e-ISSN 2721-0952

Flipped Classroom Integration at Port Dickson Polytechnic: Students' Perception

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Abstract. New technology produces new directions for education. The increase in tuition costs and the new offer from free online course open discussion and bringing change in the physical classroom. The flipped is the focus of this journal. As we know, flipped classroom is a new pedagogical method which video lectures, theory and notes as homework. The discussion and problem-solving activities conducted in classroom under lecturer supervision. This paper provides a comprehensive survey for on-going research in Port Dickson Polytechnic of the flipped classroom. The purpose of this study was to provide information about polytechnic students' perceptions on Flipped Classroom in teaching 3D modelling module at Port Dickson Polytechnic. This study will provide lecturers in polytechnic system some information on the effectiveness and clear examples of how flipped classroom being implemented and executed. To be more focus on the study the following research questions were formulated students' perception of the Flipped Classroom, students' perception upon how Flipped Classroom supports their learning and how to improve Flipped Classroom. The findings of this study show that technology can provide own paced instructional setting. Lectures who use the Flipped Classroom can add supporting elements like assessment strategy, problem-based inquiry and can create environment for instruction that is more flexible than traditional classroom settings. Some recommendations that found from this research in order to improve Flipped Classroom implementation in Port Dickson Polytechnic include interactive instructional videos, increased in class learning activities and some changes on the assessment method.

Keywords: Flipped classroom, teaching approach, own pace and interactive.

1. Introduction

It is common nowadays those students interact with technology. Today the way students interact with each other and the way they interact with their lecturers is changing. These are the millennial students. They are individuals that born between 1982 and 2002 [1]. According to Prensky [2] these students are referred to digital natives that have been exposed to information technology from the very young age. This generation access to technology, information and digital media greater than any other prior generation. This generation distinguished by their access to technological and collaborative experiences. According to Prensky [2] the technology today has stimulated students to think and process the information fundamentally different from their predecessors. Today many students bring mobile phones to the classroom. Today cell phones have the abilities to exceed what a microcomputer could do only five to ten years ago. Lecturers are struggling to capture the attention of today's students. Not like previous generation these new generation students evolved rapidly with technology and decrease their interest in lecture teaching style [3]. For years, researchers try to prove how effective the teaching methods that are entirely based on lecture and face to face [3]. According to [3] also although there are many innovations in technology enabling alternative techniques for pedagogy, lecture formats continue to be the primary method for teaching adult learners nowadays. Educators and researchers now understand how complex to recognize the complexities of teaching and learning for understanding as against to just knowledge retention [4]. Today educators need to understand if the goal of teaching is to give students the true understanding upon what students learn they need to move from memorization of knowledge and facts where understanding developed through active and constructive learning processes. To achieve this lecturers need to shift from teacher centred learning to student centred learning. Active learning is the term in teaching pedagogies where it focuses on student activity and students active participation in the learning process. Activities in active learning also designed to obtain the learning outcomes through fruitful participation of the students in learning activities. According to Kumar et al. [5] there are four categories of instructional approaches to be use in an active learning, which are individual activities, paired activities, informal small group and cooperative student projects.

2. Flipped Classroom

New method for conducting class developed since active learning pedagogies evolved. This new classroom known as flipped classroom. Through this method, students' views the class lecture through e learning method while the discussion and tutorial being one in the classroom under the supervision of the lecturers. According to Tucker [6], students utilize the time in class to work through problems, advance concepts, and engage in collaborative learning. Studied being done for an economic course using flipped classroom where students found easy-to use [3]. According to Blair [7], the use of flipped classrooms minimizes the effort creating lecture presentations. This will increase the available time in class for the activities that deepen concepts learn outside the class time and increase students' knowledge retention [3]. Flipped classroom provide more opportunities to the millennial students with wide range of learner centred learning process.

3. Non-Lecture Based Strategies

A flipped classroom model could easily being adapted to any learning disciplines such as building construction, interior design and architecture design. Through this strategy lecture used to distribute information and the actual learning occurs when students apply the instructions given to complete the assignment. Through this strategy student's access to information prior to class using digital technologies. Students have the opportunity to interact with content according to their own learning style. The time obtained by the students since lecture portion being removed from class allow for more time to the students for one on one personal engagement between n the teacher and students.

4. Technology and Social Media

Rapid development of online learning and related technologies development give opportunities for lecturers in polytechnic to develop courses that encourage students to learn using technology. When the technology is used appropriately it can foster students involvement in the learning process which many students can get maximum benefits in their learning process since many researches shown the use of technology in learning process enhance learning outcomes and improve student satisfaction [8].

5. Purpose

The purpose of this study was to provide information about polytechnic students' perceptions on Flipped Classroom in teaching 3D modelling module at Port Dickson Polytechnic. To determined students interest learning in a Flipped Classroom is important since this would determine lecturers in Port Dickson Polytechnic to continue with its application since the implementation of blended learning is one of the main strategies for the betterment of teaching and learning in Polytechnic in 2015. In this study, additional aspects like mastery learning and self-pacing examined in a Flipped Classroom context. This study will provide lecturers in polytechnic system some information on the effectiveness and clear examples of how flipped classroom being implemented and executed. To be more focus on the study the following research questions were formulated which are students' perception of the flipped classroom, students' perception upon how flipped classroom supports their learning and how to improve flipped classroom.

6. Research Method

A pilot test carried out from June 2016 to November 2017 with 25 students from Port Dickson Polytechnic. The reliabilities coefficient of the instrument is 0.857. Data from this pilot test not used for the final analysis. This research held from Dec 2017 to Apr 2018. This study conducted at Port Dickson Polytechnic involving 60 students from two classes. This study is a quantitative study to evaluate students' perceptions on teaching 3D Modelling and Animation using flipped classroom method. Students taught in this class using Dunn [9] strategies for flipping classroom. For fourteen weeks, students asked to participate in learning activities using flipping method. Both class conducted in computer lab at Port Dickson Polytechnic equipped with 30 computers and 1 LCD. The students divided into two classes. At the beginning of the study, the lecturer presented the students with a general overview of the study. Information was provided regarding the particulars of who was conducting the survey, why the survey was being completed, how the survey would be completed,

what would be done with the data. Students learn the AutoCAD commands through video clips being uploading in Port Dickson Polytechnic learning management system. After seeing the videos students attended the class to solve the tutorial given which lecturers became facilitator in the three hours session. After finish, the tutorial students will present their products and discussion involved in the presentation. The students learn to utilize AutoCAD in creating 3D objects. By the end the semester students need to answer some questionnaires to look into their perceptions of teaching AutoCAD with flipped classroom technique.

7. Results

This study investigated student perceptions of the flipped classroom. The quantitative analyses used in an attempt to provide a broad investigation into student perceptions of the flipped classroom. The results for the inquiries presented in five sections, which are flipped classroom, digital media, time, pace, and mastery..

7.1. Flipped Classroom Items

Six items assessed students' general perceptions of the Flipped Classroom. Item 1 stated: The flipped classroom is more engaging than traditional classroom instruction. The results from this item were overwhelmingly positive. 46 (77%) students surveyed either agreed or strongly agreed with. Item 2 stated: I would recommend the flipped classroom to a friend. 52 (87%) either strongly agreed or agreed with this statement. The results showed students believed the flipped classroom was worth recommending to a friend. Item 3 stated: The flipped classroom gives me greater opportunities to communicate with other students. Again, the results were very one sided, with only 6 students disagreeing with this statement and no students strongly disagreeing with the statement. 54(90%) of the students either agreed or strongly agreed with this statement. Item 4 stated: I regularly watch the video tutorial, found that 49 (82%) either agreed or strongly agreed that they regularly watched the video tutorial. Item 5 is a more general item stated: I am more motivated to learn 3D modelling in the flipped classroom, found that 44(73%) either agreed or strongly agreed that they believed flipped classroom could motivate them to learn. Item 6 stated: The flipped classroom has improved my learning of 3D Modelling. The responses demonstrated that 48(80%) of the student agreed with this statement and only 6% of the students disagreed. This result supports the assumption that the flipped classroom has a positive impact on students' perceptions of learning 3D Modelling.

7.2. Digital Media Items

The video tutorials are the foundation of the flipped classroom. Through this research, it was important to look into students' perception of this media. Item 1 in this section stated I like watching video clip for my lessons. The results of this item shows about 39 (65%) agreed or strongly agreed with this statement, 12 (20%) either disagreed or strongly disagreed with the statement. 9 (15%) neither agreed or disagreed with the statement. This item shows students liked to learn their lessons through video clip. Item 2 asked a broad question concerning social media by asking: Social Media (YouTube, Twitter, Facebook) are an important part in my learning. The results of this item shows about 44 (73) agreed or strongly agreed with the statement. This item shows to the social media is important to the students for their learning process. Item 3 stated I would rather watch a traditional teacher-led lesson than a lesson video. The results of this item show about 42 (70%) agreed or strongly agreed with this statement. Only 8 (13) either agreed strongly agreed. 10(17%) either disagreed or strongly disagreed. Item 4 stated It will be much easier for me to understand utilizing CAD through lesson video compare to traditional teacher. The results of this item show about 41 (68%) agreed or strongly agreed with this statement.

7.3. Time Items

These items investigated how much time students were spending at home doing their assignments and how students were spending their additional studio time. Item 1 stated I am spending less time working on my assignment The results of this item shows about 45 (75%) agreed or strongly agreed with this statement. About 6 (10%) either disagreed or strongly disagreed with the statement. Item 2 stated The Flipped Classroom gives me less class time to practice digital drawing. The result for this item shows 54 (90%) disagreed or strongly disagreed with this statement. These items conclude flipped classroom allow students to finish their assignment early and encourage them to give extra time in studio for practice.

7.4. Pacing items

These items examined how students felt about being in a classroom that was self-paced. Item 1 stated I would rather have the entire studio activities developing at the same pace in the program. 42(70%) either disagreed or strongly disagreed. This statement shows the students want the studio to develop at different pace according to students capabilities. Item 2 stated I like self-pacing class program. 51(85%) agreed or strongly agreed that they would rather have the self-pacing class program. Item 3 stated I like the class where the quiz can be taken at my own pace. 54(90%) either agreed or strongly agreed students can take the quiz at their own pace. Item 4 stated I find it easy for myself to pace throughout the course. 45(75%) either agreed or strongly agreed it easy for them to pace themselves throughout the course.

7.5. Mastery items

This last theme provides items to find out students' perceptions regarding mastery learning in the flipped classroom. Item 1 stated I like to take my test and quiz online using CiDOS. CiDOS is the mechanism used in Port Dickson Polytechnic to incorporate mastery learning into flipped classroom in this study. Mastery learning in this context mean students have the opportunity to learn the method to create the 3D object repeatedly. 48(80%) either agreed or strongly agreed with this statement. Item 2 stated I feel that mastery learning has improved my understanding on producing 3D object with AutoCAD. 51(85%) agreed or strongly agreed that mastery learning has improved students understanding on producing 3D object.

8. Conclusions

In this study, three major findings contribute to the flipped classroom research. The first major finding from the study revealed that students in a Flipped Classroom doing fewer tutorials at home compare to a traditional classroom. This finding also finds students spent time efficiently in Flipped Classroom to finish their tutorial. Flipped classroom minimizing students times to finish their tutorial at home. The second major finding that concluded of this study was that students simply enjoyed learning in a Flipped Classroom. Students enjoyed the flexibility of the Flipped Classroom. The learning activities in the studio increase the students' interaction with the teacher. The data also showed Flipped Classroom increased students' engagement, communication and understanding in the studio. The third major finding was that students benefit from the video clip lessons. Data showed that students obtain many benefits from being able to watch the video at their own time and pace. The students obtain benefits from the video clip since it can be paused, rewinded and even fast-forwarded when they understood a concept. This finding also important since it shows that video clip in education can be an alternative to a traditional lecture. The results of the research have strong implications for the delivery of education in the 21st century. Lecturer does not need to provide a one-way lesson but lessons can be a two away approach. The Flipped Classroom also reinvents the teacher position from being the source of information in the studio to the facilitator in the studio. Flipped Classroom provides technology that can liberate the lecturer to move towards student centred learning environment where each student receives a personalized education program.

References

1. Wilson, Michael & Gerber, Leslie.E (2008). How Generation Theory Can Improve Teaching : Strategies for Working with the "Millennials". *Current in Teaching and Learning.* Vol. 1(1). 29-44
2. Prensky, M. 2001. Digital Natives Digital Immigrants. *On the Horizon.* 9(5). 1-5
3. Roehl et.al 2013. Bridging the Feel Trip Gap : Intergrating Web-Based Video as teaching and learning partner in interior design education. *Family and Consumer Sciences.* 105(1). 42
4. Morrison, Leslie, Huett, Jason B. & Berge. 2011. The Next Generation of Distance Education : Unconstrained Learning. Springer.
5. Kumar, A., Reddy, P., Tewari, A., Agrawal, R. & Kam, M. 2012. Improving Literacy in Developing Countries Using Speech Recognition-Supported Games on Mobile Devices. *SIGHCI.* 1149-1158
6. Tucker, B. 2012. The Flipped Classroom. *Education Next.* 12(1). 82-83
7. Blair, N. 2012. Technology Integration for New 21st Century Learner. *Principal(January-February).* 8-13.
8. Revere, L., & Kovach, J. V. (2011). Online Technologies for Engaging Learners: A Meaningful Synthesis for Educators. *Quarterly Review of Distance Education.* 12(2), 113-124.
9. Dunn, L. 2015. Digital Media Supporting University-Wide online Learning via Moodle. Project Report. University of Glasgow.