Edugam Media Development Based On Education Character For Non Mathematic Students At Statistic Subject

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Abstract: *Statistic course is a compulsory subject for all students at IKIP (Institue of Teacher Training and Education) Budi Utomo Malang. However, not all students have the ability and willingness to learn the course, especially students who is in non-Mathematic major. Based on interviews at the beginning of new students program, many of them (70%) argued for avoiding mathematics with many causes. But averagelyof those stated, had a bad experience in the context of mathematics courses, when they still at the previos education. Starting from this, it would need a media-transferable learning in statistics learning process. means that, besides the media can improve the effectiveness of statistics learning, it must change the students' character as well. So that, the moral values that recently shifted, it would be reduced, even changed into the common thing at least. The referred learning media is Edugam media. Which, based on the results of previous studies related with games fostering motivation and interest in learning. So that the learning effectiveness can be achieved. The purpose of research is to produce products such Edugam media, improving the educational character and learning effectiveness of non-Mathematic students. To achieve these objectives the researchers use research and development type of reasearch, while procedural development used as the product development model*
Keywords: *Edugam media, Character education, non-mathematic*

I. Introduction

A. Background

Statistics course is a compulsory subject for all students in all majors or courses at Institute of Teacher Training and Education Budi Utomo Malang. As a compulsory subject, it has an important role in supporting student competency in writing thesis, especially in terms of analysing the data. However, not all students have the ability and willingness to learn the course, especially students who take non-mathematic major.

Theselection of non-mathematic major for new students would have some reason. Based on interviews at the beginning of new students, many of them argued for avoiding mathematics, which is 70%, while for other reasons by 30%. Pretty fantastic amount in the range of 70% to avoid the math is not without cause;avaregly of those states had a bad experience in the context of mathematics courses where they are still at the previous level of education.

Mathematics and statistics are different, but in substance, they both have in common, especially in the calculation. Practically, statistics is only as an analytical tool in thesiswriting,however, it is also the same as a compulsory subject with importantrole and essence as other subjects (Schefler, 1987: 1-2). In that context, Statistics has significant and substantial contribution to the progress of the various fields of science (Santoso&Kusnadi, 1992: 1).

The shifting students' moral values with particular manners, speech, behaviour, and despair is something that is very alarming and even that is not a good trend in recent developments (Rochsun, 2009). Starting from this, it would be urgently needed a media enhancing the effectiveness of character education in student learning at the statistics subject, particularly, addressing the student problems in the process of transferring knowledge in the field of statistics, which are generally experienced by students in non-mathematic major

Game is an activity that has been long captive the students interest, by the children through adolescence, so it is not uncommon for teenagers and children using computer technology just to play, and not to learn. Based on some research, what we liked or loved would support us to learn these things though difficult. From what is preferred by many teenagers here, we use it as basis for the selection of media preparation games in the learning process called educational media game or *Edugam*

From some research, Educational games *Edugam*are superior in some aspects when compared to conventional teaching methods. One significant advantage is the animation that can improve memory so that the child can keep the subject matter in a longer time compared to conventional teaching methods (Marsh, et al,

2005; Clark, 2006). Through *Edugam*teachers can convey the subject matter through the game, so the students have been unconsciously learning the material while they are playing.

More than that, in addition to the material conveyed through *Edugam* teachers can also convey a certain message on each level, such as: "the truth always triumphs over evil", "do not easily give up the face of a problem," although the bitter honesty Esteem ", so that through this message participant students are expected not only cognitively clever, but has the ability in the real world, noble, speak and behave well.

It goes along the way that the government has been planning foreducation character building in teaching and learning process. Character education is a cultivation system of values to one's character, because according to Pamuji (2008: 10); Sailah (2008: 30), a person's success is not determined solely by their cognitive abilities but the character that can take a very important role even exceed the cognitive abilities. Character education is not just teaching what is right and what is wrong, but also forming good habits (habituation) so that students are able to behave and act upon the values that have become his personality. In other words, good character education should involve a good knowledge (moral knowing), feeling good or loving good (moral feeling) and behaviour (moral action) forming the embodiment of the unity of behaviour and attitudes of students. Although building character education is not easy, but ones must begin, as the proverb says "the early start is more difficult than the process".

Based on preliminary data facts and theoretical concepts above, resulting in a gap between expectations and reality in the context of statistical learning, the researcher interested in exploring the title of "Edugam Media Development Based on Education Character for Non-Mathematic Students at Statistic Subject .

The specific objectives of this research are: the products with edugam media based on character education for the statistics subjecton non-mathematic student. Regard to the achievement of these objectives, the researchers used Research and Development (R & D) type of research with the procedural model of development. Procedural models are descriptive models which outlines the steps to be followed to produce the product (Rusijono&Mustaji, 2008: 43).

Theoretically, this study is expected to contribute to the repertoire of knowledge as a new horizon in the context of learning. Practically, education game is exitingmedia learning makingthe students interested in learning even though the material being studied is considered difficult. Through education game, the students are not only to be smart cognitively, but also have the ability in the real world, noble, speak and behave well.

II. Literature Review

A. Media Learning

The word "Media" comes from the Latin term and is the plural form of the word medium which literally means an intermediary or introduction. The media is any tool that can be used as a message conveyer to achieve the goal of teaching. The process of learning is essentially the process of communication, which is a process of delivering a message from the message source through the channel / specific media to the message recipient. In the learning process, the use of the media has a significant role in these activities because of the vagueness of the material presented by the teacher, can be helped by presenting the media as intermediary in teaching. As a tool, the media has a function to pave the way towards achieving the teaching goal. It is based on the belief that the learning process with the help of the media will generate better process and learning outcomes than without the help of it.

Of the various terms above,it can be taken an outline that the definition of instructional media is everything used to help clarify the meaning and message of a learning process that will be delivered to students in order to stimulate thoughts, feelings and concerns of the learners.

According Wahono (2006), learning media assessment criteria consists of three aspects, among others: aspects of software engineering, instructional design aspects, aspects of visual communication, media *Edugam* (educational games)

B.   Media Edugam (Educational Games)

Edugam or educational game is a game-based learning. Learning with the base game or Game Based Learning (GBL) is a branch of real games related to applications that have defined learning outcomes. Generally, they are designed to balance the material with the game and the player's ability to retain and apply real-world subject matter. Games often have an element of fantasy that involves players in learning activities through narrative or storyline. Educational video games can motivate students.

Edugame is a learning method that uses the application of game / games that have been specifically designed to assist students in the learning process. By using *Edugame* we can provide stimulus to the three essential part of the learning that is Emotional, Intellectual, Psychomotoric.

But there are adverse effects that may arise, including:

1. There is a presumption that it is just a usual game

2. If you lose in this game you have to try again to start from starting points.

3. Playing games without enjoying the line or steps that has been prepared by the game.

Games made for a particular purpose. Usually the game makers have a specific purpose in making a game. The purpose of making a game (Jasson, 2009) include: entertaining, expanding the skill, agility training, embed massages, educating.

C.   Character Education

Referring to Law No. 20 of 2003 on National Education System, Chapter I, Article 1, paragraph 1, which reads "Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process, so that learners are actively developing his potential, has spiritual power of religion, self-control, personality, intelligence, noble character ". Meanwhile, Pramuji (2007: 62) states, that character education rests on the coaching mentality for students to adjust to the realities of life.

Character education is a cultivation system of values to one's character. Character education is not just teaching what is right and what is wrong. Moreover, character education is forming good habits (habituation) so that learners are able to behave and act upon the values that have become his personality. In other words, good character education should involve a good knowledge (moral knowing), feeling good or loving good (moral feeling) and behaviour (moral action) forming the embodiment of the unity of behaviour and attitudes of learners. In college education character, all the components (stakeholders) should be involved, including the components of education itself, i.e. the contents of the curriculum and the lecture (Sudrajat Ahmad, 2010).

Based on the some understanding of character education mentioned above, the character education is a cultivation system of values to one's character. Character education is not just teaching what is right and what is wrong. Rather an effort instilling good habits (habituation) so that students are able to behave and act upon the values that have become a personality, so cultivate moral knowing, loving good, moral feeling, moral action, thus forming the embodiment of the unity of students' behaviour and attitudes.

METHODS RESEARCH
A.   Method

The study entitled "Development of Media Edugam to Improve Effectiveness of Learning Character Education of Non-Mathematic Student at Statistics Subject" implemented in two phases. First phase is to produce products using the type of research and development, having produced a product, it is followed by the type of experimental research, which involves the experimental group and the control class. This experimental research is carried out in the second stage.

B. Research Design

The research design will be used at the stage is research and development stage used to develop Edugam media products of non-mathematic students. The product used in this research is a model of procedural development. Procedural models are descriptive models have the steps to be followed to produce the product (Rusijono&Mustaji, 2008: 43). Because in developing Edugammedia also contains measures from the early stages of development to create media products Edugam.

MediaEdugamthat had been produced in the research is the Garuda adventure looking for dragon rolls. In a mission to find the dragon rolls, the Garuda must pass through five levels of different obstacles. Garuda had to pass through the barriers and look for secret box in each level. Each box contains material to answer the questions that will be asked to go to the next level.

The steps taken to produce this *Edugam* are:

1.   Analysis.
This analysis phase involved in:
a. Analysis of the problem
Problem analysis is used to investigate the problems that arise in the learning activities of related field and identify possible solutions that can be used to resolve the issue.
b. Media content analysis
Media content analysis is an analysis of the learning component that includes standards of competence, basic competence, learning objectives and content of media materials to be presented so that the preparation of the media have a definite purpose and content of the materials prepared in accordance with the syllabus.

2. Product Design
The design phase is the design of the system to obtain an effective media and interactive learning material that has been predetermined. At this stage it is necessary sketch interface design to facilitate programmers to translate into a more tangible form. Design made in the storyboard to facilitate the implementation of designing

3. Design Implementation

Implementation phase is designing the translation process into the actual display. Development used is based multimedia computer program used to translate this form of program, designing Macromedia Flash to create animations in the form of images and text.

4. Testing

This stage is the stage where this learning media in check. This stage is more to the examination of the navigation button if there is a mistake giving orders, cannot be accessed navigation, error checking on the material interfaces, or typographical errors. This stage is checked one by one by the manufacturer manually and will be checked again by the media expert and expert material on the validation phase of learning media.

5. Validation Expert

This stage is the stage where this learning medium is in a test. Examination navigation button if there is a mistake giving orders, navigational errors, and errors in the material. The next step is the validation by experts or expert judgment.

This is done to determine whether the media are made fit for use as a medium of learning or not. If the validated media meets the category and do not need to be revised, the media*Edugam*ready to be implemented in the field. The experts are to assess the completeness and suitability of media in which appropriate materials at the syllabus, and assess the design media. Respondent in this media research are students majoring in non-mathematic.

6. Revision

Once validated by experts, then it revised based on input from experts. If the validated media meet category and do not need to be revised, the interactive learning media is ready to be implemented.

7. Feasibility

After media Edugam properly stated eligible by the experts, the media tested in the field (in this study at Institute of Teacher Training and Education Budi Utomo Malang). The test respondents are 50 students of non-mathematic major. Students tried to media that has been made and provide feedback.

8. Media Improvement

Once tested with students as respondents, then the improvement has been made upon the students input, and if it is not possible to be improved, it will be the input for further research.

9. Product

The resulted product is an educational game for statistics subject that tells about the adventures of Garuda in the search for the dragon rolls.

III. Results And Discussion

A.   RESULTS

Material validation provided by the statistics material expert aimingat measuring the suitability of "MEDIA EDUGAM" with the learning process.

Table of MaterialExpert Evaluation Analysis Result

Num	The Aspect of Assessment	Statement	1st Revision	2nd Revision
1	Content Quality	The Content is in accordance with the basic competence and indicator	2 = Disagree	4 = Agree
		The use of language in the Edugam media is a good	2 = Disagree	4 = Agree
2	Learning Quality	Learning Quality learning objectives using Media Edugam Statistics is clear	2 = Disagree	5 = Strogly Agree
		Exercises that can be used to measure a student's ability	1 = Strongly Disagree	4 = Agree
		Media Edugam Statistics can improve student learning motivation	3 = Quite Agree	5 = Strongly Agree
		Media Edugam Statistics can improve student learning motivation	3 = Quite Agree	4 = Agree
		This Edugam Media Statistic can attract students'	2 = Disagree	5 = Strongly agree
		Feedback exercises that exist in the Media Edugam effective Statistics	2 = Disagree	4 = Agree
		Instructions for use in the media is clearly Edugam Statistics	2 = Disagree	5 = Strongly Agree
3	Quality Interactions	The quality of the learning interaction using Media Edugam Statistics is good	2 = Disagree	5 = Strongly Agree
		Text / phrase in the Edugammedia is readable at statistic	2 = Disagree	5 = Strongly Agree
		The Navigation in the madia is easy to use	2 = Disagree	5 = Strongly Agree
4	Display Qualty	The selection of color is properly choosed or good in this media	2 = Disagree	5 = Strongly Agree
		Text color is in accordance with the background color	2 = Disagree	5 = Strongly Agree
		The button placement in this media Edugam is right	2 = Disagree	5 = Strongly Agree

		The button size and color in this Edugam media is precise	2 = Disagree	5 = Strongly Agree
		Font choice and size is good	2 = Disagree	5 = Strongly Agree
		The animation in this media display is good	2 = Disagree	5 = Strongly Agree
		The simulation quality of independent activity is good	2 = Disagree	5 = Strongly Agree
		The Intro quality in this Edugam media is good	2 = Disagree	5 = Strongly Agree

B. Media Expert Validation Result

Num	The Aspect of Assessment	Statement	1st Revision	2nd Revision
1	Edugam Media Exterior Display	The attractiveness of the pictures	3 = quite good	5 = very good
		The accuracy of the picture cover choice	4 = good	5 = Very good
2	Edugam media Content	The Motion picture in Edugam media	2 = Less good	4 = good
		The accuracy of media choice content	2 = Less good	4 = good
1.	The language usage in Edugam media	The language used in Edugam media is in accordance with the rules of EYD	3 = Quite good	5 = Very good
		The language used in this media is comminicative and easy to understand	3 = Quite good	5 = Very good
4	Edugam Media Interior Display	The suitability of the color choice of the interior backgroundin Edugam Media	2 = Less good	4 = good
		The text color suitability with the background	2 = Less good	5 = Very good
		Precision of the button placement in the media Edugam	2 = Less good	5 = Very good
		Size and colour accuracy of the button in Media Edugam	3 = Quite good	5 = Very good
		The Animation displayed in this media at statistics subject is good	3 = Quite good	5 = Very good

C. Testing Products Results

Num	Statement	Answer	Percentage %
	Purpose and Content Quality		
1	By using this Edugam media I can know my goals of the study clearly	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 5% 21% 74%
2	I can understand this media manual instruction	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 9% 11% 80%
3	I can learn the Statistics material through this Media	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 9% 11% 80%
4.	I am easily interact with this media	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 23% 74%
	Technique Quality		
5	I can use this media easily	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 5% 23% 72%
6	This media has the attractive intro (opening)	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 21% 76%
7	The Edugam media has attractive display	1. Strongly Disagree 2. Disagree 3. Simply Agree	 3%

| | | 4. Agree | 22% |
		5. Strongly Agree	75%
8	The color composition in this Edugam media is interesting	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 4% 21% 75%
9	I am easily read the texts, word and sentences in this media	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 7% 19% 74%
10	I am easily understand the language in this media	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 20% 77%
11	I can easily use the buttons in this media	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 4% 21% 75%
12	The instructions in this media is clear	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 5% 20% 75%
13	The questions in this media are challanging	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 23% 74%
14	Provided score in the excersises help me to measure my ability	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 7% 24% 69%
15	By Providing evaluation in the excersises help me to measure my ability	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 4% 21% 75%
	Instruction and Learning Quality		
16	This media motivate me to learn Statistics	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 5% 20% 75%
17	this media interest me to learn the statistic material	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 5% 23% 72%
18	this media makes me more active in learning Statistics	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 21% 76%
19	This media has given me opportuniy to learn according to my ability	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 22% 75%
20	This media can facilitate me to learn independently	1. Strongly Disagree 2. Disagree 3. Simply Agree 4. Agree 5. Strongly Agree	 3% 23% 74%
21	I want to leran the other subject using the same kind media	1. Strongly Disagree 2. Disagree 3. Simply Agree	 4%

| | | 4. Agree | 21% |
| | | 5. Strongly Agree | 75% |

1. Discussion of Material Expert Analysis Results
a. Material Expert Analysis Results 1
Based on the results of the first validation matter experts (Dr.Wiwin Sri Hidayati, Pd) it can be explained as follows:

- **Quality Content**

After 2nd revision, the quality aspect of content received an average score of 4, which means material expert agree that the language used in the media as well as the content is in accordance with basic competencies and indicators

- **Quality Learning**

After 2nd revision, the quality aspect of learning received an average score of 4, 5 which means material experts agree that the Edugam media can increase student motivation and interest in learning, can facilitate students to learn independently, effective exercises and can measure the ability of students, as well as manuals and learning objectives in the Edugam media arevery clear.

- **Quality of Interaction**

After 2nd revision, the quality aspect of interaction received an average score of 5 means material experts agree that the quality of the learning interaction in media Edugam is excellent. text / phrase is easy to read and the navigationin this Edugam media is easy to use.

- **Display Quality**

After the 2nd revision on the quality aspect of interaction, it received an average score of 5 which means material experts agree that the quality of the display in the Edugame media is very nice.

b. Results Matter Expert Analysis II
Based on the results of the 2nd validationby material experts (LikninNugraheni, S.Si, Pd) it can be explained as follows:

- **Quality Content**

After 2nd revision, the quality aspect of content received an average score of 4, which means material expert agree that the language used in the media as well as the content is in accordance with basic competencies and indicators

- **Quality Learning**

After 2nd revision, the quality aspect of learning received an average score of 4, 5 which means material experts agree that the Edugam media can increase student motivation and interest in learning, can facilitate students to learn independently, effective exercises and can measure the ability of students, as well as manuals and learning objectives in the Edugam media are very clear.

- **Quality of Interaction**

After 2nd revision, the quality aspect of interaction received an average score of 5 means material experts agree that the quality of the learning interaction in media Edugam is excellent. text / phrase is easy to read and the navigation in this Edugam media is easy to use.

- **Display Quality**

After the 2nd revision on the quality aspect of interaction, it received an average score of 5 which means material experts agree that the quality of the display in the Edugame media is very nice.

2. Discussion of Results Analysis of Media Experts
Based on the results of media expert validation (AdiWijayanto, Kom, M.Or) it can be explained as follows: as a learning media, Edugam media is good and very worthy of further used.

3. Discussion of Test Results
Based on the test results EdugameStatistics Media products can be described as follows:
a. Quality of the content and purpose
Based on the results of the student questionnaire that follows the trials, it is found that the quality aspect of the content and purpose as much as 77% answered strongly agreed, 16.5% answered agree, 6.5% answered quite agree. This means that the student can know the media Edugamelearning objectives, understand the usage instructions, can learn and easy to interact.
b. Technical quality
Based on the results of the student questionnaire that follows the trials found that the technical quality aspects as much as 74.27% answered strongly agree, 21.36% answered agree, 4.37% answered quite agree. This means that the media Edugamecan be applied to the student.

c. The quality of learning and instructional

Based on the results of the student questionnaire that follows the trials, it is found that the quality of learning and instructional aspects as much as 74.5% answered strongly agreed, 21.6% answered agree, 3.9% answered quite agree. This means that the Edugam media can increase student motivation and interest in learning, can facilitate students to learn independently, effective exercises and can measure the ability of students, as well as manuals and learning objectives inthe Edugame media are very clear.

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