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Increasing Activeness and Learning Outcomes by Developing Borland Delphi 7.0 Application as Instructional Media

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Abstract
This study aims to produce instructional media of petty cash fund with Borland Delphi 7.0 application in the Finance Administration subject, Managing Petty Cash Fund material in class XII APK in Vocational High School (SMK) Negeri 1 Pasuruan, East Java, Indonesia. This study used *Research and Development* (R&D) design procedures through 10 steps, which are: (1) potentials and problems, (2) data collecting, (3) design product, (4) design validation, (5) design revision, (6) product try-out, (7) product revision, (8) field testing, (9) product revision, and (10) mass production. Based on the results of expert validation and try-out in small scale, it was obtained the average score of media expert was 92.86% and media expert was 95.58% and small scale try-out was 98.61% which indicated that the media were categorized as valid and applicable. For the product effectivity based on the achievement test, the experimental class obtained 91.03 and control class 84.59, so that the media were effective to use.Therefore, Finance Administration teacher is suggested to use the media as an alternative learning support.
Keywords: *Borland Delphi 7.0* Instructional Media, Activeness, Students' Learning Outcomes, Managing Fund of Petty Cash

1. Introduction

Education in Indonesia in this globalization era should contain the development of knowledge and technology, specifically in the information and telecommunication field. The development would support the renewal in the utilization of the results of technology in the learning process. A learning process in school will be easier to understand by students if it is supported by utilizing proper instructional media in order to reach the objective of a learning process. Instructional media are important component in a leaning and teaching process. There are two prominent elements. They are learning method and instructional media. The use of instructional media is one of the element to make a learning condition conducive. Moreover, the teacher is demanded to provide and develop variety of proper instructional media and learning sources in order to be learned by students. The use of media in a learning process will help the effectiveness of a learning process and deliver a message and contents. Additionally, instructional media will increase students' motivation and interest, and help students to understand the lesson (Arsyad, 2015:20).

Instructional media are any things which can be used to deliver messages or information in the learning and teaching process in order to grab students' attention and students' interest. The instructional media used can be various that suits the needs of learning. Moreover, instructional media include hardware and software. Hardware is set of tools which can deliver message such as *Over Head Projector*, radio, television, and etc. While software is a program content that contains messages such as information in transparency or book and other printed materials.The existence of the instructional media used in the learning and teaching process aims to help students in increasing the learning outcomes.

Learning process essentially is to develop the activity and creativity of the students through various interaction and learning experiences. Students' activeness of learning is a basic

element which is important to determine the success of the learning process. Activeness is an activity which is in form of physic or mental, that are action and thinking as a series which cannot be separated. (Sardiman, 2001:98).

Learning outcomes are results gained by students from experiences and exercises that have been followed in the learning process. They are in form of cognitive, affective, and psychomotor. Learning outcomesare closely related to learning activity in class in which to optimize the students' learning outcomes, the electing of learning strategy must be suited with the students' condition and material to be given. If the learning outcomesare high, the strategy implemented is already correct (Dimyati and Mudjiono, 2006: 200).

Computer program is one of the computer software which records computer action that will be processing by the computer. The computation is based on an algorithm or particular order of instruction. Order of instruction or algorithm is a device involved in a computer program. A computer which is not accompanied with algorithm will not work well (Nafisah, 2012:21).

The *Borland Delphi* application is a development application which goes with Windows operation system (Indriyawan, 2006:91). *Delphi* is the continuation of *Turbo Pascal* which Borland product, now it turns into *Inprise Corporation*. *Delphi* was launched at 1995.

Based on the preliminary observation and interview which involved teacher of Finance Administration productive subject in the Basic Competence of Managing Petty Cash Fund in class XII of Office Administration in Vocational High School (SMK) Negeri 1 Pasuruan, it can be concluded that the instructional media of the Finance Administration nowadays is very needed, specifically both fort teacher and students. It was because that during the learning process was still implementing the traditional method (manual)

Based on the problems above, researcher was attempted to have a research entitled "Developing Instructional Media using Borland Delphi 7.0 Application on the Basic Competence of Managing Petty Cash Fund to Increase Students' Activeness and Learning Outcomes (Study on Class XII of Office administration in Vocational High School Negeri 1 Pasuruan-East Java-Indonesia)"

The media aim to do the petty cash work, beginning from the recording the cash receipts, recording the cash expenditures, until reporting the petty cash fund. It can be easier, faster, more practical, and more efficient for student to do the petty cash fund work. Besides, students are be able to understand Finance Administration subject, especially in the basic competence of Managing Petty Cash Fund delivered by the teacher.

A research conducted by Bandele (2015: 76) "Development of C ++ Application Program for Solving Quadratic Equation in Elementary School in Nigeria" stated that the use of computer technology can increase teacher interaction with the students, students with the students, and can help students to be more independent. Besides, it can support students to train more than they thought and can increase their ability in using computer which will be worth in the future.

Siagian, S., Mursid & Yasaratodo, W. (2014: 50) "Development of Interactive Multimedia Learning in Learning Instructional Design". From the research, it was found that 80% of professional teacher course and instructional media design need interactive instructional

media which can be used as a tool for self-study. The interactive multimedia in this context can be useful, interesting, and can increase students' motivation to learn in obtaining data in needs analysis.

2. Method

The research subject chosen was students of Office Administration of grade XII in Vocational High School (SMK) Negeri 1 Pasuruan, East Java, Indonesia. The research subject contained two classes, which were experimental class and control class. The determination of control class and experimental class was seen from the score of Finance Administration subject. Researcher, then, decided to choose class XII APK 1 as the control class, and class XII APK 2 as the experimental class. The product try-out in small scale was done to 12 students based on the score in Finance Administration score which were classified into 3 group; high, medium, low. In the control class, it has already chosen 6 students, and 6 students from experimental class. This research needs a systematic procedure to reach the objective. The procedure in R & D design which was adapted from Borg and Gall in Sugiyono (2012: 298) is as follows.The data collecting method and data analysis is presented in Figure 1 below.

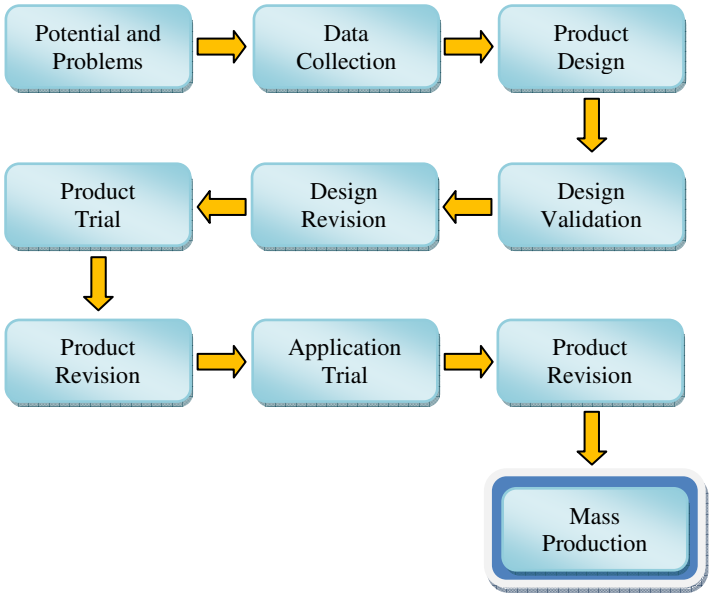

Figure 1: Research and Development Procedures adapted from Borg and Gall (Source: Sugiyono, 2012: 298)

The data collecting and data analysis method is presented in Table 1 below:

Table 1 Data Collecting and Analysis Technique

No.	Types of Data	Method	Instrument	Subject	Time	Purpose
1.	The Appropriateness of the Media	Questionnaire	Questionnaire	Media Expert	Before Product Try-out	To determine the appropriateness of the media from the media expert and material expert.
2.	Learning Outcomes without using Instructional Media	Documentation	Scores of Finance Administration Subject	Students	Before conducting the research	To know the results and students' understanding in Managing Petty Cash Fund material before and after operating the media, and also to decide the classification of control and experimental class.
3.	Evaluating the Product Try-out	Questionnaire	Questionnaire	Students	Try-out on experimental class and control class	To know the weaknesses of the media from students' view.
4.	Results of evaluation during learning process	Test	Test of Managing the Petty Cash	Students	Try-out to Experimental Class	To know the result of students' learning outcomes after using the instructional media in the learning process.

The data from media expert toward the instructional media were analyzed using descriptive technique. The percentage of the scores from the calculation of the questionnaires form the validators (media expert, material expert, and students). Here is the criteria to determine the score can be seen in Table 2 below.

Table 2 Criteria of Score Interpretation

Percentage	Criteria
76% - 100%	Very Applicable
58% - 75%	Quite Applicable
40% - 55%	Less Applicable
<40%	Not Applicable

(Source: Arikunto, 2006:245)

Moreover, to know the students activeness,it has already determined the criteria of students' activeness which can be seen in Table 3.

Table 3 Criteria of Activeness

Percentage	Criteria
90%-100%	A (Very Active)
70%-89%	B (Active)
60%-69%	C (Not Active)
< 60%	D (Passive)

Source: Vocational High School Negeri 1 Pasuruan

3. Findings and Discussion

3.1 Findings

These instructional media developed using software of Borland Delphi 7.0 application. Delphi can access Database Paradox, xBase, MS-Access and also can use ODBC. Delphi, moreover, can access other database just like Oracle, Sybase, Interbase, DB2, MS-SQL, MySQL. Therefore, the user can move from one database to other database without changing the application completely.
The instructional media using Borland Delphi can contain cash receipts, cash disbursements evidence, and reports the petty cash fund. The result of research and development showed that the instructional media developed can increase the students' activeness and learning outcomes.

3.1.1 The Display of Petty Cash Find Instructional Media Using Borland Delphi Application

The opening display of petty cash find instructional media using Borland Delphi application, the first is submitting ID User and Password then going to the main menu. The main menu in these instructional media consists of: (1) tutorial menu, (2) evidence ofpetty cash receipts, (3) evidence of petty cash expenses, (4) reports of the petty cash fund, and (5) exit.

3.1.2 Validation Data

The validation data analysis was to analyze the data gathered during evaluating the learning material and petty cash fund media using Borland Delphi application. The data validation was obtained from material expert, media expert and 12 student in product try-out in small scale. The results of data validation can be seen in Table 4 as follows.

Table 4 Results of Questionnaires from All Validation

No.	Validation	Percentage	Criteria
1.	Material Expert	92,86 %	Valid
2.	Media Expert	95,58 %	Valid
3.	Try-out in Small Scale	98,61 %	Valid
	Average	**95,68 %**	**Valid**

Based on Table 4 of the results validation data, it can be concluded that the petty cash fund media using Borland Delphi application is very applicable and can be used as Petty Cash Fund instructional media.

3.1.3 Students' Activeness

The data of students' activeness were gained from observation during the learning process. In this research, the observation of students' activeness can be divided into two aspects, which are psychomotor aspect and effective aspect.

The results of evaluating students' activeness were done in class XII APK 1 as control class, and class XII APK 2 as experimental class. The results of evaluating students' activeness in class XII APK 1 and XII APK 2 are presented in Diagram 1 as follows.

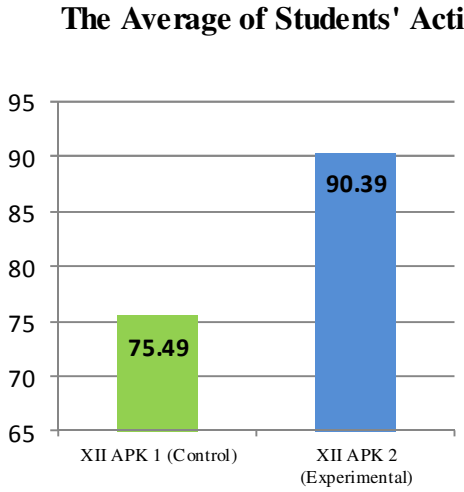

Diagram 1 Students' Activeness

The results of Diagram 1 showed that the percentage of control class activeness was 75.49%, and the percentage of experimental class activeness was 90.39%. This research showed the percentage of control class was categorized as "very active", based on the criteria of activeness set by the school. Moreover, the percentage of experimental class was 90.39%, which indicated the criteria of "very active". From evaluating the activity in experimental class while using the instructional media of petty cash fund using Borland Delphi application, it had higher percentage in the activeness aspect than the control class which did not use the media. It showed that the use of petty cash fund instructional media using Borland Delphi application could make students more active in class.

3.1.4 Students' Learning Outcomes

To assess the students' learning outcomes, researcher gave a test in from of exercises in each class. In this research, it included two classes in order to compare students' learning outcomes that used petty cash fund instructional media using Borland Delphi application and the students who did not use petty cash fund instructional media using Borland Delphi application. The class which used petty cash fund instructional media using Borland Delphi application was class XII APK 2 as the experimental class. It consisted of 35 students. Then, the class which did not use petty cash fund instructional media using Borland Delphi application as the control class, consisted of 34 students. The result of the test was conducting by 3 treatments. The treatments aimed to know how far the improvement of the students' outcomes in doing petty cash work without using instructional media and with instructional media. The improvement of students' learning outcomes of control class and experimental class was showed in Diagram 2 as follows.

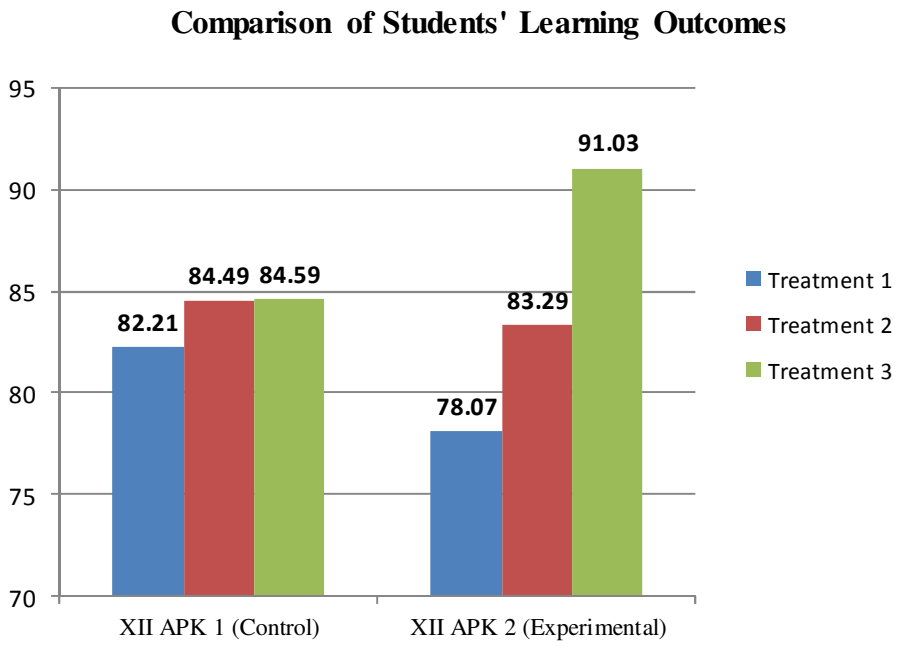

Diagram 2 Students' Learning Outcomes

In Diagram 2 can be seen that the improvement of student' learning outcomes using the instructional media was more effective and efficient than the class which did not use the instructional media. The improvement of students' results from the treatment 1 until treatment 3 in the control class/class which did not use petty cash fund instructional media using Borland Delphi application was 2.38%, so that it can be categorized as "low" based on the criteria of effectiveness. However, the improvement of students' outcomes from the treatment 1 until treatment 3 in experimental class/class which used petty cash fund instructional media using Borland Delphi application reached 12.96%, so it can be categorized as "very high" which means effective. Therefore, from the data, it can be concluded that petty cash fund instructional media using Borland Delphi application were effective to improve students' learning outcomes.

3.1.5 Product Revision

Data analysis from media expert and material expert concluded that the petty cash fund instructional media using Borland Delphi application was considered good/applicable to be used in the learning process. Before implementing the instructional media, the product must be revised based on the suggestions from the material expert and media expert.

3.2 Discussion

3.2.1 Petty Cash Fund Instructional Media Using Borland Delphi Application

Instructional media are tools whose function is to deliver messages from the communicator to the communicant (message receiver). The result of this research and development is a product in form of instructional media of petty cash fund using Borland Delphi 7.0 application which can increase students' activeness and learning outcomes in class XII APK 2 with basic competence of Managing Petty Cash Fund in Vocational High School (SMK) Negeri 1 Pasuruan. From the result of the research and development, it was found that the instructional media developed can increase students' activeness and learning outcomes. It is in line with Arsyad (2015: 20) stated that the use of instructional media can increase students' outcomes. The result of this research is also

accordance with the research conducted by Bandele (2015:76) explained that the use of computer technology could improve teacher interaction with the students, students with the students, and help students to be more independent. In addition, supporting students to act more than they thought and improve their skills in operating computer will be worth in their future.

Petty Cash Fund instructional media with *Borland Delphi 7.0* application was packed in form of CD (Compact Disk) and also completed with the manual book to operate the Petty Cash Fund instructional media with *Borland Delphi 7.0* application and the exercises. It is to support students' learning outcomes and train students to be more independent. It is in line with the research done by Oyebolu (2013:178) explained that a computer supported with the instruction will be able to complete traditional teaching technique to help students study well and fast.

The developing of Petty Cash Fund instructional media with *Borland Delphi 7.0* application had several advantages in the learning and teaching process. The advantages developed from the competence aspect are: (1) the media developed can increasestudents' competence in Finance Administration subject with Basic Competence of Petty Cash, (2) media developed can increase students' skill in operating computer, and (3) media developed can give students opportunity to have independent study in self-study in term of time and place. It is accordance with the research conducted by Azlina (2014:156) explained that multimedia which applied in the learning, multimedia application must have potentials to connect the activity with the media object. Therefore, media would be integrated in the learning process. Afterwards, the advantages of the instructional media seen from the economy aspect, the media were very cheap since it was packed in CD (*Compact Disk*) and easy in term of the maintenance.

Petty Cash Fund instructional media with *Borland Delphi 7.0* application had several strengths which are: (1) the accurate report, (2) well-organized report, (3) easy to do the report, (4) the report can be printed without re-arranging the column, (5) faster in doing the receipts, proof of petty cash expenditures until the report of petty cash fund, (6) time saving, (7) the result of the report cannot be copied by other people so the data are secured. It is accordance with a research conducted by Hermawansyah (2012: 178) stated that making inventory application using Borland Delphi 7.0 was interesting, the display was well-structured, the implementation of data basis was easier, and ease to manage the inventory data of goods and distribution of goods. The other research in line with this research was done by Ghofur (2010: 37) mentioned that the use of application program to control home security equipment with Borland Delphi 6 could help simplify the guard house and home owners in making home security.

However, the petty cash fund instructional media using Borland Delphi application also had a weaknesses.The weakness of the media was the use of Petty Cash Fund instructional media with *Borland Delphi 7.0* application needed supported facility such as laptop, computer, LCD and projector, so that it cannot be implemented in all schools. The schools which only provide the facility that can use the media. It is connected to the research done by Agbo (2015:7) stated that the efficiency and the effectiveness of using technology depended on the availability of hardware and software, and equalization by teachers, students and administrative staff. In addition, the weakness of the media was the result of compiled file of the petty cash fund instructional media using Borland Delphi application needed large memory to save.

3.2.2 Students' Activeness by Using Instructional Media of Petty Cash Fund by Borland Delphi Application

Activeness is any activities which are done by students during learning process. In this research, researcher chose 2 classes which were XII APK 1 as the control class and class XII APK 2 as the experimental class. The control class was the class which did not use the petty cash fund instructional media using Borland Delphi in the learning process. While the experimental class is

the class which used the petty cash fund instructional media using Borland Delphi in the learning class.

The observation of students' activeness was done by 3 observers of undergraduate students in State University of Malang. Researcher chose 3 observers due to the fact that researcher limited each observer to only observe 11-12 students in each class. Observers chosen were from Office Administration program. Observer, in the previous, had not known how students' attitude in everyday life and the students' outcomes. Researcher also did not include the teacher as the observer because of subjectivity factor and also effectiveness (1 teacher that observed 31- 35 students would be not effective).

Observation of students' activeness was conducted toward control class and experimental class. The activeness covered 2 aspects, which are psychomotor and affective. Psychomotor is divided into several indicators: (A) focusing on the media, (B) doing the task suits with the procedures, (C) doing the task correctly and neatly, (D) doing the task diligently, and (E) able to do the exercises independently. Then, the affective aspect is divided into several indicators as well: (A) giving attention to teacher explanation, (B) not having monologue (talking with the friends), (C) not making a fuss, (D) helping friends.

The observation of students' activeness in control class was done when students did the test without using the petty cash fund instructional media using Borland Delphi application. From the result of the observation, the highest score in the psychomotor aspect was from indicator (C) doing the task correctly and neatly. It was because the students tried to do and count correctly in recording the receipt and expenditures the petty cash until the report making. The students also tried to do the task diligently due to the fact that they had to make the column manually and suit with the transaction. For the affective aspect, the highest score was the indicator (D) helping friends. It was because there were many mutual asking among students, and the students helped each other in completing the test. The deceit in doing the test such as cheating was done by students that did not use the media. It is accordance with the theory proposed by Muhadjir (in Arsyad, 2015:27) stated that the method and teaching and learning technique must be considered the effectivity to active students as objects of education. Therefore, all students can be active in learning, and can stimulate the creativity, feeling, and even intention.

The observation of students' activeness in experimental class was also done during students doing the test using the petty cash fund instructional media using Borland Delphi application. The result of the observation done by observers showed that the highest score of psychomotor aspect was from indicator (A) focusing on the media. It was because the students had just been introduced with the media to do petty cash work. Students also more concerned on the meu provided in the instructional media, and were interesting in the media, so that they would focus on the media. Thus, students indirectly were demanded to be more careful using the media. For the affective aspect, the highest score was coming from indicator (A) giving attention to teacher explanation. It was because students were just introduced to the media of petty cash fund so that they paid attention to the explanation from teacher about the how to operate the media, students would not experience difficulties and errors when using media such learning. However, students were also very interested and enthusiastic in operating the instructional media.This research is in line with the research done by Siagian, et.al (2014:50) explained that almost students gave positive responses to the learning using instructional design multimedia, interactive multimedia learning, which were useful, attractive, and can increase students' motivation to learn. A research by Ramlah, et.al (2014:68) stated that students whose high activeness generally had high learning

outcomes, comparing to the students who had low activeness. It is in line with the theory proposed by Hamalik (in Arsyad, 2015:19) explained that the use of instructional media in learning process can stimulate new passions and interests, raise motivation and learning activity, and even bring psychological effects to students.

3.2.3 Students' Learning Outcomes Using Petty Cash Fund Instructional Media of Borland Delphi Application

Learning outcomes are the students' abilities after learning process. In this research and development, the researcher chose 2 classes which were class XII APK 1 as the control class and class XII APK 2 as the experimental class. The control class was the class who did not use the petty cash fund instructional media using Borland Delphi application during learning process. While, the experimental class was the class which used the petty cash fund instructional media using Borland Delphi application in the learning process.

Learning process done in the experimental class was the teacher explained the learning materials using the petty cash fund instructional media using Borland Delphi application. When students learned to use the media, they looked more enthutiastic and paid attention to teacher explanation about the media operation/procedures. The students noticed intently proved by there were no students who talked to others. After showing the media, students were given the test. The test was done using the petty cash fund instructional media using Borland Delphi application.

Learning process done in the control class generally same with the experimental class. However, the difference only the control class did not use the petty cash fund instructional media using Borland Delphi application. So that students were taught using lecturing method and not used any supported media. After learning process over, the teacher gave test to assess students' outcomes who did not use the petty cash fund instructional media using Borland Delphi application.

Based on the results, the use of the petty cash fund instructional media using Borland Delphi application in learning process in class was able to increase students' outcomes. It can be seen from the results of the test by control class and experimental class. The results of the test showed that the improvement of students' outcomes in the experimental class was much higher than the control class. Based on the comparison of the scores, it can be concluded that the learning using the petty cash fund instructional media using Borland Delphi application can increase students' outcomes in class XII APK 2 in the Finance Administration basic competence Managing Petty Cash Fund in Vocational High School (SMK) Negeri 1 Pasuruan.

The difference of the test scores was caused when they were taught using media, they were more interesting and motivated to learn such a research conducted by Mahajan (2012:5) stated that multimedia tools can facilitate and even accelerate the learning. From the research and development, in this case it can be concluded that the use of the media is an effective way to increase students' outcomes. It is connected to the research done by Carter (2004:1) concluded that the use of technology, if it is used correctly, can improve learning ability and positively have potentials affect the success rate of students.

4. Conclusion and Suggestion

4.1 Conclusion

Referred to the research problem, objective, findings and discussion of the developing the instructional media, it can be concluded that there were some items need to be revised. First, the material expert showed that the menu of petty cash receipts, evidence of petty cash expenditures and petty cash report were categorized valid. It indicated that the media developed are suitable to be implemented in the learning process. Second, from the result of media expert validation, the petty cash fund instructional media using Borland Delphi application showed that the menu was

presented in a very good way, which also indicated that the media were suitable to be used in the learning process. Third, the results of the questionnaires in try-out in small scale showed that the media were valid to use. Fourth, in the experimental class showed that there was significant improvement in students' activeness and learning outcomes after using these media. Overall, it can be concluded that the petty cash fund instructional media using Borland Delphi application were compatible to use in the learning process.

4.2 Suggestion

Based on the results of the research, there are some suggestions: First, before operating the petty cash fund instructional media using Borland Delphi application, teacher and students should understand the manual instruction so that there will not be any mistakes/errors. Second, the further product development using Borland Delphi application is suggested to have a product in other subject with different basic competence. Third, to the following development using Borland Delphi application, it is suggested to develop instructional media which not only can be accessed in laptop or computer but also in smartphone or tablet.

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