

ELE1301 - Computer Engineering

Catherine Hills

School of Mechanical and Electrical Engineering

TITLE: Using Padlet to Support Development of a Sense of Belonging in First Year Engineering Students

LEAD ACADEMICS: Catherine Hills, Dr Jason Brown, Matthew Quinton

PARTICIPANTS: 163 undergraduate students completed the semester. The cohort is typically early career Engineering Students, with some Information Technology students who typically take this course later in their studies.

CONTEXT: A key aim of the First Year Experience project at USQ is to ensure that students feel that they belong (University of Southern Queensland, 2020). There are many aspects to this though they can perhaps be summarised into:

- academic (“I am able to do the work”);
- social (“I have friends here”); and
- alignment with future goals (“I can see how this course will help me in my future career”).

The course under consideration (ELE1301 Computer Engineering) is nominally a first year, first semester course. For many students, it is one of the first courses studied with USQ. Consequently, students may enter the course without a strong sense of belonging in any of the areas identified above.

With a large component of students studying online (around 78% in 2021), early and consistent online engagement with first year students is critical to the development of a student’s sense of belonging.

The goal of this project was to encourage online social engagement as a way to foster a sense of belonging for each student, where students feel part of a trusted and supportive community.

Aim of the initiative

ELE1301 (Computer Engineering) is typically taken as a first year, first semester course by students enrolled in several engineering programs. The course also includes students enrolled in an IT degree. The course has had an average enrolment of 195 students over the past 5 offers. In 2021 around 78% of the students were studying online, with the remainder distributed across Toowoomba and Springfield campuses.

While students interact with each other and the Course Examiner when needed, it has proven difficult to establish a sense of community within the course.

Possible reasons for this include:

- Many students are busy with other commitments;
- Students may not feel confident in themselves and their abilities;
- Students may tend to introversion and see social interaction as unnecessary; and
- The StudyDesk forums do not lend themselves to casual interaction and simple sharing of items as social media does.

ELE1301 was identified as an important course in the First Year Experience for students in the electrical and computer engineering areas. As the course was moving to a digital first format, it was critical to include within the course design a focus on creating and maintaining the sense of community amongst students, and between students and the university.

Educational Technologies

Padlet was identified as a suitable tool to facilitate loosely structured, visually engaging, simple social interactions and sharing with lecturers and between students.

Key reasons for this choice included:

- A simple, flexible interface allowing students (and staff) to easily share photos, videos, web links, documents, etc;
- The provision for anonymous posting where students might feel embarrassed to ask questions;
- Compatibility with Google and Microsoft sign-ons;
- An attractive web interface that renders on large and small screens alike and may be embedded into StudyDesk pages;
- The flexibility of different Padlet templates for different tasks; and
- The ability to link from one Padlet to another.

The use of Padlet in ELE1301 was designed to enhance engagement for first year, first semester students in a number of ways based on Redmond et al's (2018) Online Learning Engagement elements, including:

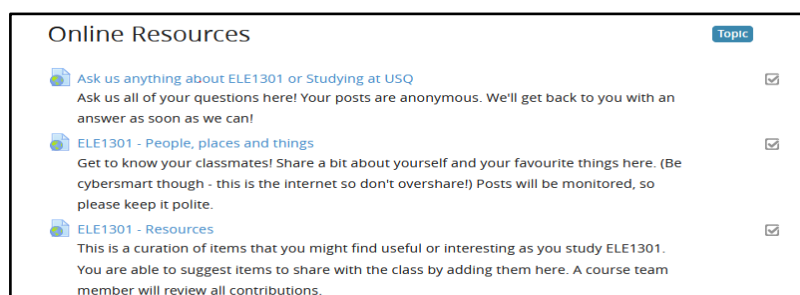
- Using Padlets to support **social engagement**
To encourage first year, first semester students to develop relationships with their lecturers and students within the cohort and establish trust within the cohort, to provide a socially engaging online experience to contribute to students' sense of belonging as a new student to USQ, to develop relationships and ultimately, build community.
- Using Padlets to support **collaborative engagement**
To encourage students to engage online with faculty members and ultimately, learn with peers.
- Using Padlets to support **behavioural engagement**
To model online learning norms including supporting and encouraging one's peers, and provide opportunities for students to develop agency as first year university students.
- Using Padlets to support cognitive engagement
To encourage students to think critically, justify one's ideas and/or decisions, and support critical reflection (metacognition).
- Using Padlets to support emotional engagement
To provide students with opportunities to articulate their assumptions and manage their expectations in their first semester and first year of university study, and motivate these students to become more engaged with and about their learning journey as a university student.

Project approach

Padlets were used in a number of places within the course. It was hoped that the use of Padlets in multiple places would encourage repeated engagement with the site, and enhance students' confidence regarding their skill development, and more importantly, their place within the course, faculty and university communities.

Padlets were introduced to students in two different ways.

The Padlets that were relevant to the entire course were included on the course StudyDesk as general resources (as illustrated below), and introduced in the introductory lecture:



Other Padlets, relevant to the current week's discussion, were introduced first in the lecture using a link and/or a QR code on a PowerPoint slide (shown below), which students were able to scan using their phone from their seat in the lecture theatre:



1. Getting Started
– Warm up!



https://padlet.com/usq/ELE1301_010


There were a couple of opportunities for students to engage in low stakes social interaction or ask questions anonymously. For example, the ELE1301 course utilised:

- A *Social Padlet* where students introduced themselves and shared a photo of themselves or of something they love. This Padlet was created with the ability for students to make comments and react to posts.
- An *Ask Anything Padlet* where students were able to anonymously post questions about the course or studying at USQ without fear of judgement or shame.

Each week, a theme was used to gain input, either casual or serious. Some of the casual topics asked about hobbies, or a favourite item within a category, such as favourite computer movie. This was used to make students comfortable with the technology, and student posts were anonymous to encourage greater interaction.


More serious questions included asking what students were most looking forward to in the course, and what they were most worried about. This provided a point of commonality for students as they could identify other students who felt similar to themselves. This also allowed the lecturer to take any appropriate actions and/or discuss these concerns with the group. Contributions were made during each workshop, and the link was also included in the summary of the workshop for other students to engage with asynchronously post-workshop (as illustrated below).


Workshop Recordings

 [Week 7 Workshop](#)

Welcome back from the mid-semester break! We started out by sharing the best bits of the break.

Then we worked through Learning Activity 7.1 (a) and (b), planning the flow charts and then implementing in TinkerCad - first using blocks and then in code.

 [Best Bits - Mid Semester Break](#)

 [Workshop 7 Notes](#)

Evaluation method

Statistics for student engagement on the social Padlet was compared with the social forum for previous cohorts.



Data on the number of students who used the links of StudyDesk and/or posted on Padlet was analysed. There was no existing data to compare this to previous cohorts, so this data will form a baseline for comparison with future cohorts.

Project impact

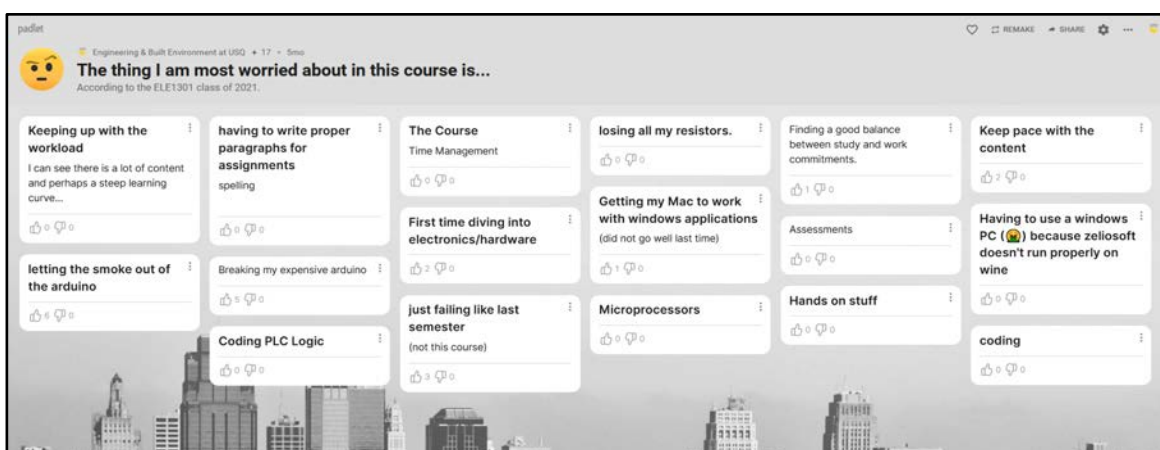
- The social introduction Padlet was not well used. This is possibly because it was one of the first Padlets introduced. In future, this will be preceded by some fun, informal Padlets to develop students' confidence with engaging online with lecturers and others. The social Padlet had 4 posts, which is comparable to the social forum from the previous cohorts, where 4 threads were started. That said, many students did visit the page as illustrated below:

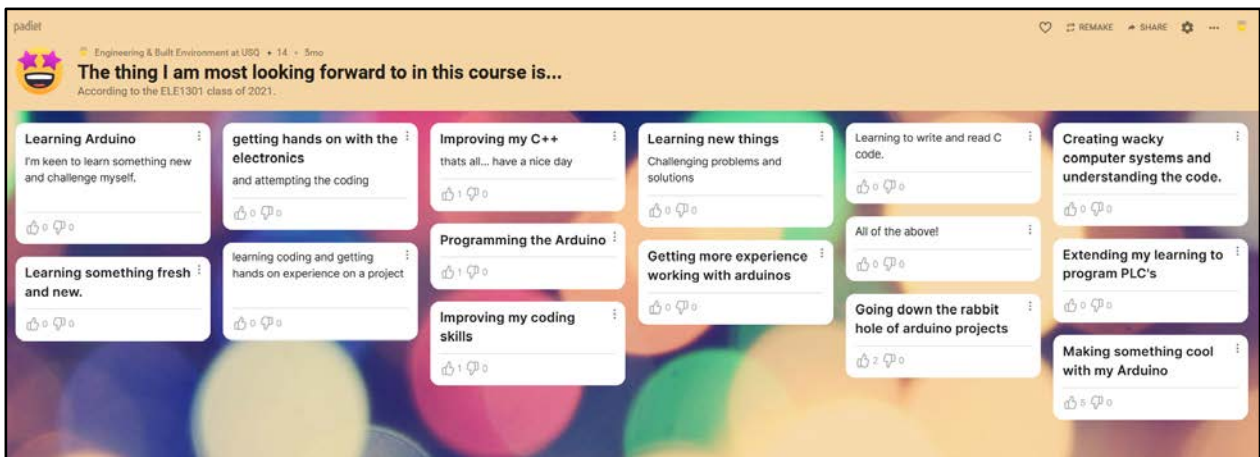
Online Resources			
 Ask us anything about ELE1301 or Studying at USQ	74 views by 55 users	-	Wednesday, 12 May 2021, 6:33 PM (91 days 19 hours)
 ELE1301 - People, places and things	96 views by 63 users	-	Thursday, 5 August 2021, 2:30 PM (6 days 23 hours)
 ELE1301 - Resources	208 views by 125 users	-	Thursday, 5 August 2021, 2:29 PM (6 days 23 hours)

- The use of Padlet for weekly polls were engaged with by just under half the cohort, with some topics being more popular than others. This will inform future topic choice.

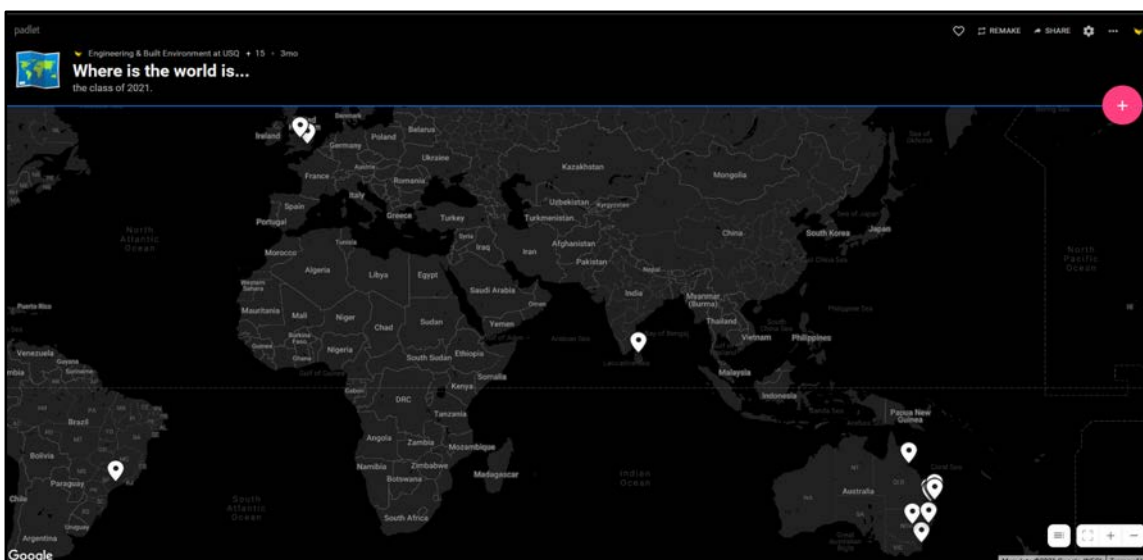
 Worst tech inventions... ever	96 views by 80 users	-	Thursday, 5 August 2021, 2:25 PM (6 days 23 hours)
 The thing I am most looking forward to in this course is...	76 views by 70 users	-	Sunday, 23 May 2021, 9:27 PM (80 days 16 hours)
 The thing I am most worried about in this course is...	69 views by 64 users	-	Sunday, 23 May 2021, 9:27 PM (80 days 16 hours)

- The most useful topics from the Course Examiner's point of view were, "The thing I am most worried about in the course is..." and "The thing I am most looking forward to in this course is...". The below screenshots provide examples of the type of responses provided by students:

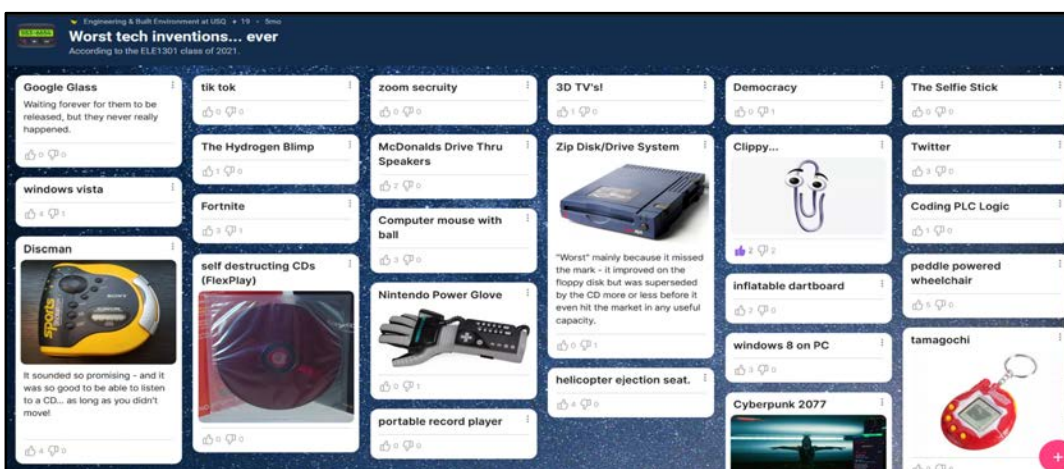


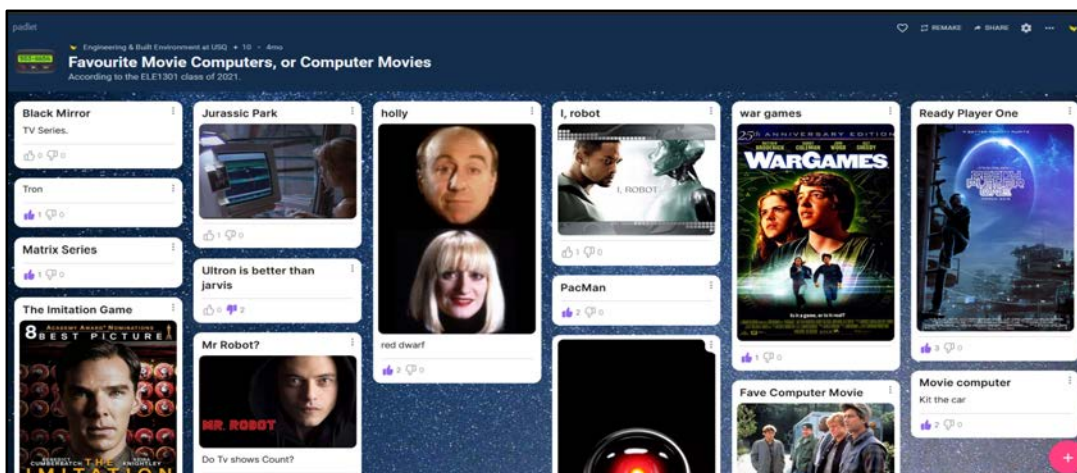


- The “Where in the world is...” Padlet was reasonably well engaged with, and it helped to highlight the distributed nature of our students, as illustrated below.



- A couple of the fun topics that were most popular are presented below, showing the range of responses from students.





- This project found that Padlet is a relatively easy platform to use from both the staff and student perspective. There was minimal skill development needed from a technological point of view.
- The use of informal topics in class supported the **social engagement** of students. Using relevant pop culture topics, such as computer movies, was a way for students to feel part of the group by way of the low stakes actions of anonymously posting a topic, or reacting to another's post. In both synchronous and asynchronous engagement methods, this style of Padlet use also develops **collaborative engagement** between the lecturer and students, as this is essentially a brainstorming session. Some of these topics were technology-related and provided an opportunity for the student (following a pattern modelled by the staff) to provide a rationale for their decision, demonstrating **cognitive engagement** with the topic.
- Transferring the same interface and approach to course-related topics facilitated further student engagement. The Padlets that asked what students were most looking forward to and most worried about in the course enabled students to articulate their expectations and concerns, and the staff to respond, developing the student's **behavioural and emotional engagement** within the course.
- Padlet was a low stake, simple addition to the course which added value with minimal effort and overhead.
- Student outcomes have been difficult to measure but the increase in non-academic engagement is demonstrable.

Recommendations

The Course Examiner will retain the following for future cohorts:

- All general course Padlets, including the useful resources, social page and ask anything Padlets;
- "The thing I am most worried about in the course is..." and "The thing I am most looking forward to in this course is..." Padlets provided valuable information to the Course Examiner in terms of student readiness and concerns in a first year, first semester course; and
- The Weekly topics Padlets.

At this point in time, there are no plans to discard any of the Padlets used in S1 2021 for future cohorts.

As a result of the S1 2021 experience, the Course Examiner has identified the following enhancements to be completed in preparation for the next offering of ELE1301:

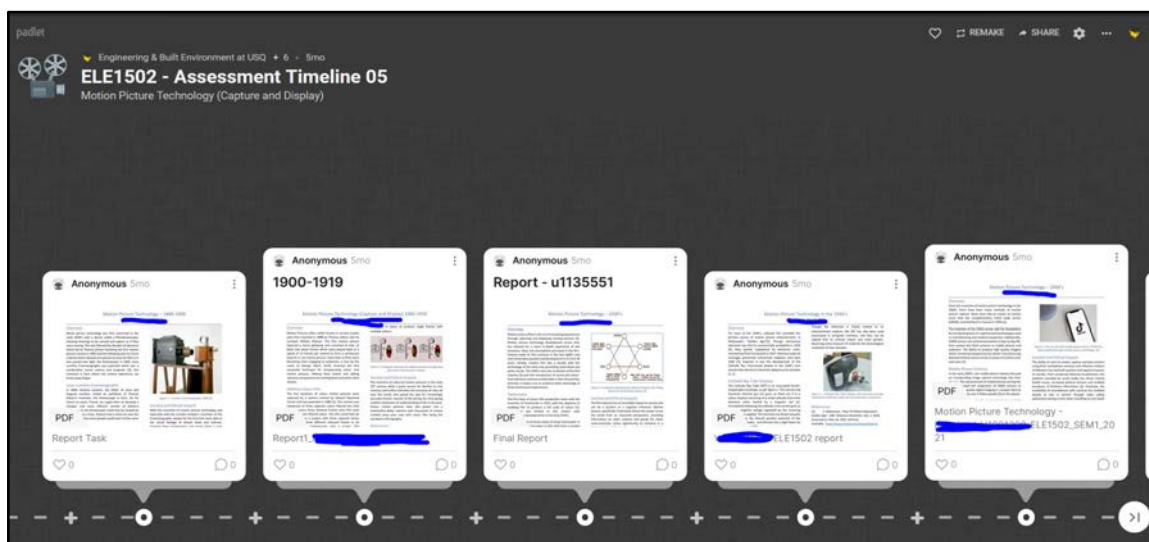
- Improve the scaffolding of the social Padlet to encourage greater student use, and consider returning to some of the Padlets periodically throughout the semester based on students' needs and where the Course Examiner identifies the need for either reinforcement or

encourage students to reflect on their learning journey throughout the semester (metacognition);

- Refer to the fun topics that were more successful this year to inform topic choice for the next offering;
- Include a link to the anonymous “Ask anything” Padlet near the top of the StudyDesk Forum page; and
- Explore the use of a Padlet timeline template to help display ELE1301’s course structure for the semester.
- Padlet has a simple interface, is easy to use and easy to master for both staff and students. The platform works well on desktop, laptop, tablets and phones, making it really flexible with the appearance changing to look attractive on whatever screen area is available.
- Padlet is also really useful when you need to create an instant webpage. For Orientation it was used as part of the “Orientation Challenge”, where students scanned QR codes to get clues for a scavenger hunt around the campus (as illustrated below):



- In S1 2021, the Timeline format was also trialled in the ELE1502 course for sharing student assessments that contributed to a topic timeline. This allowed students to see how their content related to contributions by other students.



- A strength of the Padlet platform is the quality of Padlets as they are presented on students’ mobile phones. It worked well due to the functionality of Padlet content and layout changing to fit the size of screens on the different devices used by students (and staff).