

Enhancing classroom engagement through web-based interactive tools

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ABSTRACT – Technology has seen a recent widespread integration into teaching environments in view of generation Z of students whom has grown up with technology all around them. The study was carried out by conducting online surveys among students from foundation in engineering and undergraduate from Department of Chemical and Environmental Engineering. It examined how students perceive the effectiveness of Web-Based Interactive Tools (WIT) at the University of Nottingham Malaysia (UNM). Key findings demonstrated that the WIT tools were helpful in retaining student interests and encouraged engagement in learning. In addition, this research highlighted the importance of using WIT tools to foster students' engagement and enriched the quality of student learning in the classroom.

1. INTRODUCTION

Under the University of Nottingham's Global Strategy 2020, with mission to provide high quality education to students, UNM needs to consolidate and strengthen the teaching quality in order to address the changing expectations from students. It is time to change the ways of teaching to align to the values and learning styles of these new learners, especially Generation Z, which grown up with ubiquitous access to information technology and internet. Generally, the prevalent weakness of typical teaching style at UNM is the overwhelm emphasis on lectures where there is a paucity of two-way interaction between learners and teachers. Laurillard [1] considers the learning process as a kind of conversation and asserts that this process 'must be constituted as a dialogue between teacher and student (or student and student) and operating at the level of description of actions in the world' (see Figure 1). In alignment with the concept proposed by Laurillard, the web-based interactive tool could address the above weak point in a generic way that principally can help in every subject.

Personal response system that was offered by web-based interactive tools could allow students in a class to contribute an anonymous response to the questions queried by the lecturer, providing immediate feedback on the aggregated class responses via Open Ended Questions or Multiple-Choice Questions (MCQ), all of which increase interactivity in lectures for all audience sizes, can use this in any way expressible.

Literatures [2-6] reported the pedagogical benefits of using web-based interactive tools (WIT) in classroom, such as:

- It encourages collaborative learning, which allow students to share information easily and provide opportunity to partake in lesson
- It makes responses/feedbacks anonymous and this encourages more participations from students
- It helps to address a variety of learning styles among students where the learning process fits individual requirements
- It helps knowledge retention instead of just listening to lectures in conventional classroom
- The tools are user friendly. All they (students) need is a device that can be connected to the internet (e.g. smartphone/tablet).
- It makes learning process fun and enjoyable. It can boost engagement and motivation in the classroom.

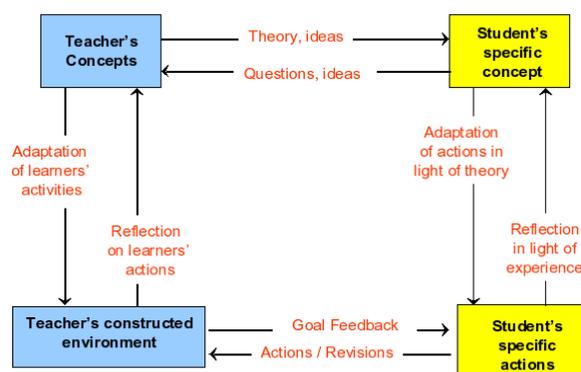


Figure 1 The Laurillard's conversational model [1].

Therefore, seeing the benefits of WIT, the present study aimed to assess the effectiveness of various WIT in enhancing student engagement in class. The main objectives are as follow:

- To explore and assess the features and reliability of selected WIT.
- To evaluate and analyse the student engagement activities when using WIT in class.
- To compare and measure the effectiveness of WIT versus conventional teaching.

2. METHODOLOGY

The studies were carried out at the University of Nottingham Malaysia involving students from Foundation in Engineering and undergraduate from Department of Chemical and Environmental Engineering. Three types of WIT, namely Padlet, Kahoot

and Socrative, were explored and evaluated using an online survey. These tools are easy to access and can be downloaded free of charge from the internet. Features of these tools could range from canvas (where users can write their opinions/answers anonymously), clicker (provides instant feedback from students), quizzes/survey and flowchart/diagram/graph. These interactive tools were applied in selected teaching modules from the foundation/undergraduate studies as well as intermediate and advanced level according to Bloom's taxonomy. Observations will be made in class to measure the response of students qualitatively, when these tools are used in the classroom. Students were also invited to fill up survey questionnaires at the end of class to obtain students' feedbacks on the use of WIT versus conventional classroom teaching. The online survey, consisting of 11 questions, was designed using Likert type questions using scale from 1 (strongly disagree) to 5 (strongly agree), and was created using Qualtrics software (Qualtrics Int., USA). Statistical analyses will be carried out using SPSS software upon data collection. Cronbach's alpha test was performed to check the reliability of survey questions, with an alpha value of > 0.70 signifying a good reliability in the results.

3. RESULTS AND DISCUSSION

A total of 396 students have participated in this survey. From the total study population, 44% of respondents were from Foundation in Engineering and 56% from Department of Chemical and Environmental Engineering students. The breakdown of the students were shown in Figure 2.

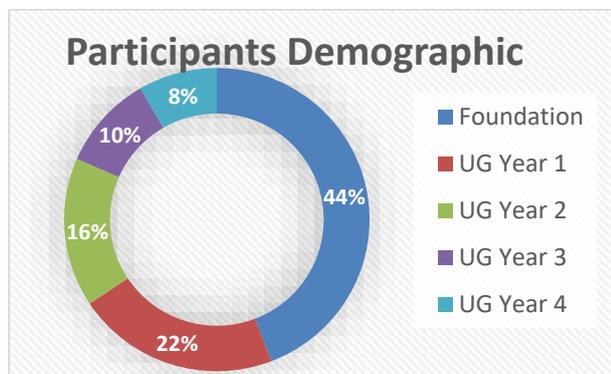


Figure 2 Participants Demographic, where UG: Undergraduate.

Key findings from the survey are summarized in Table 1.

The points below showed some additional feedback obtained from the students regarding the use of WIT (comments are posted as received).

- Padlet is a great way to communicate with the lecturer during class time without having to interrupt his/her teaching flow as they can check padlet when they are ready to address the questions or comments. The fact that it is anonymous as well encourages more people to use it and not be shy. I hope more classes incorporate this sort of communication tool.
- This WIT should be used in all module, to have more interaction with student, create a lively

class & make students more enthusiast be present

- It's fun and a really interactive way of learning as well as being innovative.
- I think WIT made the learning process more fun and it made my understanding of the subject better. It engaged me to do better every time so i would study the content after class so i could get a better score every time.
- WIT is really an interactive tool and i feel that lectures are made fun through WIT as everyone can actively engage in the learning process. Personally I feel that Kahoot is a really nice tool and it has seen that a lot of lecturers start to appreciate WIT.

Table 1 Key findings from online survey.

Questions	(% Agree & strongly agree)
1. I think the WIT tool is easy to use.	84.1
2. I could focus in every item/question in the WIT activities.	68.7
3. WIT has made the lecture/class more fun and engaging.	85.1
4. WIT has motivated me to learn in the classroom.	64.5
5. WIT has made me keen to participate more in the classroom.	76.8
6. WIT activities has improved my understanding in the covered topic.	65.8
7. WIT activities has enhanced my thinking and problem solving skills.	63.5
8. WIT activities has encouraged me to continue study even after the lecture class.	50.9
9. I think I will attend the class more often if WIT activities is implemented in this course.	61.9
10. I think the lecturer has conveyed his/her enthusiasm for the course through the WIT activities.	79.9
11. I wish these WIT activities are used in other courses as well.	74.4

Additionally, the usage of WIT was mentioned in a Learning Community Forum (LCF) of the Department of Chemical and Environmental Engineering in October 2018, with comment stated: "Wall for offline communication (padlet.com) is very useful for students not comfortable with speaking aloud; students suggest implementing a similar concept in other lectures to increase interactivity and student engagement." Based on the findings above, results showed that:

- > 70% students agreed WIT help them in

classroom response system (Q1, Q3, Q5, Q10, Q11).

- (b) 50% - 70 % students agreed WIT bring a lot of interaction to the classroom (Q2, Q4, Q6, Q7, Q8, Q9).

The collated results had also showed a good reliability, with a Cronbach alpha value of 0.919 among the questions. Majority of students enjoyed the competitive/interactive nature of the WIT and comment that it helps them retain knowledge and actively engage in learning. Classroom should be a fun place and lecture should be engaging.

4. CONCLUSION

This work concludes that WIT tools helped to engage students and improve students learning experience at UNM. With the implementation of WIT, we could provide a more conducive learning environment for students. Students will be more proactive and engaged with the lecturers in their learning. This will ensure their knowledge retention in a more effective way and could improve the students' academic performance significantly.

ACKNOWLEDGEMENT

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REFERENCES

- [1] Laurillard, D. (2002). *Rethinking university teaching: A conversational framework for the effective use of learning technologies*. Routledge.
- [2] Licorish, S. A., Owen, H. E., Daniel, B., & George, J. L. (2018). Students' perception of Kahoot!'s influence on teaching and learning. *Research and Practice in Technology Enhanced Learning*, 13(1), 9.
- [3] Plump, C. M., & LaRosa, J. (2017). Using Kahoot! in the classroom to create engagement and active learning: A game-based technology solution for eLearning novices. *Management Teaching Review*, 2(2), 151-158.
- [4] Poon, J. (2013). Blended learning: An institutional approach for enhancing students' learning experiences. *Journal of Online Learning and Teaching*, 9(2), 271-288.
- [5] Coca, D. M., & Sliško, J. (2017). Software Socrative and smartphones as tools for implementation of basic processes of active physics learning in classroom: An initial feasibility study with prospective teachers. *European Journal of Physics Education*, 4(2), 17-24.
- [6] DeWitt, D., Alias, N., & Siraj, S. (2015). Collaborative learning: Interactive debates using Padlet in a higher education institution. *Journal of Educational Technology & Society*, 17(1), 89-101.