Using Interactive Digital Tools to Support Quiet Learner Participation in Large Class Lectures

Sarah Homewood

Department of Computer Science
University of Copenhagen

Introduction

Higher education has expanded beyond being an elite undertaking and, due to state funding structures, universities are under pressure to take in as many students as possible (Gibbs and Jenkins 1992; Nyagope 2023). These factors have meant that class sizes that are not necessarily well suited for the topic being taught. As Maryellen Weimer described,

> "The focus is on classes in which the possibility of individual relationships between professor and student is precluded, in which not every student who wants to speak in class can be called on" (Gleason Weimer 1987)

However, the main problem of large classes addressed in this project is not as Weimer describes; that too many students wanting to speak. Instead, the issue is that students are prevented from speaking due to the intimidating context of the large class setting (Geske 1992). Therefore, in my project I have attempted to address how interactive digital tools can support what Rosheim calls "quiet learners" in participating in plenum discussions during lectures with large classes.

The context of this project is the Design Project course on the Communication IT Bachelors program. This course is a 15 ECTS and there are typically around 100 students in this class which takes place in an auditorium for whole class lectures, and exercises take place in classrooms with the students split into three groups of around 30 students. The Design Project course is structured around the completion of group work firstly finding a problem in the world that they will address through

design, validating their design problem through research about potential users and existing research, ideating and sketching design concepts, prototyping design concepts and conducting user testing.

What is Participation Important?

A key aspect of a constructive alignment approach to teaching is how the notion of "understanding" is applied in how the course and assessment is structured (Biggs, 1996). Through relating to Biggs's theories on constructive alignment, it becomes clear that whole-class participation during lectures is desirable. The Design Project course, with its emphasis on empirical research and hands-on design, applies a primarily "relational" performance of understanding. Biggs describes "relational" performance as being when "the components are integrated into a coherent whole, with each part contributing to the overall meaning (understanding as appreciating relationships)" (Biggs 1996). In order to reach the next level in Bigg's hierarchies of understanding, "extended abstract", students would be required to metacognitively reflect, evaluate and critique their design decisions and approaches within their design projects and understand what would be needed to improve their process (Biggs, 1996, p.352).

To do this, we need to teach students critical theories such as feminism, racism, ableism and the role and responsibility of the designer in "doing good" when introducing new technologies to different contexts. These topics often represent "troublesome knowledge" that students find difficult to understand and require discussion and the answering of student's questions (Entwistle 2007). Since these types of troublesome knowledge topics very often are shaped by the subjective positions of individual students (e.g. identifying as a feminist, or not), teaching methods would have to consider and facilitate the wide background and views of students. In order to do this, a non-uni-directional lecture format is required to support this extended abstract knowledge through student participation. In order to avoid falling into the trap of making assumptions about the "implied student" being lectured to, participatory teaching methods allows for a wider collection of voices to be heard (Rienecker, Jørgensen, et al. 2015). This also allows students a better chance at

assimilating and constructing the knowledge themselves through individual engagement with the subject matter in relation to their previous knowledge (Tanner 2017; Posner et al. 1982).

A second argument for encouraging participation during lectures is related to student concentration levels. Students report being able to concentrate for periods of 20 minutes during uni-directional lectures (Rienecker, Jørgensen, et al. 2015). Activating events, such as class discussions and interactive exercises, can help to break up these periods of uni-directional teaching (Rienecker, Jørgensen, et al. 2015).

Motivated by the possibility of supporting extended abstract understanding and in improving the learning experience for students, my project explores how successfully digital tools can support students in participating in lectures with large classes. In particular, I will explore how digital tools supports the "quiet learner" in participating in discussions in ways in which they would not have done otherwise.

The "Quiet Learner"

All students are different, but teaching methods don't always reflect these differences. Despite the benefits listed above, one clear obstacle with holding discussions in class is the fact that a cohort of students will include some willing and happy to speak up and participate, and others who are typically understood as being "introverted" or "shy". In fact, 40% - 50% of the cohort might be made up of introverted students (Condon and Ruth-Sahd 2013). Previous approaches to these types of students included judging them negatively for their apparent lack of engagement and forcing them to engage in order to "train" them out of their shyness. Modern approaches reject this approach and highlight the benefits that come with these personality types, such as deeper reflection. They instead recommends supporting the variety of students and providing a mix of introvert-friendly and extrovert-friendly activities (Condon and Ruth-Sahd 2013). Rosheim suggests the terms "shy" and "introverted" should be replaced with "quiet learners" since assuming that a student is quiet because of shyness might be inaccurate. Students can be quiet because they are processing information, or listening, or simply allowing other

students the space to speak (Rosheim 2018). Therefore, I use the term "quiet learners" to refer to these students.

Integrating Padlet into My Lectures

My motivation to explore how interactive digital teaching tools came from my experience of teaching the Design Project cohort briefly in 2023. Building on previous teaching experience at a different university on a similar, but smaller bachelor's degree program, I had prepared lectures including discussion activities for the students to punctuate my mini-lectures. I was surprised and quite horrified during my first lecture when my questions were met with complete silence. I resorted to asking them to speak to their neighbour about the topic and they seemed to speak freely and enthusiastically. However, when I asked them to share with the class what they had discussed, again, total silence. When I asked a few students after class why no one spoke, they said that everyone was nervous to speak when in the whole-class settings and it was the same in all their classes and that many teachers were frustrated with it. Talking to others teaching on the same program supported this and many had their own theories as to why students were unwilling to speak. These theories included the fact that our cohort had their high-school years during the COVID pandemic years, and therefore online-teaching had stopped them developing the skills to speak in public. Other teachers hypothesized that students' communication through social media, rather than face-to-face, had had the same effect.

Regardless of the real reasons behind my cohort's unwillingness to speak in whole-class lectures, my aim this year was to support their participation, and to explore whether the Padlet teaching tool could be effective in doing this. Padlet is an interactive online platform that allows teachers and students to collaborate by posting notes, images, links, and videos on a shared digital board. It facilitates real-time engagement and idea sharing in a visually organized manner, supporting various teaching and learning activities ("Padlet" 2024). Students can make posts and vote for and comment on posts and participate using a range of media such as images, video or voice recordings.

I used Padlet in multiple ways during my lectures on the Design Project course in order to facilitate discussion and participation in class:

1. To recap the teaching materials I had presented in a mini-lecture by filling in their own definitions or key aspects of the theories or methods being discussed.
2. To give their own evaluation of the theories or methods being discussed through adding notes with "pros", "cons".
3. To contribute examples of the topics being discussed, through adding images or descriptions.
4. To collect student's questions about the lecture material for me to answer in plenum.
5. To "vote" on either teacher's posts or other student's posts in order to collect group opinions.

Padlets were sometimes used in supplement to peer discussions where students were asked to turn to the person next to them for a discussion point, and then document their conversation using the Padlet exercises mentioned above. At other times, no peer discussion was involved. After students were finished making posts, I would read through some of them aloud and pick out themes and address questions. Very occasionally I would invite the person who had made a specific post to provide more information on their post, though more often than not, that person never identified themselves.

Student's Evaluation of Padlet as a Teaching Tool in Lectures

In order to evaluate the student experience of Padlet I added three questions specifically about the Padlet to the midway evaluation each course typically conducts 7 weeks in. However, students also referred to the use of Padlets in the general evauluation question "What aspects of the course content works well?". I used Padlet in class to conduct the evaluation and these comments were left anonymously. Since my teaching only takes place in the first half of the course, this evaluation covered the whole of my teaching time span with these students.

What aspects of the Padlet worked well?
There was a generally positive assessment of my use of Padlets. I received a total of 13 positive comments relating to the use of Padlet and 3 negative

comments. In the general midway evaluation questions about the course as whole, students mentioned the Padlets specifically, without being prompted, and described them as being *"fun"* and *"entertaining"*,

> "Makes for an interactive learning experience" and "I love them! Makes you interested and makes it easier to "stay awake", especially when we use the info you talk about in the Padlets. A long classes which is just about listening often makes you tired. This is not the case with the Padlets.".

This supports the draw-backs of uni-directional lectures and highlights how methods such as using interactive tools can combat this.

To the specific question "What aspects of the Padlet activities did you like?", students answered with statements such as *"They're fun and encourage exploration of different ideas"* and *"very interesting topics in the Padlet discussions"*. Other students wrote how Padlet activities *"makes you elaborate on your points and thoughts"* and *"love the Padlets, especially when paired with peer discussion"*. These comments suggest that the Padlet activities encourages participants to reach Brigg's extended abstract understanding through the act of interacting and discussing topics that they would not have reached otherwise (Biggs 1996).

A common topic in the evaluation was how the Padlet facilitated students to speak who would not have done otherwise. As one student said, Padlets *"seem to be greatly effective in getting students to speak up"*. Others students wrote

> "If you are someone with social anxiety or are not comfortable speaking out loud in class, the Padlets makes it possible to come with points without being judged, afraid etc. I love this:)", "Works really well! it makes it easier to participate if you dont want to talk in front of the whole class". "It's great because I don't like to raise my hand, but I want to contribute to the discussion".

This final comment received two "likes" from other students supporting this statement. Therefore, it seems that Padlet does support quiet learners in participating in discussions.

What aspects of the Padlet didn't work so well?

As mentioned, there were three comments responding to the negative aspects of my use of Padlet in the lectures:

> "Perhaps a liiiittleee too many Padlet questions. I enjoy the interactive aspect, but it can affect the flow a little.", "It can be a little disrupting to have to look for a link in the midst of taking notes" and "Less Padlet questions and perhaps a slight increase in time when it comes to responding. I found it a little difficult to write out my points before we moved onto the next slide".

The first two comments all reflect the fact that switching from uni-directional lectures to Padlet takes time and disrupts the flow of the lecture. The third comment relates to the fact that interactive activities can take more time than teachers predict since students both need time for internal thinking, discussing with peers, and writing their own contribution on the Padlet. These points highlight the importance of balancing the frequency of using Padlet as well as ensuring students have adequate time allocated for the activities.

Reflections on Using Padlet from a Teacher Perspective

My own reflections as a teacher on my use of Padlet throughout the course include the fact that anonymous posts can encourage quiet learners to participate, but risk leaving space for inappropriate language and make it impossible to understand which students are participating (Rosheim 2018). Padlet activities also restricts the students who do want to speak in class and learn best through oral discussion from doing so. One way to mitigate this would be to always use Padlet activities in combination with peer discussion, as supported by one student's comment. In contrast with oral discussion, Padlet is not a flexible method that can be adapted in real time since it requires configuration beforehand. It also restricts the amount of discussion points since, as the feedback described, using Padlet activities break the flow of the lecture. However, one unexpected benefit of the use of Padlets is that post-lecture they can be used as group notes on the lecture. This was described by one student who complained after

the Padlet was archived. I subsequently exported each Padlet into a PDF and made it available to students.

Conclusion

Motivated by the experience of teaching a cohort of quiet learners, I have explored how the interactive digital teaching tool Padlet could support quiet learner's participation in discussions in plenum when in lectures with large classes. I used Padlet to facilitate discussion and collect questions from students anonymously. This was in order to support quiet learners, to activate students in constructing knowledge to read an extended abstract level of understanding of the course material, and to break up the uni-directional lectures to improve students' concentration levels. I asked students to evaluate these methods during the midway point of the course. I received 13 positive comments and 3 negative comments. The positives aspects of Padlet included being interactive and engaging, supporting self-disclosed quiet learners, and encouraging a different kind of engagement with the course material than possible during uni-directional lectures, thereby possibly facilitating the extended abstract level of understanding. Negative aspects highlighted by students include the fact that the frequency and timing of Padlet activities need careful balancing so as to not disrupt the flow of the lecture, and to give adequate time to students to conduct the activities. Including peer discussion in every activities is also a way to support non-quiet learners who prefer oral discussion.

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