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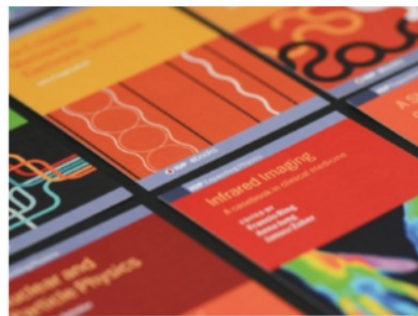
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Development of Teaching Material of Final Assignment Subject Based on PBL Using ICT

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Abstract. Open universities provide educational opportunities for workers, especially teachers who have not met the academic qualification requirements. Final Assignment (FA) is a subject aims to measure advanced thinking skills comprehensively on theory and practice, which is designed based on problem-solving. Therefore, this study designed and developed PBL-integrated FA teaching materials to meet the 2021 Open University Vision and Missions. This was a research and development study of FA teaching materials using PBL-based ICT with the ADDIE model. The study samples were 17 open universities students who were taking the FA subject. The instrument used was a media assessment questionnaire consisting of three aspects, namely the aspect of appearance, ease of use, and efficiency. The Alpha Cronbach value of the questionnaire was 0.82. The results show that the aspect of appearance had min = 3.65; SD = 0.316, ease of use had min = 3.63; SD = 0.247, and efficiency had min = 3.66; SD = 0.292. This means that PBL-based Online Tutorial Materials are excellent to help all students and tutors of the FA subject to develop a good and effective learning process.

1. Introduction

Today we often hear various concerns addressed to scholars, low levels of reasoning and creativity. The theme of this study, for 2018, is in line with the Open University (UT) Vision and Mission 2021 as well as developing strategic issues in UT, namely UT being a world-class PTTJJ (open distance higher education) institution that implies that the implementation of UT has met PTTJJ's best implementation standards recognized, both by the community and the institutions or associations of the PTTJJ world institutions. As a consequence and in accordance with the principles of the PTTJJ system, UT also produces a variety of high-quality higher education products that are standardized. The definition of higher education products includes academic products that substantially follow the development of science and technology (Science and Technology) and maintain their relevance to the development of society and national development; and graduates who are globally competitive. The definition of standard is the quality of products guaranteed by standards at each PTTJJ location by UT [1].

In addition, according to Government Regulation of the Republic of Indonesia Number 19 of 2005 concerning Education National Standards and Number 32 of 2013 concerning Amendments to National Education Standards article 1 paragraph 8, explicitly confirms that educators and grooming staff must meet the criteria and feasibility of pre-job education and position.



The teacher is a professional educator with the main task of educating, teaching, guiding, directing, training, evaluating, and evaluating students in early childhood education in formal education, basic education, and secondary education. Professional teachers will produce quality education processes and results in order to realize intelligent and competitive Indonesians, namely human beings who believe and fear God Almighty, are noble, healthy, knowledgeable, capable, creative, independent, and become citizens democratic and responsible.

To become a professional teacher, you must have the ability to develop competency aspects that exist in him and think comprehensively and at a high level or Higher Order thinking Skills (HOTS). Mastering science with professionals means being able to think comprehensively in solving problems from various integrated scientific aspects where this skill is an objective of learning from the Final Assignment (FA) [1].

Education is the key to all quality progress and development in a country because with education, humans can realize all the potential that exists in themselves both as individuals and as citizens of society [2]. The need for alternative ways, one way to improve and develop teacher competencies is to provide a good understanding of various sciences into a comprehensive unit [2][3].

Professionalism defines the commitment of an individual to improve his professional skills and develop strategies to perform his duty admirably. A professional should manage everything appropriately, particularly aspects related to his profession[4].

The professional development is a process improving an individual or a group involving various methods, such as reflection, renewing, and improving commitment to achieve better performance. The methods than realized as an effort to improve knowledge, skills, and morals to develop a better idea, design, and practice [5].

The success of a learning process in the university not only influenced by the lectures, but also the administrative staffs. OECD (2005) reported that the human resources of Indonesia would not provide any benefit without the improvement of their quality. Data from ASEAN Productivity Organization (APO) shows that only 4.3% of 1000 Indonesian labors were skilfull while the Philippines, Malaysia, and Singapore reached 8.3%, 32.6%, and 34.7%, respectively [6].

With this data, the responsibility of a teacher is getting bigger and must be followed up immediately by providing understanding and fertilization of various concepts of good high-level thinking skills, for that. The researcher wants to develop material of final assignment subject based on PBL using ICT.

1.1 Research Methodology

The study was conducted in the open universities from September to december 2018. The research objects were the student in the Faculty at Open universities in Riau. This was a research and development study of FA teaching materials using PBL-based ICT with the ADDIE model [7].The study samples were 17 open universities students who were taking the FA subject. The instrument used was a media assessment questionnaire consisting of three aspects, namely the aspect of appearance, ease of use, and efficiency. The Alpha Cronbach value of the questionnaire was 0.82.which proved the quality of the instruments.

2. Result and Discussions

2.1 The procces of ADDIE model

The basic design and stages of learning development refer to the ADDIE model instructional design (Analyze Design Develop Implement Evaluate) [7]. The ADDIE model is chosen because it is based on a system that involves fostering teaching materials for a course or a curriculum. This model is usually awakened by a research in producing products. Which were FA teaching materials using PBL-based ICT with the ADDIE model.

2.2 Descriptive analysis

The assessment results of FA teaching materials using PBL-based ICT with the ADDIE model are implemented during the tutorial process who were taking the FA subject. In this assessment assessed from the aspect of appearance, ease of use and efficiency. The quality of the instrument is essential in ensuring the obtained data are consistent and relevant. The analysis results of the students' perception of FA teaching materials using PBL-based ICT with the ADDIE model are shown in Tables 1 to 3.

Table 1. The students' perception of FA teaching materials using PBL-based ICT with the ADDIE model from appearance aspect

No	Appearance Aspect	Descriptive Analysis Result			
		N	Min	SD	Category
1	The appearance based on ICT	17	3,53	0,514	excellent
2.	The content is clearly	17	3,35	0,606	excellent
3.	Animated graphics based on ICT	17	3,24	0,437	good
4.	language and Language Effects of use	17	3,65	0,493	excellent
5	Design of the operation of teaching materials	17	3,41	0,618	excellent
6	General effects teaching materials	17	3,53	0,514	excellent
Appearance Aspect		17	3,53	0,514	excellent

Table 1 displays that in the aspect of appearance, FA teaching materials using PBL-based ICT with the ADDIE model in All items of appearance aspect were good and excellent category which is satisfying at the mean of 3.24 which is in the Animated graphics based on ICT, while other aspects are excellent category with the highest mean, namely the aspects of language and Language Effects of use (mean = 3.65). So that it can be concluded that according to users in the implementation of this media, it is known that from the aspect of appearance of FA teaching materials using PBL-based ICT with the ADDIE model from appearance aspect (mean = 3.45) were excellent category. Then for the aspect of ease of use can be seen in Table 2.

Table 2. The students' perception of FA teaching materials using PBL-based ICT with the ADDIE model from the aspect of ease of use

No	Ease of use	Descriptive Analysis Result			
		N	Min	SD	Category
1	Easy to use because it uses instructions	17	3,71	0,470	excellent
2.	Using language that is easy to understand	17	3,71	0,470	excellent
3.	Arranged systematically	17	3,65	0,493	excellent
4.	Can be used for independent learning	17	3,76	0,437	excellent
5	Helps in understanding concepts	17	3,59	0,507	excellent
6	The menus on media teaching materials are very suitable	17	3,35	0,606	excellent
Ease of use Aspect		17	3,63	0,246	excellent

As can be seen in Table 2, in the aspect of ease of use consists of six indicators. in the six indicators, the results of the assessment in the excellent category are low, namely the aspects of the The menus on media teaching materials are very suitable, namely the mean of 3.35, while the highest in the aspect can be used for independent learning (mean = 3.76). So it can be concluded that from the ease of use aspect of FA teaching

materials using PBL-based ICT with the ADDIE model from the ease of use aspect (mean = 3.63) were excellent category. Then for the aspect of efficiency can be seen in Table 3.

Table 3. The students' perception of FA teaching materials using PBL-based ICT with the ADDIE model from the aspect of efficiency.

No	Efficiency Aspect	Descriptive Analysis Result			
		N	Min	SD	Category
1	Learning Becomes Efficient	17	3,65	0,606	excellent
2.	workable anywhere	17	3,88	0,332	excellent
3.	Examples of media Questions greatly help understanding	17	3,47	0,624	excellent
4.	Use of Media Reduces Tutor Expenses	17	3,65	0,493	excellent
	Efficiency Aspect	17	3,66	0,292	excellent

Furthermore, it can be seen from Table 3 it is known that for the efficiency aspects of the assessment results from users of FA teaching materials using PBL-based ICT with the ADDIE model were excellent category seen from the four indicators in sequence, namely: Learning Becomes Efficient (mean = 3.65), workable anywhere (mean = 3.88), the Examples of media Questions greatly help understanding (mean = 3.47) and the use of Media Reduces Tutor Expenses (mean = 3.65). This means, that the total mean value for the aspect of efficiency is in the excellent category with a mean = 3.66.

From the explanation of Tables 1 to 3, it can be seen that the FA teaching materials using PBL-based ICT with the ADDIE model that has been developed by researchers can be a good and effective learning resource because it has been assessed from the aspect of appearance, ease of use and efficiency in a excellent category. So this media can be reproduced and used in a good learning process online and helps all students who were taking the FA subject.

To strengthen this study, judging from the results of the participants' responses to the media, it is known that with ICT, it is very helpful for students and lecturers in learning. I really like this smartphone-based lesson, can facilitate students in learning, only I beg in the provision of material can be adjusted so that it suits me who is old. Furthermore, other students said that it was very helpful with ICT-based materials, lots of information and could be used by everyone. It is a very important thing to have functions such as processing data, looking for material, is a necessity for anyone who is the general dominant in life.

So it can be concluded that the FA teaching materials using PBL-based ICT with the ADDIE model were very feasible to be applied and implemented in open university learning because it can be studied and used anywhere, anytime online [8].

3. Conclusion

It can be concluded that the FA teaching materials using PBL-based ICT with the ADDIE model that has been developed by researchers can be a good and effective learning resource because it has been assessed from the aspect of appearance, ease of use and efficiency in a very satisfying category. So this media can be reproduced and used in a good learning process online and helps all students who are taking TAP courses. Then for advice can be a rule model in producing interesting learning media according to the vision and mission of an open university that can carry out learning anywhere, anytime and in time that can be adjusted online.

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