What is student engagement in online learning … and how do I know when it is there?

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The term 'engagement' is much researched but tricky to define in the field of educational technology and online learning. In this short paper I will offer three perspectives on what 'engagement' means in online learning environments and provide some advice to educators on how student engagement in online learning might be promoted. The presentation of three perspectives is in no way meant to represent the entire literature base in the area. But the three perspectives hopefully provide a useful framing of how academic staff – particularly those new to online teaching and learning – can approach the concept of student engagement in online learning.

An interaction perspective on student engagement in online learning

From this perspective, developing high levels of student engagement in online learning is dependent on interaction. In an editorial for the *American Journal of Distance Education* in 1989, Michael Moore provided a simple but influential taxonomy on the types of interaction that can occur in distance education, that can usefully characterise different types of student engagement in online environments:

> **Learner-Instructor Interaction:** The "interaction between the learner and the expert who prepared the subject material, or some other expert acting as the instructor" (p. 2)

• **Learner-Learner Interaction:** This is "inter-learner interaction, between one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor" (p. 3)

• **Learner-Content Interaction:** This is the interaction between the learner and some sort of text or artefact (an article, slides from a presentation, an audio recording, etc) and is often didactic in nature but not exclusively so.

One of the more influential books of the last couple of decades in the area of educational technology, Diana Laurillard's (2013) *Rethinking University Teaching*, presents the conversational framework which proposes that interaction, dialogue and feedback between learners and teachers (i.e. learner-instructor interaction above) is at the heart of education and learning. In very general terms, productive learning occurs when a teacher designs and presents material or an activity to learners who then engage by acting and reflecting on it. Learners subsequently respond to the material or activity given their current understanding, often directly to the teacher. This is then reflected and acted upon by the teacher before a new loop or cycle is initiated in which the teacher may choose to re-present the material or activity, remediate or provide learners with feedback.

When it comes to learner-learner interaction and engagement we can think of peer-based learning, group work, etc. The foundations of the benefits of peer-based learning are strong; big educational names like Piaget (1960) and Vygotsky (1978) both highlight the value and importance of peer-based interaction and engagement in successful learning.

Finally, with the area of learner-content interaction, researchers in the field of educational technology from the 1960's have been interested in how students are able to interact with digital media in ways that can enhance their engagement and learning. Early researchers like

Thompson and Jorgensen (1989) defined learning-content interaction on a continuum. At one end, students' interaction with content is reflected by direct instruction (reading, watching, listening) or drill-and-practice activities, while at the other end of the continuum are more 'constructivist' approaches to learning-content interaction, where students investigate, explore and discover things to develop their own understanding. In more sophisticated educational technologies, such as simulation-based systems, respond and adapt when students interact with the presented material. It is learner-content interactions at this end of the spectrum that are more engaging in online learning environments.

Implications for Educators

- Plan and pay attention to fostering all three types of interaction: learner-instructor, learner-learner and learner-content. Moore (1989) makes it clear that, while there is sometimes a tendency for distance education or online learning to focus on a single form of student interaction and engagement, it is "vitally important that distance educators … do more to plan for all three kinds of interaction" (p. 6).

- Keep in mind that it is critically important for students to engage and interact with expert teachers, and this remains the case for learning in online environments. While some researchers argue that providing any one form of interaction and engagement for students is sufficient (see Anderson's [2003] Equivalency Theory), educators and educational research from Bloom (1984) to Hattie (2011) have shown the importance of learner-expert interaction.

An interactivity perspective on student engagement in online learning

With the rise of 'interactive multimedia' in the late 20th century, educational researchers became more interested in student engagement in digital and online environments. The boom of interactive multimedia brought with it an underlying and mostly untested assumption that if digital or online learning was 'interactive' it was also engaging

for students, and therefore beneficial for learning. The seduction of 'the new' has been a persistent challenge for educational technology researchers, and we still see this with contemporary technologies. For examples, tablet devices like iPads are definitely neat, interactive and engaging, but it is not clear that this automatically makes them beneficial for student learning.

Educational and human-computer interaction researchers have unpicked the concept of 'interactivity' and considered its relationship with genuine student engagement in learning (see Jonassen, 1988; Plowman, 1996; Cordova & Lepper, 1996; Kennedy 2004; Domagk, Schwartz & Plass, 2010). A fundamental distinction arising from this research is between **behavioural engagement** in online learning environments (reflected in manipulation of the interface through actions such as clicking, navigating, submitting, scrolling) and **cognitive engagement** in online learning environments (reflected by students thinking about and working through the learning material at a deeper level). Educational researchers have argued that these types of engagement are not necessarily or intrinsically connected. That is, a student can engage in an online subject by clicking through the LMS subject site and reviewing the material (*behavioural engagement*) but might not be deeply engaging with it (*cognitive engagement*).

While these two types of engagement might not co-exist, through the design of their online learning environment and the activities within it, teaching staff can encourage and foster both behavioural and cognitive engagement. For example, if a student constructs a concept map using an online tool (*behavioural engagement*), one could assume that in doing this the student will also engage more deeply at a cognitive level (employing the learning or cognitive strategy of 'organisation' for example – see Weinstein and Mayer (1986); Pintrich, Smith, Garcia and McKeachie (1991).

However, many subjects that are delivered online, and the 'learning' tasks within these subjects, are not of this nature. Many subjects that are delivered online only require behavioural and relatively superficial engagement. Admittedly, some online subject sites are intentionally prepared to ask students to simply access material, watch a couple of videos, and download articles to read later, offline. This represents a minimalist, almost 'correspondence education', approach to online learning and does not really reflect a subject site that provides students with a deeply engaging online learning experience.

Online learning tasks and activities that engage students on a cognitive level ask them to discuss and contribute their ideas *online*. They provoke and challenge students to make a response to a discussion, they ask them to reflect and then report back to peers and their teachers, they seek student input to online polls and ask them to interpret the data for the class, and ask them to create an online artefact, by themselves or with peers, for other peers' comment.

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Implications for Educators

- Move beyond creating simple behavioural interactions for students online – log on, access, download – to creating richer, more cognitively engaging tasks and activities for students to complete online.

- Think about how to design and create online tasks and activities that are *cognitively* engaging for students. This requires much more than simply presenting them with digital resources (PPTs, videos, PDFs), although providing resources is in many ways a necessary first step. The Melbourne CSHE's *'Seven ways to improve students' online learning experiences in your subject'* short guide provides some useful pointers on how to do this.

- Keep in mind that creating engaging activities and tasks for students does not require sophisticated technologies and tools – the core features of the LMS provide most of what you need. The real trick of engaging students deeply online is thinking about the learning design of your subject and the tasks and activities within it. This perspective on engagement is covered in the next section of this paper.

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A learning design perspective on student engagement

A large part of what educators do is to think carefully about their areas of knowledge and content expertise, draw components of this together, and then not just *present* it in a coordinated way to students, but also ask students to undertake activities and tasks in the areas that help them interrogate and develop an understanding of the discipline.

This activity, which academic staff and teachers do every day, is fundamentally a process of design: designing curriculum, designing learning activities and also designing assessment tasks for students. In educational circles this process is referred to as curriculum design, educational design or learning design.

The way in which teachers design and develop online learning environments for students is – implicitly or explicitly—based on an underlying understanding, theory or framework of how they think students learn. In the second half of the 20th Century there was a shift in the way educational theorists and researchers thought about how students learn. What are now known as 'constructivist' or 'student centred' models of learning gained support and traction in practice. This change is often characterised by the hackneyed aphorism of the need for teachers to move from being 'a sage on the stage' to a guide on the side'.

Contemporary models of learning place more value on students discovering, exploring and inquiring for and among themselves and less value on experts simply telling students the content they needed to know. While there is still value in teaching, direct instruction and expert feedback (see French & Kennedy, 2017), contemporary learning models emphasise the importance of privileging what students are asked to do and how *students* are asked to respond in the process of education.

It is difficult in this short paper to do justice to the range of useful curriculum and learning design models that are applied in education generally and online learning specifically. But it is perhaps useful to classify them into three broad types: inquiry-based learning models, simulation-based learning models, and peer-based learning models.

Inquiry-based learning models include problem-based learning, project-based learning, case-based learning and discovery-based learning (see, for example, Bruner 1962; Barrows & Tamblyn, 1980). Broadly speaking, with these learning designs, students are presented with relatively open, ill-structured, and authentic scenarios that they are asked to investigate, analyse and 'resolve'. By investigating and resolving the situation or scenario they are presented with, either individually or in teams, students come to a deeper understanding of discipline-based concepts and principles and how they can be applied. These learning designs can be applied at the task level (occurring over hours) or at the curriculum level (over weeks or for a whole subject).

Simulation-based learning models may, again broadly speaking, be thought of as having three types of learning designs: procedural simulations, conceptual simulations and role-play simulations (see De Jong & Van Joolingen, 1998). Conceptual simulation tasks are those that ask students to manipulate parameters of a real-world phenomenon to see what impact this has. Students are often set questions or problems, and by changing the parameters in the simulation they come to a better understanding of principles or concepts associated with the phenomenon. In procedural simulations, students complete activities that require them to develop their knowledge and understanding of a sequence of events or steps in a task. Procedural simulations can be used to support students understanding of relatively simple or very complex scenarios. Finally, role-play simulations ask students to take up a role in a scenario that can be completely fabricated or based on authentic, real-world cases and events. Role-play simulations often ask students to switch roles in order for them to gain different perspectives on a given situation.

Peer-based learning models, as the name suggests, centre around asking students to engage in tasks that explicitly require peer-based cooperation and collaboration (see Slavin 1995). These tasks and activities are commonly referred to as 'group work' and have been known to elicit groans from staff and students alike when introduced. However, when well designed, peer-based learning tasks can be incredibly engaging and beneficial for student learning. Peer-based learning can involve students collaborating over a couple of hours on a specific task, or they can occur over weeks of a semester. What unites peer-based learning models is that the activities are student led and directed, without direct intervention from an academic staff member. While their establishment will obviously involve academic guidelines, and their success will benefit from academic staff monitoring and providing feedback on how students are progressing, these activities are really about students working together on a specific problem, scenario or issue, in a social learning environment.

It is important to note that the three classifications of curriculum and learning design models are not mutually exclusive; you would regularly see, for example, collaborative learning in a problem-based learning curriculum and task. And, as mentioned above, the application of these models can be quite granular – at the learning task level – or quite broad, being used to guide the curriculum over weeks of the semester. What is common to all these models is that, through them, the design of curriculum and learning

activities promotes student activity and engagement, both individually and collectively. It should come as no surprise that these designs clearly accord with the five themes of teaching and learning practice advocated at the University of Melbourne and articulated in the 'Melbourne Way'.

Implications for Educators

- Give careful consideration to learning design when preparing online learning experiences for students, including the content material, the learning tasks and activities, and the assessment.

- Move beyond the provision of digital resources for students that revolve around direct instruction and more passive student activity, and instead engage students deeply through inquiry-based, simulation-based and peer-based learning designs. These might be applied to individual task and activities embedded within weeks of the online subject, or these learning design models may be used to guide the design of whole weeks of the course.

How do you know when students are engaged?

A final and legitimate question of academic staff who have put time and effort into designing and preparing an online subject for students is: 'How do I know they are engaged?'. A teacher's ability to determine if students are engaged in their subject is perhaps easier to see in a face-to-face context. You can see when a student is asleep in class, or clearly not concentrating in the lecture. Lecturers often feel they can tell when they have an engaged a lecture hall; when they are 'carrying the room'. And they notice the difference 'feeding off the crowd' makes when they are asked to give a lecture to camera without an audience.

It is tricky to determine when students are engaged in your online subject but there are some markers. The degree to which students are visiting and re-visiting the areas and materials in your LMS subject site are one marker. Are they 'turning up' virtually? The analytics tools of the LMS can provide you with data on this. You can also get a sense of engagement from what students say in online discussions and when you invite them to provide feedback or comments (which is a good thing to do throughout the semester). You

can also get a sense of when students have seemingly not engaged with key resources and concepts presented online once they submit their work for assessment. This is one reason to have low-stakes or no-stakes assessment early on in semester.

But what is hard to see, in face-to-face contexts and particularly in online contexts, is the cognitive engagement of students. While we can see the behavioural interactions of students online, we have very limited ways of seeing the cognitive engagement of students that lies behind these interactions. This is an emerging area of research in educational technology. So, in some ways, the best we can do is design online learning environments and activities that, when completed by students, inherently encourage their cognitive engagement.

Conclusion and Summary

The goal of this paper was to provide a brief outline of how educational researchers have thought about student engagement in online environments, and how educators might think about this in the development and delivery of their online subjects. It also sought to provide advice on what success in this area might look like and how academic staff might know that students are engaged.

In looking across the three 'perspectives' presented above it is clear that consistent themes emerge: more than one approach is often needed; thinking about both staff and student perspectives of the material presented online is important; thinking about not just what students are required to do, but how their thinking is being challenged. But the final advice to academic staff that emerges from this paper might be simply be summarised as:

> Promote three types of interaction online: teacher-learner, learner-learner, and learner-content interactions;

> Don't stop at behavioural engagement; think about designing online tasks and activities that can promote cognitive engagement;

> Build on teacher-centred learning designs and think about designing and implementing student-centred learning designs at either the task or subject level;

> It is hard to 'see' engagement online, but by using a range of measures and metrics you can get a sense of it.

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