Development of Hybrid Learning-Based Animation Media to Improve the Learning Outcomes of Multimedia Learning

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Abstract. This research aims to determine student learning outcomes and produce animated learning based on hybrid learning. In this case, the type of research is research and development (R&D) with 4D models with stages namely potential or problems, data collection, product design, design validation, design revisions, product testing, product revision, practical utility testing and revision of the final product. The sample data were recorded in the Faculty of Economics, Universitas Negeri Medan. The result of the development of learning media based on interactive multimedia indicated that valid criteria with the percentage of the post-test 73.33%, did not pass 26.66%. The learning with Hybrid Learning-based animation media in Multimedia Learning subjects is better. The hypothesis testing is obtained tcount < ttable namely -3.74 < 2.00 which means that. there is a difference in learning outcomes between pre-test and post-test time.

1. Introduction

Learning media are all things that can be used in teaching and learning activities to convey teaching messages from lecturers to students so that they can stimulate students' thoughts, feelings, concerns, interests, and attention in learning [1], [2].

Through digital learning based on hybrid learning, students are expected to be able to learn independently, continuously, and develop throughout their lives. Thus the teaching will become more productive, more efficient, and more attractive [3]. Digital and hybrid learning systems are critical at this time to develop and develop participants' students where the digital age in the teaching and learning process at this time students can learn on their own wherever they are [4].

2. Research Method

This research method uses the Research and Development (R&D) method. This method was chosen to meet the research needs that require the process of data collection in improving student learning outcomes in statistical learning. This method is very supportive of the implementation of the teaching and learning process so that the learning media used can be used descriptively. The development in this R&D research uses the Four-D Model (4D) development. The 4D model consists of four stages: (1) Define; (2) Design (design); Develop (development); and (4) Disseminate (distribution)[5].
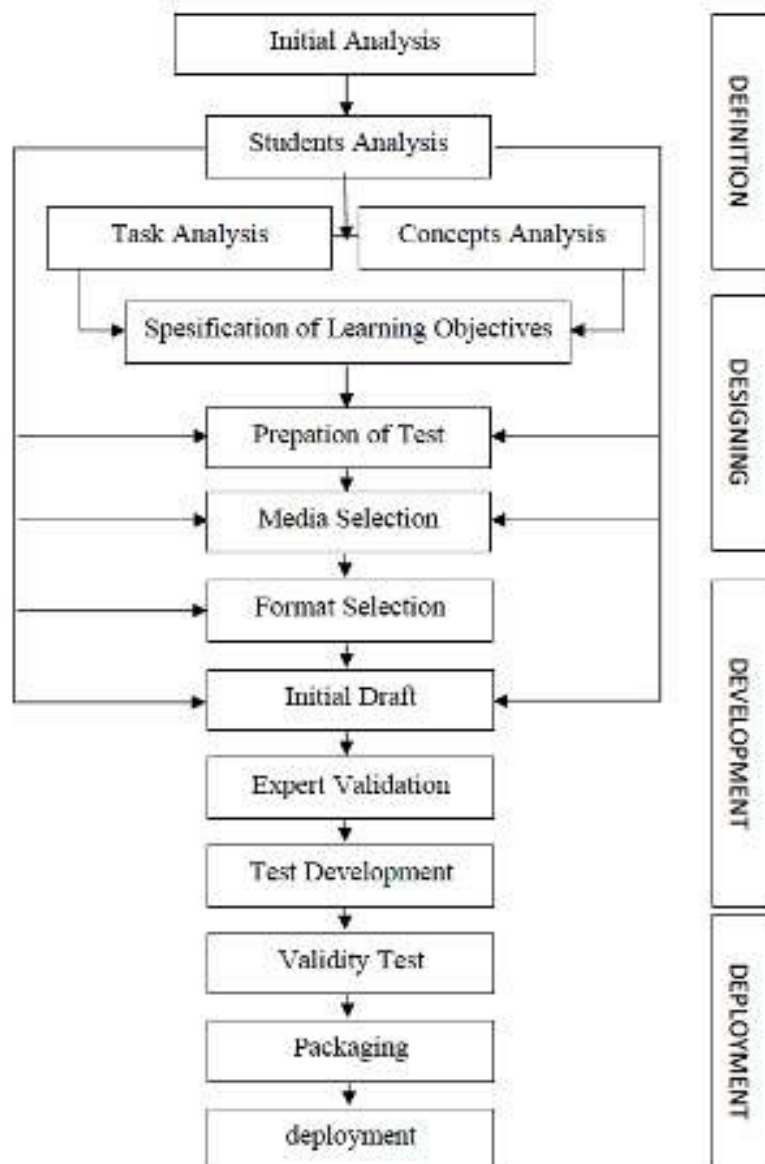
Figure 1. Development model flowchart 4-D [6]

To obtain the required data by the objectives of the study used instruments in the form of pretest and posttest. This test is in the way of multiple-choice, given after the material about multimedia learning is taught, then it will know to what extent the learning outcomes achieved.

Data analysis techniques in this study used quantitative data that was processed using computerization, including data tabulation and statistical calculations. The statistical test used is to use the T-test and product-moment correlation.

3. Results and Discussion

The diversity of instructional media in multimedia learning will significantly assist lecturers, especially in choosing the right learning media and following the learning needs of various instructional concepts and objectives. Multimedia learning requires diversity in the media, given its nature as an integrated study of multiple fields of science.

Differences in student learning outcomes are proven through hypothesis testing where t arithmetic <t table or equal to -3.74 <2.00, where these numbers show that there are differences in learning outcomes between free-test time to post-test.

Tabel 1 t-Test: Two-Sample Assuming Equal Variances

	PRE-TEST	POST-TEST
Mean	62,53333333	79,33333333
Variance	427,5678161	170,0229885
Observations	30	30
Pooled Variance	298,7954023	
Hypothesized Mean Difference	0	
df	58	
t Stat	-3,764158966	
P(T<=t) one-tail	0,000195993	
t Critical one-tail	1,671552762	
P(T<=t) two-tail	0,000391986	
t Critical two-tail	2,001717484	

The results of the study are the development of Animation Media and Textbooks based on Hybrid Learning. Media developed in the form of learning media based on Hybrid Learning, where the media is arranged based on the needs of lecturers and students.

3.1 Run the Application Tool

There are several buttons on the media in the first display on the learning media. The x key is to close/end the learning media. Some menus on this learning media include: (a) Understanding, (b) RPP (c) Material (Position of media on learning, Function learning media, Principles of learning media, Learning media tools, Benefits of teaching media, Classification and Characteristics of learning media). (d) Utilization (e) Example (f) Media Making Techniques and (g) Conclusions.

3.2 Learning Media Applications

This learning media application was built using Adobe Flash CS software by using the Action Script language version 2.0. The main menu results display from the learning media application can be seen in Figure 2 following:

Figure 2. Learning Media Display Application

4. Conclusions

Based on the results of research and data analysis, in which the process of developing Animation Media and Textbooks Based on Hybrid Learning is carried out in several stages according to the 4-D model, including define, design, develop, and disseminate. Learning media development results are presented in a more exciting way, equipped with animation, visuals, and audio accompanied by videos. Animation media and textbooks based on hybrid learning can improve student learning outcomes. It can be seen from the results of the percentage of pre-test graduation of 43.33% and did not pass by 56.66%, the increase in learning outcomes seen after the implementation of Animation Media and Textbooks with the percentage of post-graduation test of 73.33% and 26.66% did not pass. The increase in learning outcomes occurred by 30%, and learning with Animation Media and Textbooks based on hybrid learning in Multimedia subjects in teaching is better than using the Lecture Method. It is seen from the t count <t table, this proves that there is a difference in learning outcomes when the pre-test is conducted with lecture learning methods up to post-test using Animation Media and Textbooks based on Hybrid Learning.

Acknowledgement

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