An Assessment of the Effectiveness of Google Classroom Learning ManagementSystem in Quezon City University (QCU) Online Classes

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Abstract

As a result of the COVID-19 pandemic, institutions have changed their settings, policies, and methods for handing off knowledge from teachers to students. Online instruction has replaced the traditional methods of processing and exchanging student knowledge and abilities with professors and fellow students. Due to a lack of preparedness for the situation brought on by the virus' spread, some schools and universities were forced to end the term. Quezon City University chose to hold classes online using Google Classroom, a free learning management system. Google Classroom has a set of online tools that enable teachers to assign tasks, receive student work, grade it, and return the results. It can deliver educational requirements and administer classes, document, track, and report data; it serves as an illustration of a learning management system. In this study, the researchers aim to assess the effectiveness of the Google Classroom in conducting online classes in Quezon City University, specifically, Information Technology subjects. The respondents are the IT faculty and 4th Year level BSIT students, there are a total of 33 faculty and 707 students in the Information Technology department. The researchers based the design of their Questionnaires on some validated instruments used in several research related to the study. They also utilized Slovin's formula to compute the sample size; Likert Scale to measure the degree of response; Percentage to determine the percentile of the respondents and Mean to determine the degree of the validity of the responses. Purposive Sampling was used in identifying the samples. The result of the survey conducted is that, most of the respondents identified that Device Compatibility is frequently the challenges encountered by most faculty in using the LMS. Among students, the teaching and learning environment is where they encounter challenges frequently. In terms of the factors affecting the outcomes using the LMS, frequently the LMS provides information that is easy to understand. Majority also stated that the LMS provides information that can be used in the classroom, and most of them also frequently said that the LMS contains enough information for instruction. On the other hand, the majority of respondents agree with information quality, system use, and the LMS's perceived usefulness. The researchers draw the conclusion that Google Classroom is a powerful learning management system based on these findings.

Keywords: *Google Classroom, Learning Management System, Online Class*

Introduction

The COVID-19 pandemic has not stopped at national borders. It has affected people regardless of nationality, level of education, income, or gender (Schleicher,2020). As the COVID-19 virus spreads in the Philippines, it has an impact on the quality of education that schools can provide to their students. Because of the pandemic, institutions must alter their settings, norms, and methods of transmitting knowledge from educators to students. This pandemic changes institutions' settings, policies, and procedures for transferring learning from teachers to students. The transition from face-to-face classrooms to online classes has brought about an entire shift in how students and educators interact with one another and their acquired information. The Philippine government and educational institutions work hand in hand by providing infrastructure, internet connections, and accessibility, establishing partnerships with the telecommunication industries, and searching for the technologies best for online classes. To meet the problems posed by the pandemic, private and public educational institutions are seeking innovative technologies that will enable themto successfully give an excellent education to their students via online classes. Professors, Students, and even the School Management themselves are required to learn and at least become competent with those technologies that will help themin facilitating online classes as their only choice to continue giving education. During the COVID-19 strike in December 2019, some schools and universities ended the semester due to a lack of preparedness for the situation caused by thevirus's spread. The Quezon City University (QCU) has finished the 2019-2020 school year and has decided to conduct online classes using the free learning management system Google Classroom. The faculty have created virtual classrooms for their designated subjects and sent invitations to students. Additionally, they offer both synchronous and asynchronous classes.

Google Classroom is a free web service developed by Google. A suite of online tools that allow educators to set assignments, check students submitted works, mark, and return graded student outputs. Google Classroom is an example of a Learning Management System because it can administer classes, document, track, report, automate and deliver educational courses and requirements. In this study, the researchers aim to assess the effectiveness of Google Classroom in conducting online classes at Quezon City University, specifically Information Technology subjects with programming lessons. Having an awareness of the digital divide is a significant factor to take into consideration. Some people do noteven have access to the internet, and it can be difficult for them to use learning management solutions like Google Classroom. Other people do not have any equipment that they can use. Additionally, several educators, students, and even the administrators of an institution have reported experiencing indications. The main objective of the researchers is to assess the effectiveness of Google Classroom Learning Management System in Quezon City University (QCU)Online Classes of 4th Year Bachelor of Science in Information Technology (BSIT)students SY 2022-2023.

Specifically, the researchers aim to:

a. determine the challenges encountered by the faculty and students in using the LMS;

b. identify the factors affecting the outcomes of using the LMS; and

c. determine if there is significant relationship in the challenges encountered and the factors affecting the outcomes of using the LMS.

Findings from the study "Effectiveness of Learning Management System in Online Education: Views of Lecturers with Different Levels of Activity in LMSs" by YaronGhilay (2019) show that all the characteristics of the LMS investigated were ratedvery highly by educators with a level of activity in LMSs rated as medium or higher. When it came to professors with a low degree of LMS involvement, however, mostof the analyzed criteria received scores that were lower than intermediate. According to Fatima Albrahim's (2020) research, faculty members may feeluneasy teaching online courses due to the many duties and responsibilities in online classes. To assist in the design of a professional development program for online teachers, online teaching abilities and competencies must be defined. These abilities and competencies are divided into six categories: (a) educational abilities; (b) content abilities; (c) design abilities; (d) technology abilities; (e) management and institutional abilities; and (f) social and communication abilities.These skill sets can be used by online faculty to self-assess their

ability to teach online and determine their training needs.

The study of Elsa Rosalina (2020) explored the teacher's challenges for doing online teaching and learning. Also, the strengths and weaknesses of online learning were described. Based on the findings, most of the teachers agreed that the challenges to applying online learning are in facilitation such as internet connection, quota, the places of home living, and the process of online learning itself such as the teacher's less in technology for designing interesting online learning activities, less communicative, lack of interaction, and fostering an effective online learning climate. On the other hand, most of the teachers agreed that the strength of online learning is flexibility in time and place, thus the teaching and learning can be conducted everywhere and anytime. For the weakness, the teacher agreed that online learning can't conduct a maximal pedagogy process in learning activities.

In the study of Lapada Aries Alea, et. Al. (2020), the results show that the teachers were highly aware of the presence and consequences caused by the COVID-19 pandemic. The correlation between teacher's demographic profiles and awareness to COVID-19 shows no relationship at all. Nevertheless, the length of teaching experience and specialization is very strongly correlated to readiness to distance learning education. Simultaneously, the teachers' geographic location is strongly correlated to readiness to adapt to distance learning education.

Because this hybrid system had not been thoroughly researched in the past, the hybrid education system was obtained based on student perception. Furthermore, the Ground Theory approach's literature sorting step took into account the most recent research on hybrid education phenomena in the context of the COVID-19 pandemic.

The study looked at how students' attitudes change during the teaching process, how they are forced to adapt to full-online or hybrid education due to pandemic restrictions, the psychological impact of physical distancing protective measures, concentration issues during courses and practical activities, and so on. Furthermore, the proposed model incorporates the changes and constraints specific to pandemic situations. (Sabina Potra, et. al., 2021)

The majority of student respondents in the study of Kurdistan Salih Mohammed (2020) dislike having online sessions and exams. They are more familiar with short offline videos delivered via a good and user-friendly platform. Furthermore, they want to do good projects and publish them in international journals. In accordance with this, at the end of the semester, approximately 15 projects from various grades were published in various journals.

In the study of Hatice Zeynep Inan (2020), many of the participants were unaware of the various methods of distance education and relied solely on online education. The majority of those educators who supported online education complained about difficulties and negative experiences with online education, and they believed that online/distance education is appropriate for children aged 6 and up but not for younger children. Only a few agreed that online education was beneficial to children's development and learning. However, they all agreed that face-to-face education was effective during the pandemic. The current study's findings also revealed that some educators received both parental and community support, while others received no support at all during the pandemic.

This study has several implications for teacher education. First, it puts emphasis on the need to go beyond emergency online practices to provide an evidence- based approach to online teaching and learning that acknowledges the particularities of this pedagogy and its implications. Second, it emphasizes the need for a pedagogical approach that relies heavily on the social and collaborative components of learning as a starting point for the development of online teaching and learning practices (Olofsson, 2007) but also of broader support structures of higher education institutions in partnership with governments and organizations to achieve equity and inclusion. Third, it highlights the different nature of the roles and competences required to teach effectively in the online higher education environment (Ní Shé et al. 2019) and at the same time makes clear the need to equip teacher educators with a set of competences in which the socio-affective is at its very core. And, finally there is a need to go beyond an instrumental approach to online teaching and learning and to include into the equation its ethical, political and pedagogical dimensions. (Carmen Carillo, et. al., 2020)

According to Sumitra Pokhrell (2021), the need of the hour is to innovate and implement alternative educational systems and assessment strategies. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning. This article aims to provide a comprehensive report on the impact of the COVID-

19 pandemic on online teaching and learning of various papers and indicate the way forward.

The study on the impact of the COVID-19 pandemic on teaching and learning across the world concludes that although various studies have been carried out, in the case of developing countries, suitable pedagogy and platform for different class levels of higher secondary, middle and primary education need to be explored further.

The affordability and accessibility for all learners of varied economic backgrounds is identified as a challenge, for which the educational tools developer could focus on customization. Policy level intervention is also vital. The lesson learnt from the COVID-19 pandemic is that teachers and students/ learners should be oriented on use of different online educational tools. After the COVID- 19 pandemic when the normal classes resume, teachers and learners in Higher Education for the future should be encouraged to continue using such online tools to enhance teaching and learning.

Methodology

A. Research Design

The proponents utilized the Descriptive Method of Research. This method aims to accurately and systematically describe a population, situation or phenomenon. It is an appropriate choice when the research aims to identify characteristics, frequencies, trends, and categories. It is usually defined as a type of quantitative research (McCombes, 2019). The target respondents are the QCU IT faculty and 4th Year level BSIT students, Academic Year 2022-2023. There are a total of 707 students and 33 faculty.

B. Research Instrument

The researchers based the design of their Questionnaires or Survey Forms on some validated instruments used in several researches related to the study.

C. Statistical Treatment

They also utilized Slovin's formula to compute the sample size; Likert Scale to measure the degree of response; Percentage to determine the percentile of the respondents and Mean to determine the degree of the validity of the responses, and Correlation Coefficient to determine if there is significant relationship between the challenges and the factors affecting the outcomes in using the LMS. Purposive Sampling technique was used in identifying the samples. Google Forms were utilized to collect data from the respondents. This was sent via email and afterwards, the proponents tallied and computed results using the abovementioned instruments. The results were summarized and interpreted thereafter.

Results and Discussion

After conducting the survey and evaluation, the researchers came up with the following results:

Table 1.

Respondents' Demographic Profile

Respondents	Number of Respondents
b.1. IT Faculty	31
b.2 4th Year BSIT Students	256
Total	287

The College of Computer Studies has a total of 33 faculty and 707 students. Using the Slovin's formula, the number of respondents were 31 IT faculty and 256 4th Year BSIT students.

Table 2.

Challenges Encountered by the Faculty and Students Using Learning Management System (Google Classroom)

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
2.1.1 Internet accessibility and reliability (This refers to the amount of time that the software is available for use.)	7	6	3	25	8	79	8	88	5	58	31	256	287
2.1.2 Internet load budget/expenses (This refers to the cost being spent for the internet.)	6	7	3	28	6	69	9	85	7	67	31	256	287
2.1.3 Device compatibility (This refers to the compatibility of devices used for learning/teaching.)	9	19	3	17	6	63	8	94	5	63	31	256	287
2.1.4 Teaching and Learning Environment (This is where the class is held.)	6	12	3	23	6	69	12	90	4	62	31	256	287
2.1.5 Technology-related skills (This refers to the skills of the user.)	9	20	5	24	6	59	3	86	8	67	31	256	287
Mean	7	13	3	23	6	68	8	89	6	63	31	256	287

Table 2 shows the summary of the results of the survey in terms of the challenges encountered by the faculty and students using the LMS. The b.1 columns are the number of responses of the faculty, while the b.2 columns are the number of responses of students. It indicates that most of the faculty identified that Device Compatibility is frequently the challenge encountered in using the LMS, which refers to the compatibility of devices used for learning/teaching. On the other hand, among students, the teaching and learning environment is the most challenging for them, which is where the class is held.

Table 3.1

Factors Affecting the Outcomes of Faculty and Students in Using Learning Management System (Google Classroom)in Terms of Information Quality

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
3.1. Information Quality	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
3.1.1. The LMS provides information that can be used in the classroom.	1	1	1	11	8	58	11	111	10	75	31	256	287
3.1.2. The LMS contains enough information for instruction.	1	2	1	6	10	69	11	109	8	70	31	256	287
3.1.3. The LMS provides information that is easy to understand.	1	1	1	12	9	59	11	114	9	70	31	256	287
Mean	1	1.33	1	9.67	9	62	11	111	9	71.7	31	256	287

The factors affecting the outcomes of faculty and students in using the LMS in terms of Information Quality are shown in Table 3.1. It indicates that frequently, among faculty, the LMS provides information that can be used in the classroom, it also contains enough information, and it provides information that is easy to understand. Among students, they stated that frequently, the LMS provides information that is easy to understand.

Table 3.2

Factors Affecting the Outcomes of Faculty and Students in UsingLearning Management System (Google Classroom) in Terms of System Usability

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
3.2. System Usability	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
3.2.1 The LMS is easy to use	1	2	0	6	4	46	10	114	16	88	31	256	287
3.2.2 The LMS has a user-friendly interface.	1	2	1	3	3	45	8	117	18	89	31	256	287
3.2.3 The LMS is always accessible.	1	2	0	6	5	50	9	107	16	91	31	256	287
Mean	1	2	0.33	5	4	47	9	113	16.7	89.3	31	256	287

In Table 3.2, the factors affecting the outcomes of faculty and students in using the LMS in terms of System Usability are shown. It indicates that the majority of both faculty and students perceive the LMS to have a user-friendly interface as always for the faculty and frequently for students.

Table 3.3

Factors Affecting the Outcomes of Faculty and Students in UsingLearning Management System (Google Classroom) in Terms of Perceived Usefulness

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
3.3. Perceived Usefulness	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
3.3.1 The LMS enables me to complete tasks more quickly.	1	2	1	10	6	65	10	107	13	72	31	256	287
3.3.2 The LMS increases my productivity.	1	1	0	7	8	54	10	111	12	83	31	256	287
3.3.3 The LMS makes it easier for me to do my task.	2	1	0	9	7	67	8	108	14	71	31	256	287
Mean	1.33	1.33	0.33	8.67	7	62	9.33	109	13	75.3	31	256	287

In terms of Perceived Usefulness, Table 3.3 shows that the LMS makes it easier for 14 out of 31 faculty to do their tasks always while frequently, 111 out of 256 students stated that the LMS increases their productivity, a lot of them frequently perceive the LMS to make it easier for them to do their tasks, and also it frequently enables them to complete tasks more quickly.

Table 3.4

Factors Affecting the Outcomes of Faculty and Students in UsingLearning Management System (Google Classroom) in Terms of User Satisfaction

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
3.4. User Satisfaction	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
3.4.1. I find using the LMS enjoyable.	2	1	0	7	8	85	10	102	11	61	31	256	287
3.4.2. I intend to continue using the LMS on a regular basis.	0	2	2	12	5	66	10	114	14	62	31	256	287
3.4.3. I am feeling great toward using the LMS.	0	4	2	10	8	69	6	109	15	64	31	256	287
Mean	0.67	2.33	1.33	9.67	7	73.33	8.67	108	13.3	62.3	31	256	287

Table 3.4 shows the factors affecting the outcomes using the LMS in terms of User Satisfaction. Evidently, the majority of the faculty always feel great toward using the LMS, while frequently, the students intend to continue using the LMS on a regular basis.

Table 3.5

Factors Affecting the Outcomes of Faculty and Students in UsingLearning Management System (Google Classroom) in Terms of Perceived Cost

Items	Not at all		Often		Sometimes		Frequently		Always		TOTAL		
3.5. Perceived Cost	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	b.1	b.2	Grand Total
3.5.1. Using LMS at home is expensive for me because of the cost of bandwidth.	9	18	4	29	8	85	8	80	2	44	31	256	287
3.5.2 The university provides free internet service for me to access the LMS.	3	23	2	28	10	78	13	85	3	42	31	256	287
3.5.3. I can afford the LMS's subscription fees.	10	27	3	32	8	94	7	63	3	40	31	256	287
Mean	7.33	22.7	3	29.7	8.67	85.67	9.33	76	2.67	42	31	256	287

Table 3.5 shows the factors affecting the outcomes in using the LMS in terms of Perceived Cost. It describes that the majority of the faculty stated that frequently, the university provides free internet service for them to access the LMS. On the other hand, the students sometimes can afford the LMS's subscription fees. Sometimes, using LMS at home is expensive for them because of the cost of bandwidth, and also frequently, the university provides free internet service for them to access the LMS.

Conclusion

The result of the survey conducted is that, most of the respondents identified that Device Compatibility is frequently the challenges encountered in using the LMS. In terms of the factors affecting the outcomes using the LMS, frequently the LMS provides information that is easy to understand. Majority also stated that the LMS provides information that can be used in the classroom, and most of them also frequently said that the LMS contains enough information for instruction. On the other hand, the majority of respondents agree with information quality, that The LMS provides information that is easy to understand. In terms of system usability, most of the respondents agreed that the LMS has a user-friendly interface. In terms of LMS's perceived usefulness, frequently The LMS increases the user's productivity. The researchers draw the conclusion that Google Classroom is a powerful learning management system based on these findings. It is therefore recommended to continue using and integrating the LMS as a platform for learning/teaching at Quezon City University, however the bandwidth of the provided access should be increased to accommodate a more effective use of theLMS among faculty and students.

References

Ghilay, Y., Ph.D(2019). Effectiveness of Learning Management Systems in Higher Education: Views of Lecturers with Different Levels of Activity in LMSs

Albrahim, F. A. (2020) Online Teaching Skills and CompetenciesRosalina, E., 2020. Teacher's Challenges towards Online Learning in PandemicEra

Lapada Aris Alea, et.al (2020). Teachers' Covid-19 Awareness, Distance Learning Education Experiences and Perceptions towards Institutional Readiness and Challenges

Sabina Potra, Adrian Pugna , Mădălin-Dorin Pop , Romeo Negrea and Luisa Dungan (2021). Facing COVID-19 Challenges: 1st Year Students' Experience with the Romanian Hybrid Higher Educational System

Kurdistan Salih Mohammed1 & Chnar Abdullah Rashid & Hajar Abdulqadir Salih& Taylan Budur(2020).The Role of Online Teaching Tools on the Perception of the Students during the Lockdown of Covid-19

Hatice Zeynep Inan (2020). Challenges of Distance/Online and Face-to-Face Education in the New Normal: Experiences of Reggio Emilia Inspired Early Childhood Educators in Turkey

Carmen Carillo, Maria Assuncao Flores (2020). COVID-19 and teacher education: a literature review of online teaching and learning practices

Sumitra Pokhrel1 and Roshan Chhetri (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning

Mtani, H. (2022). Factors affecting Learning Management Systems Usagein Higher Learning Institutions in Tanzania: A Case of University of Dodoma. In *International Journal of Education and Development using Information and Communication Technology (IJEDICT)* (Vol. 18).