

THE DEVELOPMENT OF EDUCATIONAL GAME “WHO WANTS TO BE AN ACCOUNTANT” TO IMPROVE STUDENT’S LEARNING OUTCOMES

PENGEMBANGAN GAME EDUKASI “WHO WANTS TO BE AN ACCOUNTANT” UNTUK MENINGKATKAN HASIL BELAJAR SISWA

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Abstract

This research aimed to: 1) Developed an educational game Who Wants to be an Accountant as learning media for student class X Accounting SMK Bhakti Karya 1 Magelang, 2) Determined the feasibility of educational game Who Wants to be an Accountant based on assessment by material expert, media expert and accounting students, 3) The improvement of accounting learning outcomes on competency standard completed the accounting cycle trading companies after used the educational game Who Wants to be an Accountant. This research adapted from ADDIE models which is type of Research and Development (R&D). The results showed that development of educational game “Who Wants to be an Accountant” using *Adobe Flash Software* and passed 5 stages: 1) Analysis, 2) Design, 3) Development, 4) Implementation, 5) Evaluation. The feasibility level of this educational game obtained from the average score according to the assessment of : 1) Material expert had 4,58 (Very Feasible), 2) Media expert had 4,19 (Feasible), 3) Individual trial had 4,38 (Very Feasible), 4) Small group trial had 4,48 (Very Feasible), 5) Field trial had 4,55 (Very feasible). The educational game Who Wants to be an Accountant can improve the accounting learning outcomes. Based on paired sample t-test the game get t result -15.053 with significant 0,000 it show that the game can improve the learning outcomes. The improvement of learning outcomes was 22,58 % from average pretest score 67,83 and average posttest score 81,76. It can concluded that The Educational Game Who Wants to be an Accountant can improve the student’s learning outcomes.

Keywords: accounting learning media, educational game , *Who Wants to be an Accountant*, Learning Outcomes, The Cycle of Trading Companies, ADDIE, Vocational High School.

Abstrak

Penelitian ini bertujuan untuk: 1) mengembangkan game edukasi “Who Wants to be an Accountant” sebagai media pembelajaran untuk siswa kelas X Akuntansi SMK Bhakti Karya 1 Magelang, 2) Mengetahui kelayakan game edukasi “Who Wants to be an Accountant” berdasarkan penilaian dari ahli materi, ahli media, dan siswa akuntansi, 3) Mengetahui peningkatan hasil belajar akuntansi pada Standar Kompetensi Menyelesaikan Siklus Akuntansi Perusahaan Dagang setelah menggunakan game edukasi “Who wants to be an Accountant”. Penelitian ini merupakan penelitian pengembangan atau Research and Development (R&D) yang diadaptasi dari model pengembangan ADDIE. Hasil penelitian menunjukkan pengembangan game edukasi “Who Wants to be an Accountant” menggunakan software Adobe Flash dan melalui 5 tahap pengembangan yaitu : 1) Analisis 2) Desain 3) Development/Pengembangan 4) Implementasi, 5) Evaluasi. Tingkat kelayakan game edukasi “Who Wants to be an Accountant” diperoleh dari rata-rata skor berdasarkan penilaian dari: 1) Ahli materi

diperoleh 4,58 (Sangat Layak), 2) Ahli media diperoleh 4,19 (Layak), 3) Uji coba perorangan diperoleh 4,38 (Sangat Layak), 4) Uji coba kelompok kecil diperoleh 4,48 (Sangat Layak), 5) Uji coba lapangan diperoleh 4,55 (Sangat Layak). Game edukasi "Who Wants to be an Accountant" dapat meningkatkan hasil belajar siswa. Berdasarkan hasil uji t berpasangan diperoleh t hitung 15.053 dengan sig. 0,000 yang menunjukkan game dapat meningkatkan hasil belajar. Peningkatan hasil belajar sebesar 22,58 %, dari rata-rata skor pretest diperoleh 67,83 dan rata-rata skor posttest diperoleh 81,76. Berdasarkan hasil penelitian, maka dapat disimpulkan game edukasi "Who Wants to be an Accountant" dapat meningkatkan hasil belajar siswa.

Kata Kunci : Media Pembelajaran Akuntansi, game edukasi, Who Wants to be an Accountant, Hasil Belajar, Siklus Akuntansi Perusahaan Dagang, ADDIE, SMK.

INTRODUCTION

Education is the pillar of nation, which means education is a way to achieve the goals and objective a nation. The objectives of the nation of Indonesia is essentially already regulated in the fourth paragraph of the preamble of Undang-Undang Dasar 1945. It contains : (1) to form a Government of the State of Indonesia that protect all Indonesia people and the entire homeland of Indonesia, (2) to develop the welfare of the people, (3) to develop the nation's intellectual life and (4) to participate in the world orderliness based on freedom, eternal peace and social justice.

Develop the nations intellectual lifes is one of the pillars for the realization of the objectives of education nation Indonesia which can be done through learning activities. In the learning activities, there is a learning process to determines the goals of learning is achieved or not. Learning process can occur if there is an interaction and feedback between

teacher and student. Wina Sanjaya (2013:52) argues that to support learning process it must also be supported by several factors, such as the environment and infrastructure.

Teacher is an educator who has an important role in learning. Besides of the teacher, student is one of society who has a potential to develop him/herself. In the learning activity students is only a subject who received everything from the teachers.

Environment learning in the learning process should be considered, because a good environment can make the learning objectives achieved. One of the environment is a classroom. Classroom is a place for learning process. It is not just about school building, but it is also about a place who can make a learning activity and interaction between teacher and students,

Learning process will be maximum, if there is a good infrastructure. There are several infrastructure in a school such as,

school building and learning media tools. From the descriptive above, it concludes that there are four important factors to achieved learning process goals, such as teachers, students, environment and infrastructures.

Computer is one of the tools that are required in order to support school learning process like ICT subjects. The learning process will be more optimally if it supported by a learning media. Learning media is tool to deliver the materials by the teacher for the students to achieve the learning objectives.

Computer is one of learning media that involved student to participate and give a feedback in the learning process. From several research, have a fact that using computer for learning media can improve students learning outcomes. So it necessary to created computer based learning.

SMK Bhakti Karya 1 Magelang is one of school that have computer laboratorium and LCD for learning process, but there are no ones teacher who develop a learning media based on computer. Based on interview with Accounting Teacher in SMK Bhakti Karya 1 Magelang, the teacher just using the computer laboratorium for deliver ICT material. The Accounting Teacher in SMK Bhakti karya 1 Magelang, just using whiteboard, worksheet and LKS for delivering material to students.

The effect of the way teacher to teach make the students did not pay attention. They often playing handphone or diccussing with other students. The learning activities very monotonus, the students just listening what are delivered by the teacher. The teacher deliver the material using conventional methods and they always give exercise to the students, so it make the students feel bored. It influenced the learning outcomes of students less expexted.

The learning outcomes achieved by the students Class X Accounting at SMK Bhakti Karya 1 Magelang is lower. Based on prasurey at April 4th 2015, the activity students when answer the excersice from the teacher is less true. They were confused to answering the question. In addition, the learning outcomes is lower evidenced by the result of daily test that given by the teachers on February 6th 2016. There are so many students did not reached the KKM (Kriteria Ketuntasan Mnimal) especially in adjustment entries is the part of Competency Standard Completed The Accounting Cycle of Trading Companies. Just 50 % of 23 students who could passed the KKM.

In this case, teachers have challenge to omit students's bored and to improve students learning outcomes by creativity and learning process. Fun learning can created by the

interactive of models, methods or media so it can make students interested and excited in the learning process.

Computer can be used for developing learning media. Onetype of computer based learning is game. Based on data from Komang Budi Aryasa, The Senior Manager Content and Incubation of Telkom in Jakarta cited from www.teknologi.news.viva.co.id on November 20th 2015 at 11.13 a.m, said Indonesian gamers has increased 33% every years. From that we can conclude that peoples in Indonesia have hight interested on playing game. It is happen because game is very interesting and entertaining. If games are developed optimally, especially packed in the learning so teacher can used it for learning media which interesting and exciting. By using interesting and exciting leanring media it can raise student interested learning so all the students can increase the learning outcomes and passed the KKM.

To develop computer game we need software. Adobe flash is one of software which is an open platform, it is mean that it can be used in all types of computer. To operate and understanding the language program of adobe flash is not difficult, so teacher can develop educatiol game for learning media by using adobe flash. Develop game by using adobe flash can be used by

student, when they are at home, because it can installed in all type computer.

Based on survey by using questionnaire on November 3rd 2015 at SMK Bhakti Karya 1 Magelang all the students grade X Accounting have known and interested to played Who Wants to be a Millionaire game. From that, researcher have an idea to adopted Who Wants to be a Millionaire game to Who Wants to be an Accountant game which containing Accounting Cycle of Trading Company quiz.

From the problem background, the researcher have interested to make research with title The Development Of Educational Game Who Wants To Be An Accountant As Learning Media To Improve Student Learning Outcomes In Class X Accounting SMK Bhakti Karya 1 Magelang Academic Year Of 2015/2016.

RESEARCH METHOD

Research Type

This research is a Research and Development (R&D).

Time and Place

The research was conducted in SMK Bhakti Karya 1 Magelang at Jetis Elo Road No. 3 Magelang, Central Java on September 2015-May 2016

Subject of Research

The research subjects were one material expert, one media expert, one accounting teacher of SMK Bhakti Karya 1 Magelang, and 23 students of Class X Accounting SMK Bhakti Karya 1 Magelang.

Procedure

This research using ADDIE procedure. ADDIE was developed by Dick and Carrey (1996) to design a learning system (Endang Mulyatiningsih, 2011: 184). It stands for Analysis, Design, Development, Implementation, and Evaluation. The following is the explanation of five development stages adjusted with the research:

a. Analysis Stage

1) Curriculum Analysis

This analysis was conducted to find out the basic Competence that can be loaded in a game that would be developed. The researcher choose standard of competence Completed the Accounting Cycle Of Trading Companies because the learning outcomes of this subject is low.

2) Student's Needs Analysis

After conducting observation, the researcher found problem source in terms of teachers, schools facilities and

learning outcomes. The teacher used conventional media to deliver the materials, so the students get bored and it make the learning outcomes low . The facilities of laboratorium is not optimal, it can be used for computer based learning media. The researcher inspired to develop computer based learning media that can be used to delivery material so the students will attractive to use it for learning that can improve student learning outcomes.

3) Media Needs Analysis

Media needs analysis related to hardware and the software that used to develop the game. The hardware are laptop, mouse, keyboard and speaker active, while the software are Ms. Windows 7, Adobe Flash CS6, Corel Draw 12 and Adobe Audition.

4) Goal Formulation

The educational game "Who Wants to be an Accountant" was expected to be used by the students for learning media and hope it can enhance the understanding of the students regarding the Accounting Cycle Of Trading Companies so that student learning outcomes were expected to be increased.

b. Design Stage

1) Material and Question Framework

The material is The Accounting Cycle of Trading Companies divided into 6 quizzes with total number of 114 questions.

2) Flowchart

In this media flowchart contains steps and requirements that have to be taken for the players to play games or often called game play.

3) Storyboard

Story boards created to simplify the process of creating media that contains a description of each display. The interface appeared in this game include the preface page, pages menu, page content, the starts page game, game instructions, page and profile page.

4) Arrangement of Media Assessment Instrument and Learning Outcomes Instrument

Media assessment instrument was questionnaire to assess the feasibility of the media and the learning outcomes instruments is test questions.

c. Development Stage

1) Develop educational game "Who Wants to be an Accountant"

At this stage the researcher create and develop the product based on the desain stages.

2) Validation of the product feasibility by the expert

Validation process was carried out by material and media experts. The results is in the form of suggestions, comments and feedback.

3) Product Revision

The researcher revise the product based on the analysis of suggestions and comments from the expert.

d. Implementation Stage

1) Individual Trial

The product tested by 3 students in the individual trials.

2) Small Group Trial

The product tested by 7 students in the small group trials.

3) Field Trial

The product tested by 23 students in the field trials. In this stage the researcher also give pretest and posttest to measure the improvement of student's learning outcomes.

e. Evaluation Stage

1) Formative Evaluation

A formulative evaluation was conducted in 2 stages, alpha test and beta test. According to Prabakti Utama

(2011) alpha test aims to identify and eliminate as much as possible the issues before finally distributed to the user, while the beta test is an evaluation entirely done by user.

2) Sumative Evaluation

Abdul Ghofur (2012:40) summative evaluation is intended to find out the level of students' mastery of competencies which have been taught. In this research summative evaluation was done by learning outcomes test (pretest and posttest) at the stage of field trial.

3) Final Product

The final product of this development Research was the Educational Game Who Wants to be an Accountant which had been completed in validation and evaluation.

Data Collection Technique and Analysis

a. Data Collection Technique

1) Questionnaires

Questionnaire is a written statement that is used to obtain information, private information or information that the respondents already know, from respondents. Meanwhile, according to Sugiyono (2012): 199), questionnaire is a data collection

technique that is done by giving a set of questions or written statements to respondents to be answered.

2) Learning Outcomes Tests

According to Eko Putro Widyoko (2012:51) the test of learning outcomes is a test used to measure achievement or competence of someone after studying something. The tests was used to measure student learning outcomes before and after using educational game Who Wants to be an Accountant on the standards of competency Completing The Accounting Cycle of Trading Companies.

b. Data Analysis

From the data and information obtained, the data analyses that needed to be conducted in this research were:

1) Qualitative descriptive analysis.

Qualitative data are in the form descriptions obtained from documentation, interviews, and observation (Moh. Ali, 2010: 322). Qualitative descriptive analysis technique was used to process data from validation of material experts, media experts, and students' responses.

2) Quantitative descriptive analysis

According to Moh. Ali (2010: 324), “Quantitative data are in the form of numbers obtained from a total of a calculation or an assessment. The data are scores from a calculation or an assessment, rating scale scores and other types of scale scores and test scores.” In this research, quantitative descriptive analysis was used to process data obtained from questionnaires and data learning outcomes test. It aimed to know the feasibility of the educational game “Who Wants to be an Accountant” and the improvement of learning outcomes after using the game.

a) Data Analisis of Media Feasibility

(1) Converting qualitative data into quantitative data

Tabel 1. Assesment Aspects of Validation Questionnaire using Likert Scale

Criteria	Score
<i>Sangat Setuju</i>	5
<i>Setuju</i>	4
<i>Netral</i>	3
<i>Tidak Setuju</i>	2
<i>Sangat Tidak Setuju</i>	1

(2) Calculating the score of each aspects using a formulation as follows:

$$X = \sum X_i / n$$

Explanation :

X = average score

$\sum X_i$ = total score

n = number of subject

(Sugiyono, 2011:49)

(3) Converting average score:

Tabel 2. The Conversion of Quantitative data

No	Interval	Category
1	$X > 4,21$	Very feasible
2	$3,40 < X \leq 4,21$	Feasible
3	$2,60 < X \leq 3,40$	Quite Feasible
4	$1,80 < X \leq 2,60$	Less feasible
5	$X \leq 1,80$	Not feasible

Source : Sugiyono (2011:49)

b) Data Analysis of Learning Outcomes

(1) Converting the average value of the results of pre-test and post-test using formulation as follows :

$$X = \frac{\sum x}{n}$$

Explanation :

X = average value (mean)

$\sum x$ = number of value

n = number of individual

(Tulus Winarsunu, 2002:32)

(2) Measure the result of pre-test and post-test by using *paired sample t-test* formulas :

$$t_{hitung} = \frac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r - \left(\frac{s_1}{s_2}\right)\left(\frac{s_1}{n_2}\right)}$$

Explanation :

\bar{x}_1 = test 1 average

\bar{x}_2 = test 2 average

s_1^2 = test 1 variance

s_2^2 = test 2 variance

r = correlation between test

s_1 = test 1 raw byway

s_2 = test 2 byway

(3) Determine the selected hypothesis.

For paired-samples t-test values of df (degree of freedom) is the number of samples reduced one or n-1. In: t- count > t-table = differ significantly (H0 is rejected) and in t- table < t-count = did not differ significantly (H0 is accepted).

RESEARCH RESULT AND DISCUSSION

Description of Research Subjects

The subjects of this development research were one material expert, one media expert, one accounting teacher, and all students of grade X Accounting of SMK Bhakti Karya 1 Magelang.

Research Results

a. Developing The Educational Game “Who Wants to be an Accountant” as Learning Media

The procedure of the research consisted of several stages explained is :

1) Analysis Stage : curriculum analysis, student’s needs analysis, media’s needs analysis & goal formulation.

2) Design Stage : material and question framework, flowchart, storyboard and research instrument.

3) Development Stage : developing the media, validation by expert and product revision.

4) Implementation Stage : individual trial, small group trial and field trial.

5) Evaluation Stage : formative evaluation, sumative evaluation and final product.

b. Validation of The Product Feasibility

The collected data were quantitative as the primary data and the qualitative data were comments and suggestions from the validator. The educational game “Who Wants to be an Accountant” were validated by two material expert and one media expert

1) Material Expert

Tabel 3. Recapitulation of validation results of the educational game “Who Wants to be an Accountant by material expert.

X	Lecturer		Teacher		Mean
	Sc ore	Me an	Sc ore	Me an	
1. Learning Desain	53	4,8 1	50	4,5 4	4,68
2. Languag & Question	42	4,6 6	39	4,3 3	4,50
Total	95	4,7 3	50	4,5 4	4,68
Category	Very		Very		Very

Feasible	Feasible	Feasible
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Based on table 2 of The Conversion of Quantitative data, it was known that the mean score (X) was 4.58 on the range values $4.21 < X \leq 5.0$ which means media developed get category "Very Feasible". The validation results showed that the game was developed according to learning design and language & questions aspects .

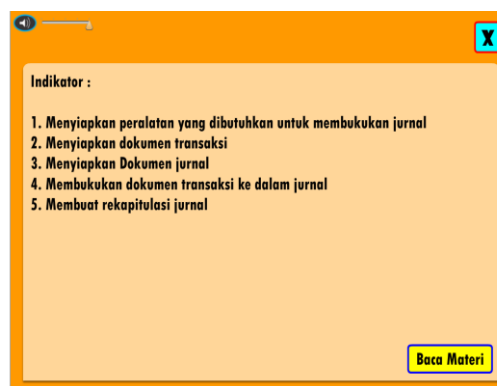
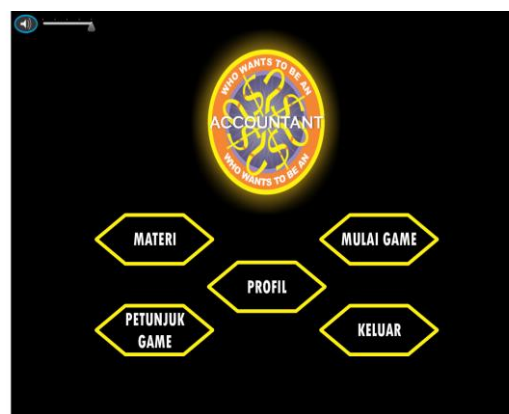
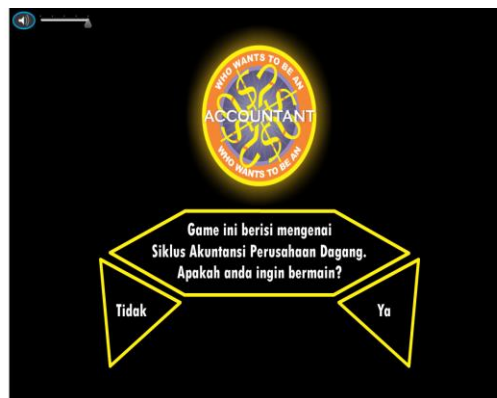
2) Media Expert

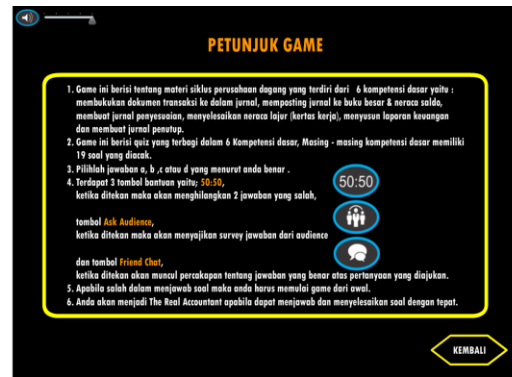
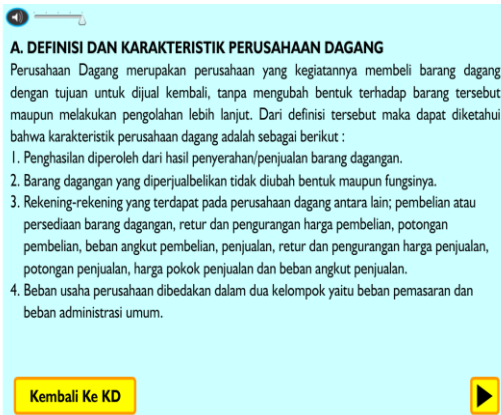
Tabel 4. Recapitulation of validation results of the educational game “Who Wants to be an Accountant” by media expert

Feasibility	Score	Mean
1. Programming quality	48	4,00
2. Appearance quality	57	4,38
Total	105	12,38
Mean score	52,5	4,19
Category	Feasible	

Based on table 2 of The Conversion of Quantitative data, it was known that the mean score (X) was 4.19 on the range values $3.41 > X \leq 4.20$ which means media developed got category "Feasible". The validation results showed that the game was developed according to programming and appearance quality aspects .

c. Educational Game “Who Wants to be an Accountant”

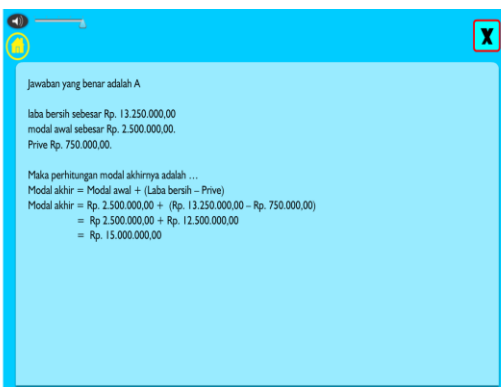




d. The Student's Assesement of the Educational Game "Who Wants to be an Accountant".

The subjects of the Field test were 23 students of grade X Accounting of SMK Bhakti Karya 1 Magelang in the academic year 2015/ 2016. Students give assessment of the feasibility of the media based on the programming quality, learning design and appearance quality aspects by using questionnaire.

Tabel 5. Recapitulation of assessment the educational game "Who Wants to be an Accountant" in the filed test.



Feasibility Aspect	Score	Mean
1. Programming quality	652	4,72

2. Learning Design	722	4,48
3. Appearance quality	922	4,45
Total	2296	4,55
Category	Very Feasible	

Based on table 2 of The Conversion of Quantitative data, it was known that the mean score (X) was 4.55 on the range values $4.21 < X \leq 5.0$ which means media developed get category "**Very Feasible**". The assessment results showed that the game was developed according to programming quality, learning design and appearance quality aspects.

- e. The Improvement of Student's Learning Outcomes after Used The Educational Game "Who Wants to be an Accountant".

The goal of this research is to know the improvement of student's learning outcomes after using the educational game "Who Wants to be an Accountant. The subject of the test were 23 students of grade X Accounting SMK Bhakti Karya 1 Magelang. The improvement can be seen by the measurement of *pre-test* and *post-test*. The total question of the test are 20 tested empirically with Cronbach's Alpha score 0.735 with instrument reliability ≥ 0.700 .

Tabel 6. Recapitulation of the result *pretest* and *posttest*

N	<i>Pretest</i>	<i>Posttest</i>
1	75	95
2	70	80
3	80	95
4	75	90
5	85	100
6	60	80
7	75	85
8	50	80
9	70	85
10	65	90
11	75	95
12	85	100
13	55	80
14	80	95
15	75	90
16	55	75
17	75	95
18	55	85
19	75	90
20	65	90
21	60	85
22	55	80
23	45	75
Total $\sum x$	1560	2015

Explanation :

Pre-test

$$\sum x = 1560$$

Total individual (n) = 23

$$\text{Mean (X)} = \frac{\sum x}{n} = \frac{1560}{23} = 67,83$$

Minimum value = 45

Maximum value = 85

Post-test

$$\sum x = 2015$$

Total individual (n) = 23

$$\text{Mean (X)} = \frac{\sum x}{n} = \frac{2015}{23} = 87,61$$

minimum value = 75

maximum value = 100

Percentage of Learning Outcomes Improvement

$$\text{difference mean (X)} = 87,61 - 67,83 = 19,78$$

$$\begin{aligned} \text{Percentage} &= \frac{\text{difference X}}{\text{X posttest}} \times 100 \\ &= \frac{19,78}{87,61} \times 100 \\ &= 22,58 \% \end{aligned}$$

Beside measured using the formulas improvement of learning outcomes on this research was also measured the result of test by using *paired sample t-test*.

Tabel 7. Recapitulation of Paired Statistics

Mean	Corre	Sig.	T	Sig.
Pr	Po	lation		(2-
ete	stte			tailed)
st	st			
67.	87.	0.873	0.00	-
83	61	0	15.053	0.000

Table of paired sample statistics showed the mean of total score of *pre-test* was 67,83, while the mean of total score of *pest-test* was 87,61. Table of paired sample correlations showed that correlation of two

variables was 0.873 with sig 0.000. It means that correlation of the total score of learning outcomes (*pretest* and *posttest*) based on before and after using the media was strong and significant.

If $t_{\text{hitung}} \geq t_{\text{table}}$, so the hypothesis H0 was rejected, on the contrary, Ha was accepted. In t-test, t hitung was -15.053 with sig (p) 0.000. Because $t_{\text{hitung}} > t_{\text{table}}$ showed that H0 was rejected and Ha was accepted. It showed that the development of the educational game “Who Wants to be an Accountant” could improve students’ learning outcomes. It influenced the score of the students’ learning outcomes.

CONCLUSSION AND SUGGESTION

Conclusions

According to the research result and discussion of the research, it can be conclude that:

- The Educational Game “Who Wants to be an Accountant” is Feasible as learning media of SMK Bhakti Karya 1 Magelang
- The Educational Game “Who Wants to be an Accountant” can increase the students’ learning outcomes at SMK Bhakti Karya 1 Magelang

Suggestion

- a. It needs more materials, so students get more complete materials.
- b. It should be able to be applied to students not only during the accounting learning hours, but also everytime and everywhere both in the school or at home
- c. It need for further development of that Educational Game Who Wants to be an Accountant so it can used not only for the computer or laptop but also can be used in mobile phones

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