

Exploring user analysis of blended learning module for Research Methodology course

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Abstract. This paper describes the user analysis of a newly proposed blended learning module for Research Methodology, specifically for postgraduate programmes. Blended learning for Research Methodology course is a first interdisciplinary modules introduced in Universiti Tenaga Nasional (UNITEN) for an innovative teaching method for all program (Business, IT and Engineering). This study was exploratory and interpretative in nature, using a qualitative research design to investigate the users' needs in blended learning. Drawing from instructional design of ADDIE model, interviews with new postgraduate students have been carried out to explore their needs and expectations. Findings reveal learning environment, users' knowledge, learning motivation and duration time appear significant in the user analysis of Research Methodology blended learning course. The study findings will act as an input for the next stages of Research Methodology module development. The user analysis enables deep understanding on the users' needs and in turn may improve students' learning experience in blended learning course.

1 Introduction

Blended learning has become one of the innovative learning methods, especially in academic institutions. Blended learning can be referred to as a mixture of two models; offline course, the traditional way of teaching and learning (face to face) and online course (internet & cloud base system). The students would get the best of both worlds via blended learning, where they could learn at the comfort of their home during their free time. Students can revise the modules dictating their own pace of learning and time. Face to face session, classroom activities, discussion and sharing session will enhance their understanding on the taught module.

Blended learning offers many benefits, but the dropout rate has become a major problem in this new learning method (Berge & Huang, 2004; de la Varre, Irvin, Jordan, Hannum, & Farmer, 2014; Shiang & Hui, 2009; Willging & Johnson, 2009). While having a high students' registration rate for the online course, attrition remains a problem. A study investigated for student dropouts in an online course in rural setting found that the dropout (de la Varre et al., 2014) generally fall into five categories:

- a) Scheduling and time constraints,
- b) Academic rigor and motivation,
- c) Technology problems,
- d) Problems with online medium and lack of teacher immediacy, and
- e) Parental influences

Due to high attrition of students, instructional design in blended learning has become a growing issue. This issue became the contribution factor to the attrition. In a related study, it was stated that interactive learning, effective presentation of course content and productive communication are features needed in online course (Lee & Choi, 2011).

Therefore, there are several models and theories that are suitable for instructional design. Among them, the ADDIE model is said to be the best suit since it looks closely and system-oriented in producing a good instructional design (Muslimin, Nordin, & Mansor, 2017). The ADDIE theory stands for Analysis, Development, Design, Implementation and Evaluation (ADDIE).

The first stage of the ADDIE theory is the analysis step. The instructor or the developer needs to conduct a user analysis review on the targeted audience. This is to ensure that the developed system accommodates the needs which in this case is the students' needs. It was suggested that it is important to conduct a proper student needs analysis prior to designing and implementing stages (Gedik, Kiraz, & Ozden, 2013; Ramos, Tajú, & Canuto, 2011). User Elements (should be emphasized) such as learning characteristics, motivation, learning goals, and technology affordance.

Studies on the application of ADDIE model in blended learning course have been carried out by previous researchers (Muslimin et al., 2017; Nadiyah & Faaizah, 2015; Stapa & Mohammad, 2019). However, there is a lack of

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empirical studies specifically focusing on this stage. Thus, the objective of this study is to understand users' needs for blended learning Research Methodology (RM) course in UNITEN.

The RM course is a compulsory course for all postgraduate programmes. In addition, blended learning for Research Methodology course is a first interdisciplinary modules introduced in Universiti Tenaga Nasional (UNITEN) for an innovative teaching method for all postgraduate programs. It was launched as a pilot test in 2019 to IT postgraduates' Master and PhD students. It consisted of eight (8) modules which are Introduction, Problem Formulation, Literature Review, Research Design, Quantitative Analysis, Qualitative Research, Information Literacy Skills, and Proposal Development.

The development has been converted into blended learning gradually. Two hours' class is conducted for each module. Students are given the options to either attend face-to-face classroom or video conference.

As part of the analysis phase of the ADDIE model, students' instructional objectives, learning requirements, existing knowledge and skills are investigated. Since ADDIE model is an interactive instructional design, the input from the analysis phase will be considered during the design, implementation, and evaluation phases.

2 Method

This study was exploratory and interpretative in nature. This study uses a qualitative research design to investigate the users' needs in blended learning. The semi-structured interviews were conducted with six postgraduate students from the College of Graduate Studies (COGS) in UNITEN. The students ranged from Business, IT and Engineering programmes in order to ensure the needs covered these three main fields in UNITEN. The interview took on average of 20 to 30 minutes, exploring key points based on the ADDIE model (Shiang & Hui, 2009) analysis method.

The questions that were being asked based on the following key points:

- a) Students' existing knowledge on Research Methodology
- b) Learning goals
- c) Motivation to learn
- d) Technology affordance
- e) Interest in blended learning and expectation

Other additional probing questions were also asked in the interview to elicit more details on the blended learning issues. All interviews were transcribed and content analyzed. The recurring themes emerged from the data were recorded.

3 Findings and discussions

This section analyzed and discussed the findings gathered from the interview sessions of postgraduate students in UNITEN.

3.1 Demographics

Consistent with confidentiality issues, interviewee names are disguised with a numeric 1 to 6.

Table 1 Demographic

Participants	Gender	Age	Program	Field	Nationality
P1	Male	39	PhD	Engineering	Malaysian
P2	Female	46	PhD	IT	Oman
P3	Female	22	Master	IT	Malaysian
P4	Female	23	Master	Engineering	Malaysian
P5	Male	23	Master	IT	Malaysian
P6	Male	24	Master	Business	Malaysian

3.2 User analysis

This study focuses on exploring postgraduate students' needs and expectation on research methodology blended learning module. The major themes emanated from the interviews are as follows:

3.2.1 Analysis of learning environment

The first theme emerged from the interview session is learning environment. Focusing on the context and learning materials, students expect that online face-to-face sessions can be recorded, and teaching materials can be downloaded. The preference is in order for them to revise the module after class sessions as stated by two interviewees.

P3: "It would be great if the session recorded since I can review it after."

P5: "I would like to be able to download the video and slides because I can revise it later after a few months."

Likewise, two of the interviewees said that they want to acquire statistical software and references skills. They would want to learn on reference management software such as Mendeley or EndNote and statistical software such as SPSS.

P4: "I want to know how to get the research idea. I also want to learn how to use statistical software and understand the research flow."

P6: "I know about SPSS but I want to know the other statistical software."

Another student preferred assignment to be assigned after each module to strengthen his or her knowledge.

P2: "In order to strengthen the knowledge, I prefer the lecturer to assign the assignment after each module."

3.2.2 Analysis of users

It appears that the students were having limited knowledge regarding to Research Methodology course and in need of assistance to help them. The interview session reveals majority of Master students have no prior knowledge on the Research Methodology (RM) subject.

P3: "I do not know anything about research methodology. I had done final year project before with the guidance of supervisor."

P4: "I do not know what RM is since we do not have any RM class. Our lecturer guides us step by step but I'm not sure if it is related to RM."

P5: "I do not have much knowledge (regards to RM)."

This is contrary compared to the PhD students where they have basic ideas about the RM class including research writing, process, types of methods, literature review and other relevant skills to produce a thesis.

P1: "I have enough knowledge such as the process and method to write the paper."

P2: "I know the basic ways to write the paper since I had attended to the course during my Master degree. So, I got experiences and publish papers."

According to the findings, the guidelines should include the flow of the processes, creation of problem statement and literature review, writing the thesis, publication and journal reading and writing. Basically, they want to learn the essential ideas of producing a quality thesis.

P4: "I want to know how to get the research idea. I also want to learn how to use statistical software and understand the research flow."

P6: "I know about SPSS but I want to know the other statistical software."

Moreover, the interviewees stated that thesis writing guidance as their learning goals to learn RM. Majority of them highlighted the needs for thesis writing guidelines.

P1: "I want to learn how to conduct the literature review, find (journal) papers and manage the sources."

P2: "I would like to learn how to write problem statement, literature review, results and basic things in research."

P3: "I would expect to learn the guidelines to do the research."

P5: "Since I do not know the process to do research, I want to learn how to write a thesis."

Along with the knowledge and assistance, technology affordance is an important feature to the online courses. This study found that most of the students possessed with technology affordances. Thus, online courses and online meet-ups will not impose problems for the students.

P2: "I have no problem with technology affordance. I am flexible to the new technology, I'm skillful with basic navigation of the internet browser."

However, one of them has some difficulty when it comes to accessing the online course from his home. Slow internet speed and capped data is the main reason why he preferred to access the online course during his working time (8am to 5pm).

P5: "Accessing from home would be a little bit of problem. So, it would be easier to access during the working hours (8am-5pm)."

3.2.3 Learning motivation

Learning motivation is one of the themes that emerge from the finding. Majority of students would like to learn more on how to produce a quality thesis for their respective program (Master or PhD level).

P1: "I want to know about the research."

P2: "To be more excel and faster in writing with more knowledge (of research) and more skills."

P3: "I want to produce a research thesis."

They also want to know the different requirement for postgraduate thesis compared to undergraduate thesis.

P4: "I would like to know the different between undergraduate and postgraduate and what I can improve my (research)."

Besides, other interviewees were simply motivated to learn because of their lecturer and the subject is compulsory.

P5: "I was invited by my lecturer to pursue my master's degree while working as a research assistant. So, I have no constraint in financial and time."

P6: "I thought it was compulsory. That's the motivation. To be fair, it is a good course. It is helpful when we do not know about anything."

All interviewees positively responded that they are highly interested in the blended learning. Majority of the interviewees state that it would save time and cost. Online learning allow students to be physically absence in the classroom. The flexibility enhanced their learning experience.

P1: "It (blended learning) is interesting because we still can learn even if we are working."

P2: "I can reduce the time to be in university and the environment would be calm without noise if I am alone."

P3: "Yes, I am interested with blended learning. It would become more flexible and fits my time constraints."

P6: "It would save the time and cost and more accessible."

3.2.4 Duration time

Most of the students highlight the duration time of the course. One of them preferred to have an online face-to-face session during the weekdays over the weekends. The difficulty to have the internet access made him to choose the session during working hours.

P5: "Since I have difficulty in accessing internet, I would prefer to have the session during the office hour on weekdays."

Furthermore, one of them choose to have the online session with not less than 1 hour for each module, preferably on weekends and having an early announcement of the schedule would help her to prepare for the session.

P2: "I think 1 to 2 hours in a session should be okay as long it is not less than 1 hour. Also, the schedule for the session should be announce early for me to make preparation."

Additionally, most students preferred to have on average one to two meet-ups for every module (there were eight modules in total) to discuss with the lecturer with a minimum of six meet-ups per course.

The summary of the user analysis is presented in Table 2.

Table 2 Summary of user analysis

Analysis of learning environment	<ul style="list-style-type: none"> • Downloadable of learning materials. • Lesson on statistical software. • Recorded session of online face-to-face sessions.
Analysis of users	<ul style="list-style-type: none"> • Limited knowledge. • Assistance on writing thesis (guidelines). • Technology affordance is not an obstacle.
Learning motivation	<ul style="list-style-type: none"> • Thesis and paper writing. • High interest on the blended learning RM course for it save cost and time.
Duration time	<ul style="list-style-type: none"> • A total of six meet ups to cover the taught topics • A session with not less than one hour. • Preferred time – weekdays or weekends • The schedule should be announced earlier

3.3 Limitations

There are limitations for this study. First, limited number of postgraduate students shrink the scope of the study thus restrict the capability of findings generalization. Subsequently, the user analysis should be done for diverse (i.e. undergraduate) course.

4 Conclusions

This study was undertaken to identify users' needs for postgraduate research methodology modules using a blended learning approach. The analysis was based on the ADDIE model (Stapa & Mohammad, 2019). The findings contribute to the understanding on the user's needs. This needs analysis will act as inputs for the subsequent phases of RM module development.

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