Development of DPB6043 E-Notes Business Project Mobile Applications

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***Abstract*—The Covid-19 pandemic and Movement Control Order (MCO) resulted in the closure of all higher education institutions throughout the country to prevent the spread of this contagious outbreak. The teaching and learning process becomes fully online learning due to this situation. Students living in rural areas face the problem of no internet access. Hence, the purpose of the innovation DPB6043 E-Notes in the form of mobile application to assist students who faced problem with online learning during Covid-19 pandemic. This mobile application was developed using Thunkable and Google Sites based on TAM theory, CBAAM, and ADDIE model. Data were obtained using the survey research method. A total of 33 students from the final semester of Diploma in Business Studies (DPM) program from the Commerce Department, Politeknik Mukah Sarawak participated in the survey. The survey findings further revealed that DPB6043 E-Notes improves students' understanding and is very important for online learning with the highest mean = 4.484. The outcome of this research can benefit the decision-makers of higher institutions in Mukah Sarawak regard to the way to enhance m-learning and promote effective teaching and learning activities as well as strengthening the quality of learning delivery.**

Keywords—mobile application, business project, student, Covid-19, DPB6043

I. INTRODUCTION

DPB6043 Business Project course is a compulsory course that must be taken by students of Diploma in Business Studies (DPM) at Politeknik Mukah and Polytechnic Malaysia. This course covers knowledge in the basic areas of theoretical and practical research that emphasizes the concept of teamwork in the production of project output via face-to-face learning. This course is divided into two choices i.e., innovation on product or services or conducting case studies. Covid-19 pandemic and MCO resulted in the closure of all higher education institutions throughout the country to prevent the spread of this pandemic. According to UNESCO (2020), approximately 320 million learners in India are infected, with approximately 34 million enrolled in tertiary education [1]. In terms of education, how institutions and stakeholders adapted and faced challenges to the new scenario created by the Covid-19 pandemic [2-4] as well as training strategies and innovation experiences [5] have been published. Internet connections problems also can affect online learning. Students living in rural areas face the problem of no internet network and need to go to the city to get an internet line that requires a high cost. Hence, the use of information technology plays an important role in the teaching and learning process facing current situations [6]. There is a lack of agreement on the critical challenges and methods that shape the successful use of e-learning systems during the Covid-19 pandemic; thus, a clear gap in knowledge on the critical challenges and methods of e-learning usage during this pandemic has been identified. In line with the current presence of mobile devices, the field of education can ease the constraints that existed before and be able to equip students with interest in the DPB6043 Business Project course. Hence, the purpose of the innovation DPB6043-Notes in the form of mobile application is to assist students who faced problem with online learning. take DPB6043 Business Project course during Covid-19 pandemics. The use of mobile applications is a new learning method created to match the development of a borderless information world. It was also created to reduce the burden of students who have to carry the burden of bringing thick and heavy reference books to lectures. There are several rationales for the development of mobile apps innovation materials in the DPB6043 Business Project module, among which are that students can easily read and be carried anywhere as the notes are in their mobile applications only. In addition, this innovation is to save money where students do not need to print reference materials, but they can use them anytime and anywhere from their mobile devices. The mobile app has many advantages among which it makes it easier for students to read notes without printed books.

II. LITERATURE REVIEW

The developments of mobile applications DPB6043 E-Notes based on TAM theory. The Technology Acceptance Model (TAM) has been regarded as one of the most fundamental and influential theories in predicting m-learning adoption. The technology acceptance model identifies the relationships between external variables, perceived usefulness, perceived ease of use, and behavioral attitude [7].

The degree to which an individual believes that using a particular system will be free of physical and mental effort and will allow them to complete tasks easily was defined as perceived ease of use [8]. The ease of use associated with the themed-learning system is regarded as an important factor in encouraging users to adopt mobile learning. Furthermore, the contents of DPB6043 E-Notes are based on the Computer-Based Assessment (CBAAM) model [9]. The Computer-Based Assessment Acceptance Model (CBAAM) is a model that explains learners' intentions to use a computer-based assessment satisfactorily. The CBAAM employs nine major variables, including perceived usefulness, perceived ease of use, perceived playfulness, perceived importance, social influence, facilitating conditions, perceived content, goal expectancy, and computer self-efficacy, to determine the intention to used [10]. The Perceived Content (PC) of a CBAAM is defined by two factors: 1) the students' perceptions of the course content and 2) the students' perceptions of the questions asked during the CBAAM. As a result, learners first assess the content based on their prior knowledge, experience gained during the course, such as if it is difficult, interesting, and useful, and secondly, during the CBAAM if the questions are clear and understandable [11].The ADDIE model was chosen because of its systematic generic approach to instructional design, which simplifies the instructional framework for designers or researchers, ensuring the effectiveness of instructional products with creative processes [12]. The ADDIE instructional model [13] describes the analysis, design, development, implementation, and evaluation of instruction. The subject of learning is established through analysis, the method of learning is established through design, the instructional materials are chosen and created through development, the materials and activities are implemented through implementation, and the impact of instruction is established through evaluation. Each phase contained in the ADDIE model has specific steps and procedures.

M-Learning, or mobile learning, is frequently associated with the use of mobile technology, particularly the mobile phone [14, 15]. According to [15], the term "mobile" indicates to it is both portable and personal. [16] describes m-learning as "wireless learning", a subset of e-learning that emphasizes the use of personal communication devices. M-learning, according to [17], solves the problems of insufficient internet access, frequent power outages, and limited PC support and availability. It has a particularly strong impact in isolated and rural places and is bolstered by the mobile phone networks' potential and skill. M-learning is a type of teaching and learning that takes place on mobile devices such as phones, PDAs, and other similar devices, allowing learners to access material and conduct learning at any time and from any location [18].

III. Research Design and Methodology

A. Innovation Implementation Methods

Mobile applications DPB6043 E-Notes development developed through Thunkable software. Then, after the e-content has been developed, the software will produce a single-user version application (standalone) in the form of APK format. This APK format can be installed on any smartphone such as iPhone, Samsung, Oppo, and others. In addition, the development of e-Content involves minimum storage and low data usage allow users to freely start learning as quickly as possible. In addition to the application of support activities, information in e-Content is also integrated with user understanding without altering the original meaning of the text. Users are also free to go to any part without the following order and without finishing reading on one display in advance. Mobile application software uses Thunkable and Google Sites to upload the notes DPB6043 Business Project done by lecturers. After that, lecturers will publish on the Google Play store to be downloaded by students. After completing the process, students were taught to download DPB6043 E-Notes mobile application software on their smartphones for free. This innovative material is very easy to use once it is uploaded into student-owned mobile devices. Students can also take it anywhere and it does not require an internet line. It is also used during the teaching and learning process in the classroom.

The application development process of DPB6043 E-Notes is based on the Perceived Ease of Use used in the Theory Acceptance Model (TAM). DPB6043 E-Notes content development process is content based on a computer-based acceptance model (CBAAM). Each phase contained in the ADDIE model has specific steps and procedures. According to [19] analysis at the first stage involves needs analysis, student and lecturer analysis, context analysis, and content analysis. Then, the output result for the analysis phase acts as input to the design phase. In addition to the design model, builders also combine multimedia elements from YouTube to attract students to be more focus and interested with the online notes. Multimedia contains text, audio, video, and motion. Text-based instructional contents are being phased out in favor of content that is auditory, visible, and has a high level of interaction with the user as the internet infrastructure evolves in the twenty-first century[20].

B. Innovation Development Design

Fig. 1. Front screen

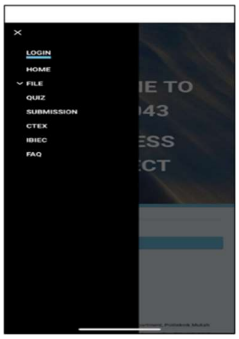

Fig. 2. Side menu

Fig. 3. Home screen

Fig. 4. Control screen

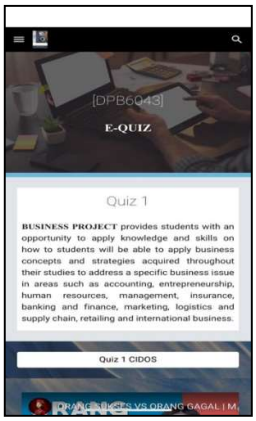

Fig. 5. Quiz screen

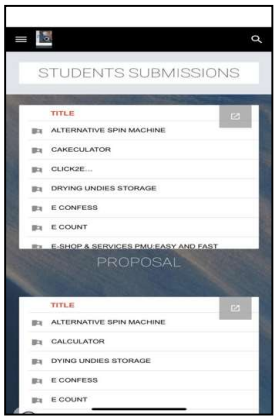

Fig. 6. Submission screen

IV. FINDING OF STUDY AND DISCUSSION

The scope is focused on DPM5 class students who took the subject of DPB6043 Business Project Session December 2020, which is a total of 33 students. Further, under time and budget constraints, the chosen sample is justified. Due to time and cost constraints, convenience sampling is used in this research. This study deployed a survey method to obtain data. Refer to tables below; the questionnaire instrument contained three sections. The first section focused on obtaining respondents' demographic profiles such as age, gender, and area. The second section in the questionnaire is the DPB6043 E-Notes Business Project application. There were 15 questions in this section to identify the perception of students. The questionnaire adapts from [21]. Section C involved questionnaire is DPB6043 E-Notes Business Project contents which have seven questions. Questions were slightly modified to suit the context of mobile technology and application for college students adapts from [10]. The relative importance of each construct was assessed by a 5-point Likert scale from one being "strongly disagree" to five being "strongly agreed".

TABLE I. RELIABILITY TEST ITEM QUESTIONNAIRE EFFECTIVENESS OF MOBILE APPS DPB6043 BUSINESS PROJECT FOR DPM5 STUDENTS

Reliability Statistics	
Cronbach's Alpha	***No of Items***
.840	22

The result of the Cronbach Alpha reliability test was 0.840 at a good level exceeding 0.60. This shows respondents understand the question of the distributed survey.

TABLE II. THE DEMOGRAPHIC BACKGROUND OF THE RESPONDENTS

Respondent Profile		**n**	**(%)**
Age	21 to 22	16	59
	23 to 24	10	37
	25 and above	1	3.0
Gender	Men	5	15.2
	Women	28	84.8
Area	Kuching	1	3.0
	Sibu	5	15.2
	Sri Aman	1	3.0
	Miri	3	9.1
	Bintulu	5	15.2
	Kapit	7	21.2
	Semarahan	1	3.0
	Tatau	1	3.0
	Debak	1	3.0
	Tawau	1	3.0

Refer to Table II, 33 DPM5 students took the DPB6043 course as respondents. The majority of respondents aged between 21 to 22 years of age (59 %), followed by 23 to 24 years (37%) and over 25 years (3%) up there is only one. The respondents were 28 women (84.8%), while men were only 5 (15.2%) only. Most of the respondents lived in Kapit District (21.2%) and other districts such as Kuching, Sri Aman, Kota Semarahan, Tatau, Debak, and Tawau (3%).

TABLE III. MEAN AND STANDARD DEVIATION FOR DPB6043 BUSINESS PROJECT INNOVATION APPLICATION FOR DPM5

Descriptive Statistics				
No.	***Item***	***n***	***Mean***	***Std. Deviation***
1.	Using DPB6043 E-Notes is better than the traditional method.	22	4.000	.5590
2.	DPB6043 E-Note design is good.	22	4.030	.6839
3.	DPB6043 E-Note system is user friendly.	22	4.000	.5000
4.	DPB6043 E-Note interface is very attractive.	22	4.000	.7071
5.	DPB6043 E-Notes important for online learning.	22	4.484	.6671
6.	DPB6043 E-Notes are easy to install.	22	4.242	.7512
7.	Using DPB6043 E-Notes easy to upload and download documents.	22	4.394	.7044
8.	DPB6043 E-Notes can be used offline.	22	4.212	.7809
9.	I can use DPB6043 E-Notes anytime.	22	3.818	.9170
10.	DPB6043 E-Notes can be used by android and iOS systems.	22	4.000	.7071
11.	DPB6043 E-Notes can be installed using a smartphone, tablet, and laptop.	22	4.152	.7124
12.	ICT skills and knowledge are important in DPB6043 E-Notes.	22	4.394	.7044
13.	DPB6043 E-Notes useful during Covid-19 pandemic.	22	4.333	.4787
14.	DPB6043 E-Notes are free and have no fees.	22	4.424	.6628
15.	Overall DPB6043 E-Notes easy to use.	22	4.273	.5740

As shown in Table III, the level of mobile application usage among DPM5 students in PMU is as high as the mean is between 3.50 and 4.49. For this category, the highest mean value of 4.484, E-Notes is very important for online learning and teaching during the Covid-19 pandemic. Overall, the majority of respondents agreed that the use of mobile applications in facilitating teaching and learning activities at PMU was enjoyable (min = 4.273). However, the lowest mean value in this category is related to the use of mobile application E-Notes DPB6043 anytime by phone (min = 3.818).

TABLE IV. MEAN AND STANDARD DEVIATION FOR DPB6043 BUSINESS PROJECT INNOVATION APPLICATION FOR DPM5 STUDENTS

Descriptive Statistics				
No.	***Item***	***n***	***Mean***	***Std. Deviation***
1.	DPB6043 E-Notes improve students understanding of the subject.	22	4.484	.5075
2.	The contents DPB6043 E-Notes follows the syllabus.	22	4.181	.6825
3.	Using DPB6043 E-Notes is more interesting to study.	22	4.151	.7124
4.	I'm more focused on the study, using DPB6043 E-Notes.	22	3.909	.7230
5.	I'm more confident answering the quizzes after using DPB6043 E-Notes.	22	3.939	.6585
6.	I appreciate all notes and videos in DPB6043 E-Notes.	22	4.090	.5789
7.	Overall, the content DPB6043 E-Notes is very informative.	22	4.484	.5075

As shown in Table IV, the level of mobile application usage among DPM5 students at PMU is moderately high with the mean values being between 3.50 and 4.49. For this category, the highest mean value (min=4.48) i.e. can increase students' knowledge and strengthen existing knowledge in students. Overall, the majority of respondents agreed on the contents of the mobile application DPB6043 E-Notes in facilitating teaching and learning activities at PMU (min= 4.484). The contents of this mobile application follow the syllabus content i.e. (min= 4.181). However, the lowest mean value in this category is that students are more focused on using DPB6043 E-Notes via easy-to-use smartphones (min = 4.909).

V. DISCUSSION AND SUGGESTION FOR IMPROVEMENT

Results found that the students were very satisfied with the application developed. This shows that there is a very positive potential among students to use mobile applications in DPB6043 Business Project online learning. The results support the finding from [22] explained that the aspect of user acceptance depends on how easily users feel and can be followed by users when using any type of application. This high user-friendly aspect is also in line with the [11] study, which also depends on how long the user uses the app and adapts to the application. Overall, the content DPB6043 E-Notes is very informative and can improve students understanding of the subject. This supports the findings from [23]the content has a positive impact on students adopting mobile learning. The contents must be informative, interesting, and follow the syllabus. Before the use of the DPB6043 Business Project mobile application, students were only provided with notes in the form of PowerPoint slides or hardcopy notes for reference during the teaching and learning process. The problem faced by the students is, they are easily bored with the existing form of notes and difficult to carry where they go. With the development of innovative materials the DPB6043 E-Notes mobile application can add and foster student interest in DPB6043 Business Project courses and so on can make students more proactive in the classroom.

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