STUDENTS' TECHNOLOGY ACCEPTANCE OF USING CANVAS LEARNING MANAGEMENT SYSTEM IN PROGRAMMING AT A STATE UNIVERSITY IN THE PHILIPPINES

by:
Aaron Paul M. Dela Rosa, MSIT, GK-CDPO, PCEP, JSE, CPE, CLE, ITS, MIE, GCE, DEL

ABSTRACT

Learning management systems (LMSs) became more prominent during the Coronavirus Disease 2019 (COVID-19) pandemic. Universities around the globe find the best solutions and which LMS is the best to deliver their education. This study determined the technology acceptance of using Canvas LMS Free for Teachers in delivering a programming course. A descriptive survey method was implemented in this study on the students of Bulacan State University, a state university in the Philippines, who are taking Bachelor of Science in Information Technology (BSIT). Web Systems and Technologies 2 course was subjected to using Canvas LMS and was evaluated by the students. Within the course, lessons in form of modules were provided. Additionally, summative assessments were provided to the students at the end of each lesson. Third-year BSIT students were asked to evaluate the LMS used. Out of 169 students enrolled in the course, 132 students answered the survey questionnaire provided. Upon tabulating students' responses, it was deemed found that they "Strongly Agree" with using Canvas LMS. In terms of its technicalities, the overall mean is $\bar{x}$=4.52, which shows that Canvas LMS offers quality features fit for use in delivering programming courses. On the other hand, in terms of its presence, the overall mean is $\bar{x}$=4.50, which shows that by using the LMS, students were able to learn the programming language being delivered asynchronously. This shows that Canvas LMS is one of the better options for delivering programming courses. With high results of acceptance, the university may consider a subscription to Canvas LMS to deliver its courses online.

Keywords: *learning management systems, online learning, information technology, programming, asynchronous learning*

Introduction

The global spread of the Coronavirus Disease 2019 (COVID-19) pandemic started in December 2019. Due to its impact, companies, offices, and even schools and universities had to close and find other means to communicate with their students (Khalil et al., 2020). Transitioning from traditional face-to-face classes to online distance learning was difficult for schools and universities (Mpungose, 2020; Turnbull et al., 2021).

The pandemic did not spare the Republic of the Philippines from its spread. The government discovered a means to deliver education despite the pandemic by imposing several

learning modalities to respond to the global concern about education (CMO No. 4, s. 2020, 2020). Bulacan State University, one of the Philippines' state universities, created guidelines that complemented the government's response. Bulacan State University (BulSU) is a cutting-edge academic university situated in the Philippine province of Bulacan, in the City of Malolos. BulSU created rules for utilizing flexible learning modalities as part of its attempts to provide education to its students (Bulacan State University [BulSU], 2020). During this pandemic, BulSU employed three learning modalities: synchronous learning (SL), asynchronous online learning (AOL), and remote print learning (RPL). These instructional strategies were put in place to meet the various needs of the students.

Web Systems and Technologies 2, one of the courses at Bulacan State University, College of Information and Communications Technology, was delivered using the Canvas Learning Management System (LMS) Free for Teachers. This course was delivered asynchronously using the said LMS, with faculty intervention through synchronous sessions for questions and clarifications.

As Eusoff et al. (2022) noted in their study, it can be difficult for educators to deliver programming courses online because they have fewer interactions with the students and are unsure of whether or not they fully understand the concept, the context, and the logic throughout the course of programming. This is because programming is a challenging course to learn. CICT indeed had a similar worry when teaching programming. With this in mind, this study aims to determine how using Canvas LMS has affected how students learn the relevant course.

Statement of the Problem

The study's main objective is to determine the impact of using the Canvas Learning Management System (LMS) Free for Teachers in learning a programming course delivered at Bulacan State University.

Specifically, this study answered the following questions:

1. How may the students perceive the impact of Canvas LMS in terms of its technicalities?
2. How may the students perceive the impact of Canvas LMS in terms of its presence?

Literature Review

As higher education institutions shift from traditional face-to-face classes to online learning due to the effects of the COVID-19 pandemic, several studies have highlighted how universities handled this situation by implementing online learning. Abdulkareem and Eidan (2020), Ali (2020), Coman et al. (2020), Simamora et al. (2020), and Laili and Nashir (2021) studied the effects of the pandemic in higher education institutions, highlighting how universities could adapt to continue delivering education through online learning. These studies mentioned the advantages of online learning amidst the pandemic. Moreover, they have found that within the situation, online learning became the only resort to continue delivering education to its people.

LMSs, even before the pandemic, were already used by other universities across the globe and even across the Philippines to implement online distance learning. Studies by Dobre (2015), Aldiab et al. (2019), Ghilay (2019), and Reid (2019) have presented the advantages and benefits of using LMSs in delivering education in higher education institutions. Each study showed what universities could benefit from using an LMS even during the era of traditional, face-to-face classes.

The researcher focused on students' perspectives on evaluating the Canvas LMS used during the delivery of a programming course. The students evaluated the LMS in two different aspects, the LMS's technicalities and presence.

Methods and Design

Descriptive survey research was used to achieve the study's objectives. This study's primary source is the rubric for evaluating e-learning tools by Anstey and Watson (2018). This rubric is intended to assess e-learning tools being used among learners in higher education institutions. Then, it was made to be a survey questionnaire and was validated by the teaching and learning technologies experts of BulSU.

The survey was provided at the end of the course, which marks the beginning of the data collection. The Bachelor of Science in Information Technology (BSIT) third-year students who took the course Web Systems and Technologies 2 are involved in this study. The population of students who used Canvas LMS Free for Teachers is 169. The computed sample size is 118.80 or 119 students, with a 5% margin of error. The number of students who responded is 132 and is within the calculated sample size.

The study's interpretation was based on a five-point Likert scale. "Strongly Agree" is within the scale of five (5) and a range of 4.50-5.00. "Agree" is within the scale of four (4) and a range of 3.50-4.49. "Neutral" is within a scale of three (3) and ranges from 2.50 to 3.49. "Disagree" is within the scale of two (2) and a range of 1.50-2.49. Lastly, "Strongly Disagree" is within the scale of one (1) and a range of 1.00-1.49.

Results and Discussion

1. Impact of Using Canvas LMS in terms of Technicalities

The instrument evaluates Canvas LMS in terms of its technicalities with the following criteria: (1) Functionality; (2) Accessibility; (3) Technology; and (4) Privacy, Data Protection, and Rights. Table 1 presents the summary of the evaluated criteria in determining the impact of Canvas LMS in terms of its technicalities.

Table 1

Summary of the Respondents' Ratings in Evaluating Canvas LMS in terms of its Technicalities

Item	Mean	Descriptive Interpretation
Functionality	4.46	Agree
Accessibility	4.53	Strongly Agree
Technology	4.56	Strongly Agree
Privacy, Data Protection, and Rights	4.54	Strongly Agree
Total	**4.52**	**Strongly Agree**

Students have rated technology the highest ($\bar{x}$=4.56), which shows that Canvas LMS is an emerging technology in learning their programming course as it delivers contents well with proper structuring. Additionally, students have rated privacy, data protection, and rights with a mean of $\bar{x}$=4.54, showing that students feel safe online while using the LMS.

2. Impact of Using Canvas LMS in terms of Presence

The instrument evaluates Canvas LMS in terms of its presence with the following criteria: (1) Social Presence, (2) Teaching Presence, and (3) Cognitive Presence. Table 2 presents the summary of the evaluated criteria in determining the impact of Canvas LMS in terms of its presence.

Table 2

Summary of the Respondents' Ratings in Evaluating Canvas LMS in terms of its Presence

Item	Mean	Descriptive Interpretation
Social Presence	4.49	Agree
Teaching Presence	4.52	Strongly Agree
Cognitive Presence	4.49	Agree
Total	**4.50**	**Strongly Agree**

Students have rated teaching presence the highest, with a mean of $\bar{x}$=4.52, which shows that Canvas LMS enables students to learn course contents asynchronously, with minimal interaction with their instructor. Moreover, students have rated both cognitive and social presence with a mean of $\bar{x}$=4.49, which shows that Canvas LMS enables students to communicate with their instructors through synchronous sessions and chats. In addition, Canvas LMS also allows students to work collaboratively with each other within the LMS. Lastly, Canvas LMS provides assessment tools where students can enhance learning with different options, such as taking quizzes and submitting assignments to their instructor.

Conclusions

After the data had been analyzed and interpreted, this study found that students strongly agreed with using Canvas LMS in learning a programming course. With this, Canvas LMS has been deemed to positively impact students' learning as a tool in delivering a programming course. In addition to this, it was also found that: (1) Canvas LMS is emerged to be a solution for delivering programming courses with technicalities that fit the need of a programming course; and (2) Canvas LMS has an excellent social, teaching, and cognitive presence that students found helpful in learning a programming course asynchronously.

Recommendations

Based on the findings and conclusions, this study presents the following recommendations:

1. Consider using Canvas LMS for future programming courses the university offers. Using Canvas LMS to offer lecture courses may also be considered; and
2. The university may consider buying a subscription with Canvas LMS to enable even the administration panel to be accessed to manage Canvas courses within the university easily.

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