

**O desenvolvimento da aplicação de material didático com base no programa visual  
básico para aprimorar a capacidade de redigir demonstrações financeiras**

**The development of teaching material application based on visual basic program to  
enhance ability in drafting financial statements**

**El desarrollo de la aplicación de material didáctico basado en un programa básico visual  
para mejorar la capacidad de redacción de estados financieros**

Recebido: 25/11/2019 | Revisado: 26/11/2019 | Aceito: 27/11/2019 | Publicado: 29/11/2019

**Warya Satar**

ORCID: <https://orcid.org/0000-0001-8028-9227>

Universitas Lampung, Indonesia

E-mail: [satarwarya@gmail.com](mailto:satarwarya@gmail.com)

**Sudjarwo**

ORCID: <https://orcid.org/0000-0002-8134-7238>

Universitas Lampung, Indonesia

E-mail: [profdrsudjarwo@gmail.com](mailto:profdrsudjarwo@gmail.com)

**Pujiati**

ORCID: <https://orcid.org/0000-0002-9228-5191>

Universitas Lampung, Indonesia

E-mail: [pujiati@fkip.unila.ac.id](mailto:pujiati@fkip.unila.ac.id)

**Resumo**

Este estudo tem como objetivo conhecer o desenvolvimento e a eficácia da aplicação de material didático para contabilidade de negociação usando o programa visual basic para melhorar a capacidade dos alunos de redigir demonstrações financeiras. A metodologia utilizada neste estudo é de pesquisa e desenvolvimento, utilizando delineamento pré-experimental. Existem dez etapas na análise do material didático usando a abordagem de pesquisa e desenvolvimento. No entanto, este estudo utiliza apenas seis etapas, incluindo (1) pesquisa e coleta de informações, (2) planejamento, (3) desenvolvimento de forma preliminar de produto, (4) teste preliminar de campo, (5) revisão do produto principal e (6) principal Teste de Campo. Este estudo é realizado na Al-Kautsar High School, em Bandar Lampung, com 35 alunos do 12º ano como amostra. O resultado constatou que o desenvolvimento de aplicativos de material didático para contabilidade de negociação usando o programa visual

basic havia sido validado por especialistas e declarado viável para uso. A eficácia também pode ser vista pela diferença nas pontuações de pré-teste e pós-teste dos alunos, realizadas antes e depois do uso do aplicativo de material didático. Assim, em resumo, o uso do aplicativo de material didático para contabilidade de negociação usando o programa visual basic é capaz de melhorar a capacidade dos alunos de se tornarem melhores.

**Palavras-chave:** Aplicação de material didático; Programa visual básico; Capacidade de desenho.

### **Abstract**

This study aims to know the development and effectiveness of teaching material application for trading accounting using visual basic program in enhancing students' ability to draft financial statements. The methodology used in this study is research and development using pre-experimental design. There are ten steps in analyzing the teaching material using research and development approach. However, this study only uses six steps including (1) Research and Information Collection, (2) Planning, (3) Develop Preliminary Form of Product, (4) Preliminary Field Testing, (5) Main Product Revision, and (6) Main Field Testing. This study is done in Al-Kautsar High School in Bandar Lampung with 35 students of 12th grade as the sample study. The result found that the teaching material application development for trading accounting using visual basic program had been validated by experts and declared feasible to be used. The effectiveness also can be seen from the difference in students' pretest and posttest scores which done before and after using the teaching material application. Thus, in summary, the use of teaching material application for trading accounting using visual basic program is able to enhance students' ability to become better.

**Keywords:** Teaching material application; Visual basic program; Drafting ability.

### **Resumen**

Este estudio tiene como objetivo conocer el desarrollo y la efectividad de la aplicación de material didáctico para la contabilidad comercial utilizando el programa básico visual para mejorar la capacidad de los estudiantes para redactar estados financieros. La metodología utilizada en este estudio es la investigación y el desarrollo utilizando diseño pre-experimental. Hay diez pasos para analizar el material didáctico utilizando el enfoque de investigación y desarrollo. Sin embargo, este estudio solo utiliza seis pasos que incluyen (1) Investigación y recopilación de información, (2) Planificación, (3) Desarrollar una forma preliminar del producto, (4) Pruebas preliminares de campo, (5) Revisión del producto principal y (6)

Principal Pruebas de campo. Este estudio se realiza en la escuela secundaria Al-Kautsar en Bandar Lampung con 35 estudiantes de 12° grado como muestra de estudio. El resultado encontró que el desarrollo de la aplicación de material didáctico para la contabilidad comercial utilizando el programa básico visual había sido validado por expertos y declarado factible para ser utilizado. La efectividad también se puede ver a partir de la diferencia en los puntajes de los estudiantes antes y después de la prueba que se realizaron antes y después de usar la aplicación de material de enseñanza. Por lo tanto, en resumen, el uso de la aplicación de material didáctico para la contabilidad comercial utilizando el programa visual básico puede mejorar la capacidad de los estudiantes para mejorar.

**Palabras clave:** Aplicación de material didáctico; Programa básico visual; Capacidad de redacción.

## 1. Introduction

Learning process is one of teacher's efforts to improve students' intellectual potential which is becoming the way to measure the quality of a school. The quality of a school can represent the country educational status (Jamaa, 2010). Hence, an innovation in education is needed due to enhance the education quality.

Social science has an important role in daily life especially within this globalization era. Therefore, through social science learning, students need to be equipped with some spiritual attitude, social attitude, knowledge and skills. Social science is really important to be given in educational field; considering human being is the creature of God, as well as the social being that this existence cannot be separated from other individual or group. Similar with social science subject, economics subject also has an important role in life. Economics subject is a part of social science that studies on how humans try to achieve prosperity or satisfy their high and varied needs and improve their life with every available resources through production, consumption and/or distribution. According to regulation of the Minister of Education and Culture Number 59 of 2014 regarding on Indonesian high school curriculum, economics subject intended to make students gain some skills such as: (1) be grateful for God as the Almighty who gave us plenty of resources; (2) understanding few of economic concept to relate economical occasion and problem with daily life especially those which occur inside individual environment, household, communities and countries; (3) showing curiosity about economic concepts that needed to understand economics better; (4) establishing a wise, rational and responsible attitude by having knowledge and skills of economic, management, accounting which make any benefit for oneself, household, public society and country; (5)

making a responsible decision regarding economic social values within a pluralistic society, either in national scale or international scale. Therefore, teacher's role as a learning director will be necessary in order to make student not only gaining knowledge but also be able to build knowledge for themselves, thus the main focus of learning process neither student-centered nor teacher-centered.

Based on the average score of middle exam's result, economics for third grade Al Kautsar High School Bandar Lampung 2017/2018 did not enough to reach standard. From 130 students, 80 students did not reach standard as it 61.54%. The teacher made the standard considering intake, carrying capacity, and complexity. Students' inadequacy can also be seen from their ability to compile the accounting cycle on a chapter of trading company. These things happen because there is still lack of accounting teaching materials which has independency and suitable to learning environment, students characteristic and technological development as a media of learning process. Teaching material is "independent" means student can learn by himself because it systematic and complete. Pannen (2001) explains about teaching material that designed and developed based on a good instructional principles will (1) help students on their learning process; (2) help teacher to reduce material presentation's time and increase teacher's tutoring time for students; (3) assist school to complete the curriculum and achieve their instructional goals within the available time (Pannen, 2001).

In learning process, teaching material is an important part to improve student activeness. The existence of teaching material will greatly help teacher in learning process, especially help teacher within their effort to deliver information to student. This is because the conventional learning system (faculty teaching) which is applied often inside the classroom related to instructional situation and tends to be incompatible with the dynamics of the rapid development of science and technology (Baharun, 2016)

The use of computers in education is increasing, not only as an aid to the administration of education, but also as a presentation medium. Moreover, computers are already being used to present many programs of a simpler construction (Romiszowski, 1992). Another general future of computer-based instruction is the development of curriculum materials (Gerrald, 1967). Based on that statement, it stated that the general features of computer base media is a material derived from curriculum.

Making of teaching materials using computers must be related to the current valid curriculum. Computers can be designed and used as an effective teaching material to learn and teach any relevant learning, such as visual basic. Visual basic is a program developed by

Microsoft since 1991, as a result of its former program BASIC (Beginner's All-purpose Symbolic Instruction Code) which developed at the era of 1950. Visual basic is one of the Development Tool which used to make varied kind of computer programming, especially those that uses windows as operating system. Visual Basic is a computer program that support the object or known as Object Oriented Programming (OOP). Visual Basic for Application (VBA) is an integrated combination between program and programming language which help user to design and build the Visual Basic Program. VBA is located within the main application of Microsoft Office that pointed to certain applications and designed to perform several tasks, such as customizing an application like Microsoft Office or Microsoft Visual Studio. It has function to atomization the jobs which done regularly and complex. The benefit of accounting teaching material using visual basic application is to facilitate student to complete the financial statements of trading company and make it available in the form of soft and hardcopy.

Some previous studies on teaching material development using technology have been done. As Aditama's study that observed on the advantage of information and communication technology as accounting teaching material development using Wondershare Quiz Creator Software. The result showed that the properness of the software within learning process was categorized as good (Aditama, 2015). Similar to Aditama, Harahap, et al also used information and communication technology in accounting teaching material development. They found that XBRL as the development from accounting information system was able to enhance the students' motivation in increasing their learning competence (Harahap, Husrizalsyah, Setiana, & Habibi, 2017). Furthermore, Newman, in his study, found that visual basic program on NEADT 3 could help embedding the sense of orderliness in students (Newman, 1999).

Therefore, this study has purpose to develop teaching material application of trading company based on visual basic to improve student's ability and understanding. Also, it has purpose to know the effectiveness of visual basic application to improve student's ability in drafting financial statements.

## **2. Methodology**

This study used research and development approach as the methodology. According to Borg and Gall, educational research and development is a process used for developing and validating educational products, including procedure and process such as learning method or teaching material. There are ten steps in using research and development approach, but this

study only use six of the steps, namely; (1) Research and Information Collection, (2) Planning, (3) Develop Preliminary Form of Product, (4) Preliminary Field Testing, (5) Main Product Revision, and (6) Main Field Testing. These six steps of research and development are described as below;

### **1. *Research and Information Collection***

There are some stages needed to do due to identify and summarize the learning problem, those are;

#### **a. Curriculum Analysis**

In curriculum 2013, there is a change on economic teaching material for 12<sup>th</sup> grade, in which the material for accounting lesson has been applied in this grade. The weakness is seen in the time allocation for teacher to explain the whole material on accounting for trading company.

#### **b. Students' Necessary Analysis**

Teaching material used by students is limited on learning text book which rated as minus in digging up students' potential and competence. Besides, in drafting accounting statements, it needed columns to input the financial data which spend a long time in drawing the column. This makes the learning process becomes ineffective and inefficient.

#### **c. Potential Analysis**

The researcher saw the potential on technology development. Hence, developing teaching material based on technology is used to facilitate the learning process, especially in drafting accounting statements.

### **2. *Planning***

In this step, the researcher done some planning on learning objectives, learning strategies, learning indicators for every competence and defining the learning sequence

### **3. *Developing Preliminary Form of Product***

The making of teaching material using visual basic program consists of coding activity and error code testing. The construction is divided into two activities; (a) preparation, including planning concept, choosing programming language, programming environment, testing units and application manuals for teacher and student, (b) programming, it is done by applying algorithm, selecting data structures, making the name of variables, writing the account name and making the account code to help the understanding.



**Figure 1.** Display of Teaching Material Application and Data Input

Source: Researcher's Data, 2018



**Figure 2.** Display of Purchases and Sales Journal

Source: Researcher's Data, 2018

#### 4. Preliminary Field Testing

The preliminary field testing is done through validation by expert of content, learning design and evaluation. It is also validated by students either in personal or small scale students that taken from high, medium and low skill students based on the exam score. This was done due to get correction or suggestion on the developed product and used as the indicator for revision for final version.

#### 5. Main Product Revision

After the preliminary field testing, the revision on the evaluation result from content, learning design and evaluation experts, along with students is done.



## **6. Main Field Testing**

The main field testing is done after the teaching material of trading accounting using visual basic program is ready to be used for students in large scale. The main field testing is tested to the experiment class to see the effectiveness of the application.

The design used in this study was pre-experimental design with pretest and posttest in one group. An early measurement was done by giving a pretest to the object due to know the early condition. After that, the object was given the visual basic teaching material application to be used and measured its effectiveness through posttest.

This study was done in Al Kautsar High School in Bandar Lampung. Al Kautsar High School is chosen since the teaching material is still not yet able to create interesting economic subject which involve students within the learning process. The sample of the study was defined using probability sampling or known as sampling technique by giving similar opportunity for each population element to be chosen as sample. Probability sampling has some variations, including random sampling. The sample that involved within this study can be described as below;

- a. One by one evaluation process is done to three students of 12<sup>th</sup> grade with one student with low ability, one student with medium ability and one with high ability.
- b. Small group evaluation process is done to six 12<sup>th</sup> grade students that consisted of two students with low ability, two students with medium ability and two students with high ability.
- c. Field and effectiveness testing is done to 35 students of 12<sup>th</sup> grade

The primary data were obtained through; (a) Questionnaire, it is done to get direct data from sample of the study, including the experts and students. The questionnaire is combining the open and closed question due to know the students' opinion and response on created product, (b) Learning ability test, it is done to measure the cognitive, affective and psychometric learning result in certain time duration (Sukmadinata & Nana, 2013). The learning ability test is in the form of cognitive learning test using 5 answer choices in 20 questions. The test is done before and after the learning process. The data obtained from this learning ability test is then analyzed to define the use of teaching material application development on trading accounting using visual basic program. While, the secondary data obtained through related institution, literature and printed or electronic media.

The data were analyzed using inferential statistic with parametric statistic technique. Parametric statistic is a statistic that considers the distribution type or data which normal and



homogeny. The use of parametric statistic should fulfill the assumption that the data must be normal and homogeny, therefore normality and homogeneity test are needed. The normality test is using Kolmogorov Smirnov test with criteria as  $H_0$  is accepted if the significant score is  $> 0.05$  which mean the distribution data is normal and  $H_0$  is rejected if the significant score is  $< 0.05$  which mean the distribution data is abnormal. Whereas the homogeneity test has requirement that if the price is  $F_{count} \leq F_{table}$  then the data will be homogeny and if  $F_{count} > F_{table}$  then the data is not homogeny with significance standard for 0.05 and dk ( $n_1-1$ ;  $n_2-1$ ).

The technique of data analysis was done by using descriptive qualitative and quantitative. The data analysis covered the whole activity such as clarifying, analyzing, using and making conclusion from the collected data.

### 3. Result and Discussion

The result of the study can be seen after collecting information and planning the early product which has been developed and validated. The validation step was done by three experts in material, media, and evaluation. The material validation aimed to test the product's properness through content, language and quality. The material validation can be seen in following table 1 below;

**Table 1.** Assessment result by material expert

Assessment Aspects	Total Score	Average	Category
Material Relevance	16	3.2	Very Appropriate
Material Organizing Assignment	20	3.3	Very Appropriate
Evaluation/Practice	26	3.7	Very Appropriate
Language	6	3.0	Appropriate
Effect for Learning Strategy	14	2.8	Appropriate
<b>Total</b>	<b>82</b>	<b>3.2</b>	<b>Very Appropriate</b>

Source: Primary data, 2019

Table 1 above showed that the aspect of material relevance, material organizing, assignment evaluation or practice had the average score for  $> 3.0$  which meant that the teaching material was very appropriate. The aspect of language and learning strategy effect had average score for  $\leq 3.0$  which meant appropriate. Thus, the total assessment aspect has average score for 3.2 which meant very appropriate to be used based on the expert material assessment. The next validation was done by the expert media due to know the

appropriateness of teaching material application through the media side. The media validation can be seen in table 2 below;

**Table 2.** Assessment result by media expert

Assessment Aspects	Total Score	Average	Category
Effect for Learning Strategy	18	3.6	Very Appropriate
Software Engineering	18	3.6	Very Appropriate
Visual Display	24	3.0	Appropriate
<b>Total</b>	<b>60</b>	<b>3.4</b>	<b>Very Appropriate</b>

Source: Primary Data, 2019

Table 2 above showed that the effect for learning strategy and software engineering had average score for  $> 3.0$  which categorized as very appropriate. While the aspect of visual display had average score for 3.0 and categorized as appropriate. Thus, the assessment result from expert media was very appropriate to be used, even though it was still need a refinement for making it more perfect. The last validation was evaluation validation. It was aimed to evaluate the assignment appropriateness for pretest and posttest. The evaluation validation is seen in table 3 below;

**Table 3.** Assessment result by evaluation expert

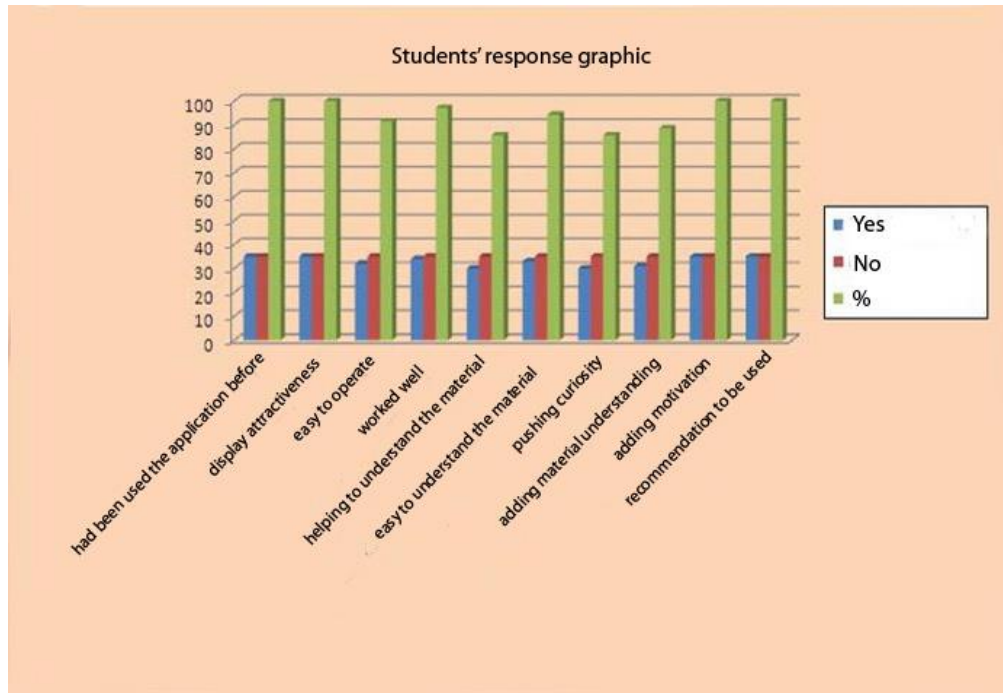
Assessment Aspects	Total Score	Average	Category
Substance/Material	17	3.4	Very Appropriate
Construction	28	3.5	Very Appropriate
Language	9	3.0	Appropriate
<b>Total</b>	<b>60</b>	<b>3.3</b>	<b>Very Appropriate</b>

Source: Primary data, 2019

Evaluation expert assessment was divided in three aspects; substance or material, construction, and language. After being counted, it showed that the aspect of substance or material and construction had average score for  $> 3.0$  which meant very appropriate. The aspect of language had average score for 3.0 and categorized as appropriate. Thus, the total of assessment score had average score for 3.3 which meant very appropriate to be used even there were some refinement that needed to be fixed.

After validating the teaching material, students were asked to test the application due to know its appropriateness, such as finding its weakness. The test was divided into two; one by one test and small group test. Furthermore, after the teaching material was considered appropriate to be tested in huge scale, then it continued to field testing. The field testing was

done to 35 students of 12<sup>th</sup> grade in four meeting, which each meeting had time allocation for 45 minutes. The learning process was done by discovery learning model with question and answer method. In the end of learning process, students were asked to deliver their opinion and suggestion to teaching material application for trading accounting using visual basic program through questionnaire in closed question or “yes” or “no” question.



**Figure 3.** Students' response on teaching material application for trading accounting using visual basic program

Source: Researcher's data, 2019

The figure above showed the positive percentage for each indicator related to teaching material application. It showed the average score for students' response had reached 93.33% which indicated that the teaching material application for trading accounting using visual basic program had positive response. However there was still deficiency in helping to understand the material and pushing curiosity indicator for 83.33% that needed to be refined.

### ***Evaluation of Teaching Material Application for Trading Accounting using Visual Basic Program***

The next process is an evaluation regarding the advantages and disadvantages of visual basic. Based on it development process that has been done, then the advantages of Teaching material application for trading accounting using visual basic program are :

- 1) Teaching material application for trading accounting using visual basic program is one of learning sources of Economics and it presented practically on its using.
- 2) Teaching material application for trading accounting using visual basic program can save the available effective time, therefore all the materials can be delivered without worrying about being short on time.
- 3) Teaching material application for trading accounting using visual basic program equipped with security access like password. Thus, teacher can see the learning process of each student.
- 4) Teaching material application for trading accounting using visual basic program have an ability to export the data and producing financial statements in a form of soft copy and hard copy.
- 5) Teacher's role as facilitator and motivator in managing the class can goes well.
- 6) Student's ability to actively participate on learning grows higher.
- 7) Teaching material application for trading accounting using visual basic program is learning media innovation using computer technology and that highly have a chance to be developed as the rapid growing of science and technology.

Meanwhile, the disadvantages of teaching material application for trading accounting using visual basic program are, (a) the presented material inside are limited to the basic competence. (b) Convenience of using application depends on the user's skills and knowledge.

### ***Learning Outcomes in Experimental Class***

The technique used to measure the effectiveness testing from application of accounting trading company learning materials based on visual basic program is using some questions test. The questions used are in form of multiple choices with the 20 questions of each meeting. The students are given pre-test first then the result is measured simultaneously with post-test. The pre-test questions are the same with the post-test questions, but the multiple choices and the questions number is randomized. The valid and proper questions instrument is being tested to the students both before and after the used of application. The obtained result of pre-test and post-test is described as follows:

**Table 4.** The Pre-test of Student's Ability to Compile Financial Statements

<b>Minimal</b>	<b>Assessed Indicator</b>		
<b>Completeness</b>	<b>Noting Step</b>	<b>Summarizing Step</b>	<b>Reporting Step</b>

<b>Criteria</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>
< 76	32	91.42	32	91.42	28	80
> 76	3	8.58	3	8.58	7	20
<b>Amounts</b>	35	100	35	100	35	100
<b>Mean</b>	<b>59</b>		<b>56</b>		<b>65</b>	

Source: Student's Pre-test(processed)

Table 4 shows that the students' pre-test data before using teaching materials for trading company accounting based on visual basic programs has differences in each stage of preparing financial statements. In the noting and summarizing step, there are 32 students or 91.42% which not reach the minimal completeness criteria. In the students' reporting who does not reach the minimal completeness criteria is decreasing amounts 28 students or 80%. However, the percentage relatively low in the successful learning. This statement is in accordance with Irafahmi & Andayani(2016) which states that the taught learning material is merely 65% mastered by the students and thus the percentage of students successful in the subject study is low.

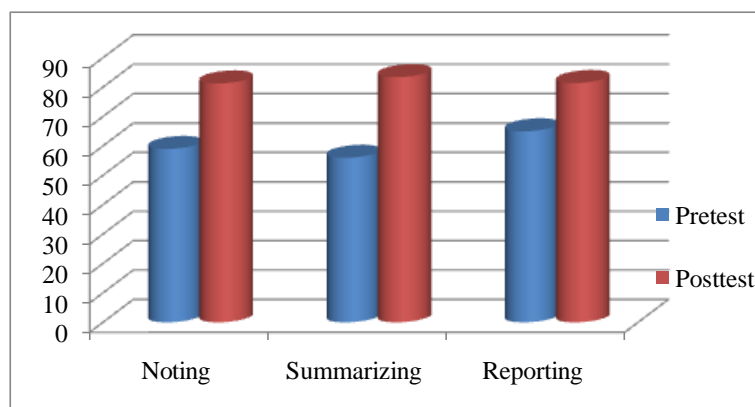
**Table 5.** The Post-test of students' ability in preparing financial statements.

<b>Minimal Completeness Criteria</b>	<b>Assessed Indicator</b>					
	<b>Noting Step</b>		<b>Summarizing Step</b>		<b>Reporting Step</b>	
	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>
< 76	6	17	8	23	5	14
> 76	29	83	27	77	30	86
<b>Amounts</b>	35	100	35	100	35	100
<b>Mean</b>	<b>81.29</b>		<b>83.43</b>		<b>81.43</b>	

Source: StudentPosttest (processed)

Based on the table 5, the post-test ability in preparing financial statement in the noting step which reaches the minimal completeness criteria amounted 29 or 83%. In the summarizing step, there are 27 students or 77% who reach the minimal completeness criteria and in the reporting step, there are 30 students or 86% who reach the minimal completeness criteria.

The pre-test and post-test data shows that there are positive differences in the students' score after the used of application of trading company accounting teaching materials based on visual basic programs. Thus, the average of students' pre-test and post-test can be seen in the following graphic.



**Figure 4.** The comparison of pre-test and post-test

Source: Researchers' data processed in 2019

Based on the figure 4, there are some differences in the learning outcomes that have positively increased after post-test. In the noting step, the pre-test average is about 59 while the post-test is about 81.29. In the summarizing step, the pre-test average is about 56 after given the treatment using the application, the average of students' post-test have increased amount 83.43. In the reporting step, before given the treatment, the pr-test average amount 81.43 while after given the treatment, the post-test average is amount 81.43.

This is in line with Yana in Tania (2017) reveals that teaching materials based on local wisdom make a positive contribution in improving the ability of students to prepare financial reports with very strong criteria. Overall, the score comparison of the students' achievement scores in the twelve classes before and after using visual basic accounting trading company teaching materials is way better. The average of students' achievement score before and after the used of application of trading company accounting teaching materials based on visual basic program in the noting step amounts 0.52 which is in middle criteria, the summarizing step amounts 0.60 which include into middle classification, while reporting step is in the middle classification amounts 0.42. It shows that in 12<sup>th</sup> class, after the used of application of accounting teaching materials based on visual basic trading company can improve students' ability to be better compared before using the product development.

#### 4. Conclusion

The appropriateness of accounting teaching materials for trading company based on visual basic program shows that the assessment aspect based on substance material has 3.2 average score which means "very appropriate", the assessment based on media expert has 3.4 score

which means “very appropriate”, meanwhile, based on evaluation expert judgment has an average eligibility score of 3.4 which means “very appropriate.” The research and development result shows that small group testing, large group testing and expert testing reveal that accounting teaching materials product for trading company based on visual basic, is quite interesting and appropriate to be used as economy learning materials. Based on gain testing, accounting learning material is include into middle category and can improve significantly the ability of preparing financial statements with the significant with the significant value (sig. 2-tailed) t-test is 0,000 based on the provision less than 0,05.

Further research is expected to develop similar applications with trials not only conducted in one school and one class, but it can be performed in more than one school so that it can create better media.

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**Percentage contribution of each author in the manuscript**

Warya Satar - 70%

Sudjarwo - 15%

Pujiati - 15%