yes, p<0.01
Useless - Useful	5.59 (1.11)	6.13 (1.00)	Yes, p<0.01
Meaningless – Meaningful	5.62 (1.06)	6.17 (0.92)	Yes, p<0.01
Boring - Enjoyable	4.81 (1.43)	5.77 (1.27)	Yes, p<0.01
Overwhelming – Easy to control	4.91 (1.34)	5.75 (1.23)	Yes, p<0.01
Inefficient - Efficient	4.99 (1.30)	5.78 (1.16)	Yes, p<0.01

Inappropriate - Appropriate	5.77 (1.11)	6.17 (0.90)	Yes, p<0.01
Unimaginative -Creative	4.53 (1.30)	6.09 (0.95)	Yes, p<0.01
Impersonal - Personal	4.90 (1.47)	5.35 (1.50)	Yes, p<0.01
Time consuming - Time saving	4.60 (1.58)	5.06 (1.64)	Yes, p<0.01
Threatening - Non-threatening	5.72 (1.20)	6.28 (1.01)	Yes, p<0.01
Problematic – Problem Free	5.36 (1.37)	5.44 (1.47)	No, p=0.61

The responses were further grouped into three categories to allow for exploration of the research questions. These were issues related to *time* (useless v useful, rigid v flexible, time consuming v time-saving and inefficient v efficient); *ease of use* (overwhelming v easy to control, problematic v problem free, threatening v non-threatening, inappropriate v appropriate) and *creativity and personal impact* (unimaginative v creative, boring v enjoyable, meaningless v meaningful, impersonal v personal). The accumulated scale means and reliability statistics are presented in Table 2.

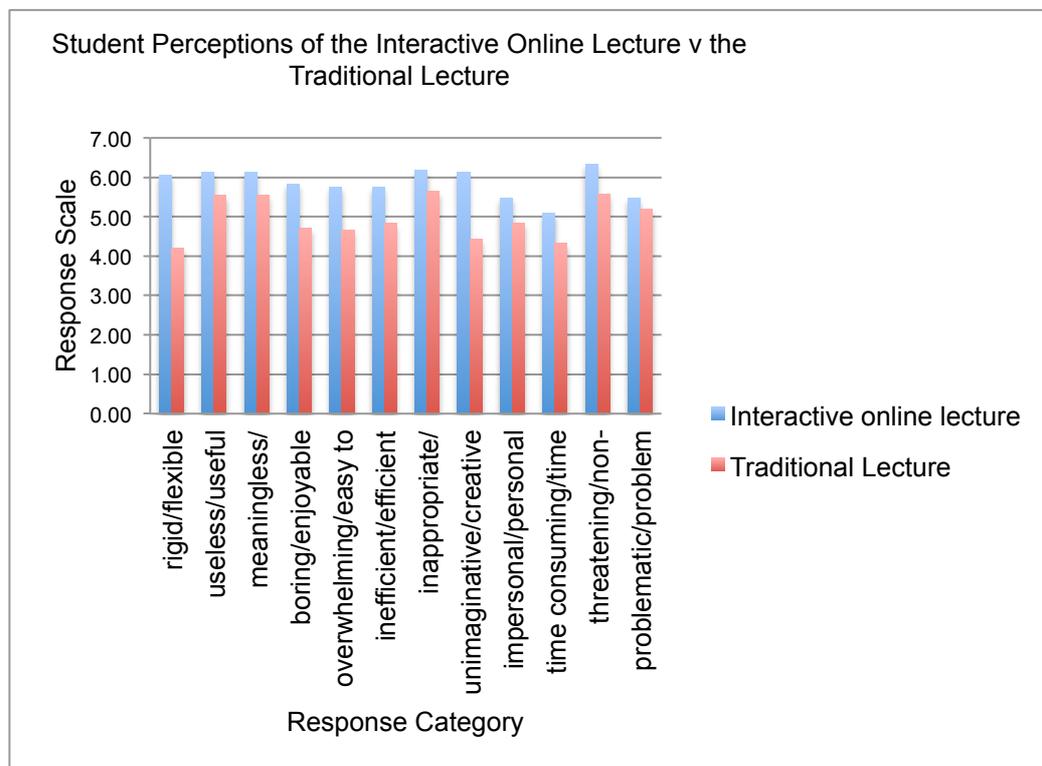


Figure 1: Student perceptions of the interactive wall v the traditional lecture using the ACAIS (Allen, 1986)

All scales achieved a strong level of reliability and, as can be seen, the *interactive wall* mean scores were all above those of the traditional lecture.

Table 2

Grouped means for ACAIS categories.

Scale	Mean (SD)		Cronbach Alpha	
	Traditional	Interactive Wall	Traditional	Interactive Wall

Time	19.6 (4.4)	22.9 (3.8)	0.820	0.757
Ease of use	21.7 (3.9)	23.7 (3.8)	0.784	0.825
Creativity & personal impact	19.9 (4.5)	23.4 (3.9)	0.870	0.847

To establish a deeper appreciation of the student's views on the *interactive wall*, feedback from students on the ACAIS criteria that was rated lowest and highest for the *interactive wall* and the traditional lecture, were explored for common themes using the using the open coding method (Strauss and Corbin, 1998; in which labels are made in the margins of interview transcripts; see Table 3).

Table 3

Common themes established using a line by line analysis of the interview transcripts

Survey question	What ACAIS criteria did you rate highest for the interactive wall?	
Student:	I enjoyed being able to complete the lecture in my own time. I found it engaging and effective. I also managed to write more notes for future reference as I could pause and return to areas already covered.	CODING <i>flexible</i> <i>easy to manage</i>

The most positive outcome about the *interactive wall*, according to the students in this current study was that it allowed more flexibility when compared to traditional lectures (see Table 4). This comment from a student illustrates this aspect of the study:

I found that this type of lecture was easy to follow and could be viewed at any time of the day to suit my needs. I really enjoyed that I could stop and start the videos to take notes or restart them if I needed more clarification. This was important as in lectures it's hard to keep up and things pass you by [sic] without understanding them. I felt I was able to pace myself to fully understand the concept.

Feedback such as 'it allowed me to go at my own pace, re-watch things, and take notes'; 'it was less stressful and rushed like a normal lecture'; and 'you have the freedom to complete it when you have the opportunity to' were typical of those surveyed.

Further, the *interactive wall* received consistently positive feedback in terms of its ease of control. The developers of the lecture were pleased with this feedback given that this was the first time such a tool had been utilised at the university. Many of the students comments related to the structured layout of the *interactive wall* and how the learning appeared to be compartmentalized: 'the lecture online was very easy to control and all of the content was categorised making for easy and quick access to certain points when necessary'.

Table 4

Students' highest and lowest rating for ACAIS criteria.

Themes of student feedback on the interactive wall	
Themes	Frequency of theme suggestion
Highest rating	

• It was flexible.	41 (25.5%)
• It was meaningful.	22 (16%)
• It was enjoyable.	6 (4%)
• It was easy to control.	28 (20%)
• It was efficient.	14 (10%)
• It was creative	10 (7%)
• It was personal.	19 (13.5%)
• It saved time.	8 (6%)
• It catered for different learning styles.	12 (8.5%)
Lowest rating	
• It was overwhelming.	27 (20%)
• It was inefficient.	9 (6.5%)
• It was impersonal.	26 (19%)
• It was time-consuming.	28 (20.5%)
• It was problematic	40 (29.5%)
• It was unimaginative.	2 (1.5%)
• No lecture notes were provided.	4 (3%)

Finally, student feedback suggested that the *interactive wall* was both meaningful (16%) and personal (13.5%); the combined comments made this category of feedback the highest. Again, this feedback was pleasing for the developers as it highlighted that, despite the content not being delivered by a lecturer, the tools and techniques used allowed the *interactive wall* to present course material in a style that was potentially transformative. Comments such as the following were typical;

I found this lecture very powerful and informative especially all the interviews shown.

At one point while (person's name) was speaking I got quite emotional thinking about what she must have gone through.

Watching this lecture and the ideas behind it all really helped me change my perspective and attitude towards the subject.

Students were also asked to provide feedback on their lowest rated criteria for the *interactive wall*. The highest rated categories here were that it was 'problematic'; 'time consuming' and 'overwhelming'. Many students commented on the technology issues they encountered while working through *interactive wall*, such as:

It constantly glitched, and several times I needed to log out and back in again. It took a good hour and 45 minutes to get through the information and glitches.

I attempted to open this interactive lecture on several laptops and the settings or compatibility of the laptops did not agree with the lecture.

I just found that living in an area without great wireless internet signal videos could crash or take a long period of time to load

I felt like a face-to-face lecture, for me, is quicker as I keep up to the speed of the lecturer. In this I was over analysing the information, and writing down all the facts.

I am not the best at using computers, so I did find using this form of online lecture a little overwhelming. I wasn't sure if we had to go down the columns or across from left to right!

Given this was the first time the *interactive wall* had been used, the developers acknowledged that the issues presented by the students were not surprising and imagined that effective presentation of this content was dependent on the availability of student's digital technology, the quality of their internet

connections and their confidence with using online technology. Despite these concerns, informal anecdotal feedback via tutorials suggested most students were able to access the *interactive wall* content by utilizing the University's computer services; or through problem-solving with peers.

Discussion

This research has reported on 3rd year education students' perceptions (using a modified version of the ACAIS, [Allen, 1986]) on using an online lecture format (the *interactive wall*) in comparison to attending traditional lectures. In doing so, it has responded to the calls from researchers such as Bennett and Maniar (2007), Pittaway and Moss (2014), Taplin et al., (2011); and Williams et al., (2012) who implore online educators to be more creative and to utilize technology to enhance student engagement. The results from this research indicate that these students are positive towards innovative use of technology when it comes to their learning. Additionally, students within this current study indicated that they saw the *interactive wall* as being more time-efficient, easier to control and personally more meaningful than a traditional lecture format; thus addressing the research questions in an affirmative manner.

The statistical data received via the ACAIS and anecdotally through student's elaboration on positives and negatives associated with the *interactive wall* were highly encouraging. Given this was the first time that this format had been used and that it was completed only days before it was posted on BlackBoard there were ample opportunity for problems and student complaints, but in the main these did not occur. Rather, the *interactive wall* provided a mechanism for delivering complex course material in an engaging (and sometimes powerful) manner. Bennett and Maniar (2007) suggest online lectures have the potential to make learning uninteresting on the basis of a loss of the immediacy that may occur in face-to-face lectures; but when combined with video they can become a "powerful teaching medium" (p. 1), particularly when it is necessary to humanise the content. Through a series of professionally constructed videos - the *interactive wall* provided opportunities for students to develop a more empathetic and authentic view on the history of the education of students with disability, via ex-students (with disability), parents, advocates and educators.

As Prensky (2010) argues the "desire and ability to go beyond 'I'm teaching this because it's in the curriculum', to 'here's how this relates to each of your worlds in a real way'" (p. 73) is highly valued by students; and this appeared evident in this current study. As described by one student the *interactive wall* provided the opportunity for transformative learning (which is essential when trying to convey content that targets fundamental changes to pedagogy); 'I enjoyed the videos (even though they made me sad and teary) as they showed how hard it was back then and how important it is these days to be educated and ready to teach children of all backgrounds and influences'. While attempts at altering students perspectives via mechanisms such as the *interactive wall* can leave them feeling "insecure and unsure" (Moore, 2005, p. 84), O'Sullivan (1999 cited in Moore, 2005, p. 88) points out "a radical shift in education is necessary if we are going to create change agents". It would appear from this current study that the *interactive wall* has the capacity to meet growing student demands for on-line learning, and create a personalised experience as well.

Despite the highly significant differences in student perceptions on eleven out of twelve ACAIS criteria (Allen, 1986) between the *interactive wall* and the traditional lecture, qualitative data highlighted the issues associated with delivering content with total reliance on digital technology. Responses such as, 'I had some difficulty accessing the lecture using my computer however could use my smart phone; although that used up a very large majority of my monthly data allowance to do so', hint at the issues students face within this environment. While students detailed problems associated with accessing and navigating their way through the *interactive wall*, universities are not in the position to wait for all students to acquire better digital devices or quality wireless connections. Given the exponential expansion in information required in any profession, and lecturers being unable to create more face-time, Prober and Heath (2012) sum it up well when they say, "in an era with a perfect video-delivery platform - one that serves up billions of YouTube views and millions of TED talks on such things as technology, entertainment, and design - why would anyone waste precious class time on a lecture?" (p. 1658). Without making light of issues associated with online delivery of course content, a more prudent approach for universities might be likened to Kevin Costner's character Ray Kinsella in *The Field of Dreams*; 'if you build it - they [sic] will come'!

Conclusion

In this paper the authors have described an initial foray into an innovative online lecture format. As much as the available data emphasizes that the students were overwhelmingly positive towards the *interactive wall*, our evaluation has revealed many adaptations and improvements that could be

made. For example, while a brief assessment was embedded into the *interactive wall*, there is the capacity via the use of BlackBoard discussion board features to 'flip' (Bergmann & Sams, 2012) the lecture content into the tutorial rooms. Flipping content would allow a deeper examination of the material and the capacity for students to address uncertainties that arise when engaging with the material; it would also allow students to address the questions presented in the video-clips more thoroughly. Also, it is clear that an audit of what Wi-Fi environment or type of digital devices best support the *interactive wall* needs to be conducted. Finally, several students indicated that supporting notes were not provided with the lecture and this was an oversight.

Previous studies have determined that students in higher education are receptive towards working online to achieve course outcomes, but the tools developed to achieve this, such as videoed lectures and Camtasia Power Points, appear to be limited in terms of presenting lecture content (i.e., they merely represent another version of the traditional lecture) and are not always supported by various mobile devices (Hahn, 2011). The *interactive wall* is unique in that it allows information to be presented in a structured format that encourages multiple views and enables a potentially deeper and more empathetic view of the content. The authors envisage opportunities in the future to use this format in a variety of teaching and learning situations, but in this initial exploration found it to be a promising vehicle for essential course content presented online. As Powell suggests, given the complex nature of our developing societies, university lecturers can "no longer be satisfied with a state where it doesn't matter if anyone learns anything" (2003, p. 236); the features that exist in the *interactive wall*, may provide lecturers with peace of mind that even when the content is out of their hands the message is well received.

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Appendix A

Modified Allen Attitude toward Computer Aided Instruction (Allen, 1986)

For each word select the number that best describes your feelings toward the **format** of the course content that has just been presented to you?

Rigid	1	2	3	4	5	6	7	Flexible
Useful	1	2	3	4	5	6	7	Useless
Meaningless	1	2	3	4	5	6	7	Meaningful
Enjoyable	1	2	3	4	5	6	7	Boring
Overwhelming	1	2	3	4	5	6	7	Easy to control
Efficient	1	2	3	4	5	6	7	Inefficient
Inappropriate	1	2	3	4	5	6	7	Appropriate
Creative	1	2	3	4	5	6	7	Unimaginative
Impersonal	1	2	3	4	5	6	7	Personal
Time saving	1	2	3	4	5	6	7	Time consuming
Non-threatening	1	2	3	4	5	6	7	Threatening
Problematic	1	2	3	4	5	6	7	Problem-free

Expand in a sentence on your lowest and highest descriptors:

Lowest:

Highest:

Write a paragraph about what difference this **course content** could have on your classrooms of the future.

Appendix B

The interactive wall

EDS3100 Teaching Children with Special Needs

[HOME](#) [CONTACT](#)

Click here to start your journey +

History of Disability in Western Cultures	Institutionalisation	Universal Declaration of Human Rights	Normalisation	Early History of Special Ed & Inclusion in WA	Conclusion: A Point to Consider
Video: Historical Views on Disability	Video: From Institutions to Integration	Video: The Rights of Persons with Disability	Video: 'Normalisation Today'	Video: '50 years of Special Education in WA'	The Road Ahead
Specialised Services	Eugenics	Civil Rights	Social Role Valorisation	Early History of Inclusion in WA- A Mother's Reflection	Next Week...
Video: Early Days of Specialised Education	Americian Eugenics - Historical Images	Video: Brown vs Board of Education	Video: 'A New Take in Social Role Valorisation'	Early History of Inclusion in WA- A Child's Reflection	Link to Blackboard Survey



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