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Utilizing Instructional Media for Teaching Infrastructure Administration

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Abstract

This study aims to produce instructional media Corel VideoStudio Pro X7-based on teaching infrastructure administration at class XI of APK in SMKN 1 Ngawi, East Java, Indonesia. This study uses Research and Development research design (R & D) through 10 steps, namely: (1) the potential and problems, (2) data collection, (3) the design of the product, (4) design validation, (5) design revision, (6) product tryout, (7) product revision, (8) utility testing, (9) product revision, and (10) mass production. The results showed that the assessment from expert validator and limited group testing to the fourth aspects gained an average score 97.7% from material expert, 76.5% from media expert and 93.06% from limited trial group, which means that the media is categorized as very valid and reliable to use. In terms of the effectiveness of the product, according to the results of student posttest, experimental class and control class had achieved 90 and 79.7. Hence, this module is effectively used. Therefore, teachers of infrastructure administration subjects are recommended using this media as an alternative to support learning process.

Keywords: Corel VideoStudio Pro X7, Learning Media, Students' score, Infrastructure administration

1. Introduction

In this 21st century, the rapid growth of technology could not be restrained. Technology is not a new thing; it has become human need in daily life. So does in the education, the growth of technology also influences the use of learning media in schools. Learning technology is the theory and practical in development design, utilization, management and evaluation of process and resources for learning (Uno & Nina, 2010: 16). In this global era, teachers are required to be able teaching creatively by optimizing the use of technology. The use of technology in the learning process will increase student motivation. Hence, learners who has an access to information will study more passionate and motivated, one of the elements that affect the learning is learning media (Punaji & Sihkabuden, 2005: 10).

The use of instructional media is also expected to increase students' understanding related to the subjects taught. So far, the use of media in learning process is still scarce for this issues: (1) learning technology is still depicted in the form of sophisticated and expensive equipment, (2) technology is only considered and related to machine and all sophisticated devices, (3) availability of technology or media is still not optimized (Punaji & Sihkabuden, 2005: 14). According to the current problems, the most fundamental is the application of learning media must be adapted to the facilities owned by the school since not all learning media can be applied in all schools.

In the reality, many schools had not applied variety of media. In contrast, education is required to create the intelligent and creative generation. This will require teachers to be more creative in transferring knowledge to students. To date, the learning method that is frequently used is a lecturing or conventional learning. Edgar Dale makes its classification level according to the experience from the most concrete to the most abstract. The classification is then known as Cone Experience as follows:

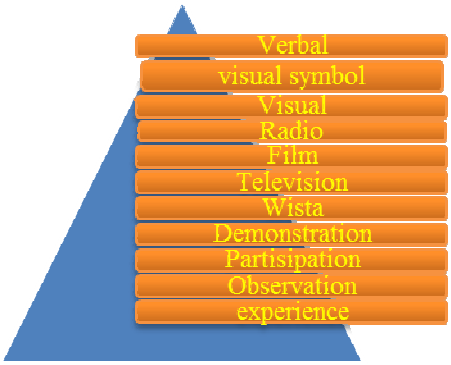

Figure 1. Cone Experience E. Dale
(Source: Sadiman, 2010: 8)

According to its classification, it can be inferred that students who only learn verbal auto didactically would have different understanding with students who learn direct experience, the more concrete way students learn, the more experience and knowledge will be gained.

Multimedia learning is basically a study which is expected to optimize all learners brain activity during learning activities (Darmawan, 2012: 47). While the learning outcomes are the patterns of actions, values, notions, attitudes, appreciation, and skills (Suprijono in Thobrani & Arif, 2011: 22).

SMK Negeri 1 Ngawi, East Java, Indonesia is a public school with the status of national standard and referral school. This school is the basis of business and management as well as software engineering expertise that has five programs, namely Administration, Accounting, Marketing, Industrial Electrical Engineering, and Computer Engineering and Networks. In the learning process, this school does not utilize multimedia, especially office administration department. The learning process is carried out using conventional methods, which is only depend on lecturing. Therefore, the material does not fully transferred. Its facilities consist of free Wi-Fi and free netbook borrowing in the school library. These facilities are contemplated to support the development of instructional media that is Corel VideoStudio Pro X7-based to improve student learning outcomes.

Corel VideoStudio Pro provides complete arrangement of capturing, burning and editing video from one another, and distributing the video to DVD or Blu-ray Disc, mobile devices or the web. (Corel VideoStudio X7 user guide, -: 9 (http://www.sdcl.org/PDF/DWTC_Corel-Video-Studio.pdf).

This media is expected to support teachers presenting the material and facilitate students understanding the material given by teachers of Infrastructures Administration in class XI Office Administration Program at SMK Negeri 1 Ngawi, East Java, Indonesia. Corel VideoStudio Pro X7 also facilitates the teacher in assessing the student's understanding since it is complemented with QuizCreator. It has a function to measure student understanding. Thus, the teachers' teaching methods can be more attractive than using the conventional method, which is lecturing.

Research conducted by Jaradat (2013) "Students 'Motivation and Instructors' Technology Use in Higher Education: A Case Study in the Gulf Region" Concluded that there is a significant correlation between the use of technology in the classroom with student's attention. The significant association comes from the use of technology, the relevance of the material presented in the classroom and the students' real life. There is a significant relationship between the use of technology and the participation of students in the classroom using technology. Further, there is also significant relationship between using technology and student satisfaction with the material presented in class. ARCS is significantly correlated with experimental learning, student learning strategies, and the use of computers in the learning process.

Iskandar (2009: 184) states "The result of study can be measured in form of student's changing behavior which is the increasing of students' knowledge towards something, attitude, and skill". Gagne's theory (in Thobrani & Arif, 2011: 22) shows that the result of study covers (1) Verbal information is the capability to express knowledge through language, both oral and written, (2) Intellectual skill is the ability to present concept and sign, (3) Cognitive strategy is the ability to deliver and direct their cognitive activity, (4) Motoric skill is the ability to

do physical movement in coordinating in order to reach automatically physical movement, (5) Attitude is the ability to accept or ignore objects based on the judgement towards the object.

The learning model "Make a Match" means each students received a card (can be question or answer), then looks for the pair suited with the card being hold on as fast as possible.

According to the aforementioned problem, the researcher is interested to conduct a study on Development of Infrastructures Administration Learning Media Using Corel VideoStudio Pro X7-Based to improve Students' learning outcomes (case Study at Grade XI Office Administration at SMK Negeri 1 Ngawi, East Java, Indonesia).

2. Method

The selected research subjects in this study were students of class XI office administration program at SMK Negeri 1 Ngawi, East Java, Indonesia. The subject of this study are two classes, experimental class and control class. The consideration of making experimental class and control class was conducted based on the score of Mid-term test of infrastructure administration class. The researcher then decided XI APK 1 as an experimental class and XI APK 2 as the control class. Limited product tryout was carried out to 6 selected students based on their mid-term score after it has been classified into high, medium and low for the control class, AP2 XI. This study requires a directed and systematic work procedures to gain the target. The working procedures in this study are adapted from R&D design proposed by Borg and Gall cited in Sugiyono (2011: 409) as follows. As for the method of data collection and data analysis are presented in Table 1 below.

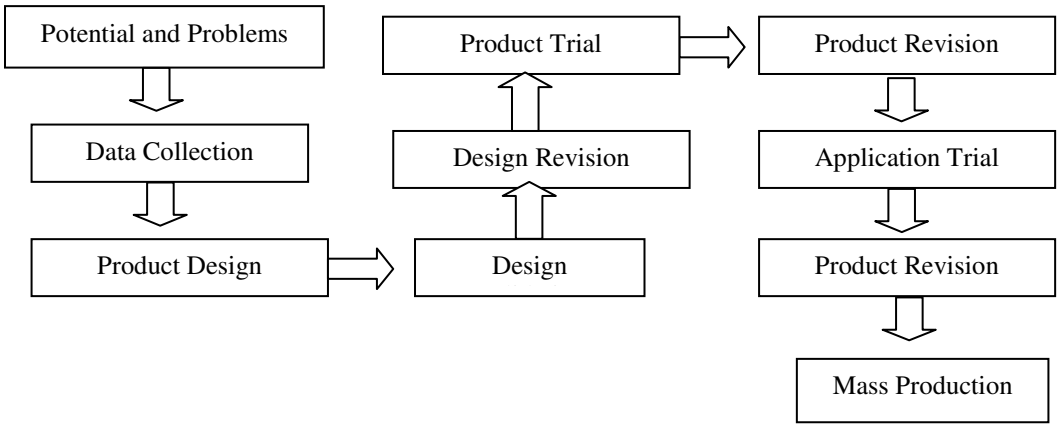

Figure 2. Steps conducting *Research and Development* (R&D)

(Source: Borg and Gall in Sugiyono, 2011:409)

As for the method of data collection and data analysis are presented in Table 1 below.

Table 1 Data Collection and Analysis Method

No	Type of Data	Method	Instrument	Subject	time	Aims
1	Multimedia Feasibility	Questionnaire	Questionnaire	Experts	Before product trial	To know the feasibility of multimedia according to multimedia experts, and material experts.
2	Evaluation of Infrastructure Administrati-on Learning	documentation	Mid-Term score of Infrastructure Administration Subjects	Students	Before conducting research	To know student's result and understanding related to the material of infrastructure administration before and after using media, and to determine the classification of control, and experiment class as well. To know the weakness of media from the user.
3	Multimedia applied assessment	Questionnaire	Questionnaire	students	While conducting tryout for limited group and experimenta l group	
4	Evaluation Result of Learning Process	Test	Test Items of infrastructure administration evaluation.	students	As the experiment group trial	To know student's result after using multimedia in the learning process.

Assessment data of media expert towards multimedia learning was analyzed using descriptive techniques. The data was presented and analyzed by material experts, namely (1) Material Presentation (2) Feedback (3) Exercises, while from media experts are (1) Media presentation (2) Material Presentation (3) Interactivity, and (4) Exercises.

The score percentage will be from the calculation of questionnaire score from the validators (media experts, material experts, and students). The following are the criteria to determine the score.

Table 2 Criteria of score interpretation

Percentage	Criteria
0% -20%	Extremely not feasible
21%-40%	Not feasible
41%-60%	Less feasible
61%-80%	Feasible
81%-100%	Very feasible

(Source: Riduwan, 2011:15)

3. Results and Discussion

3.1 Result

Development of learning media *Corel VideoStudio Pro X7*-based was developed using main software of *Corel VideoStudio Pro X7* and assisted by using *Corel Draw X5 Adobe Photo Shop* and QuizCreator. *Corel VideoStudio Pro X7* provides complete arrangement including capture, enter and edit video from another video, and transfer the video to DVD or Blu-ray Disc, mobile devices or the web that can be combined with other applications that show attractiveness of learning media and easily understood by users. Corel Draw X5 software and Adobe Photo Shop can be used to edit the background and the contents of video to make it look more attractive. While QuizCreator software is used to create the post-test questions of Infrastructures Administration subject on teaching materials according its type.

3.1.1 The display of Corel VideoStudio Pro X7-Based Multimedia Learning.

The first view of *Corel VideoStudio Pro X7*-Based Multimedia Learning is started with the introduction of animated motion pictures, text, video and music, to go to the next menu, video will automatically play in accordance with time setting.

3.1.2 Main Menu Display

The main menu display in *Corel VideoStudio Pro X7*-Based Multimedia learning developed by researchers consists of some parts, those are:

Learning Objectives is the part that shows the purpose of studying the Office Spatial Factors according to Basic of Competence of 3.1 and 4.1

Basic competence and core competence are the parts that show the target of competences which should be mastered by students.

Manual instruction is a section that shows how to use the *Corel VideoStudio Pro X7*-Based Multimedia Learning on Subjects of Scope and Infrastructure according to its type.

Material, is the part that contains the materials in Basic Competence of 3.1 and 4.1. Besides, there are photographs related to the lighting system, the color system, room light system settings and sound structuring system. It will stimulate students to have a real picture associated with the office layout factors, so that students are interested in learning.

Developer profile is the part that shows the profile of the researchers who develop the *Corel VideoStudio Pro X7*-Based Multimedia Learning on Subjects of Scope of infrastructures according to material of Spatial Office Factors.

The Final appearance of *Corel VideoStudio Pro X7*-Based Multimedia Learning is a list of team media makers and the source of image and music within the media.

3.1.3 Material Expert Validation

Table 3 result of material expert validation

No	Indicators	Scorer	Statement
1	Material Presentation	96,6	Very valid
2	Feedback	100	Very valid
3	Exercise	96,6	Very valid
Total		97,7	Very valid

X 100%

Quantitative data were obtained from a questionnaire given to the material expert with components contained in the questionnaires, namely: (1) Presentation of the material, (2) Feedback, (3) exercises. The following data were obtained from the questionnaire of material expert validation.

Table 3 shows that the validation results of the quantitative data of material experts on material presentation and exercises obtained the same score, it was 96.6%, while the feedback achieved 100%. The total score of the assessment of material experts towards developed instructional media was 97.7%, so it can be concluded that this media is very feasible to use for the learning process based on Table 2, Feasibility criteria of score media according to Riduwan (2011: 15). Furthermore, material validator stated that the media is categorized as good and testable media. The general judgment of the validation test materials related to the developed media was very positive and has no revisions as it helps teacher in the learning process used in 2013 curriculum.

3.1.4 Media Expert Validation

Quantitative data was obtained from a questionnaire given to media experts regarding to the components in the questionnaire, namely: (1) Presentation of media, (2) Presentation of materials, (3) interactivity, (4) exercises. The following data was obtained from the questionnaire of media expert validation.

Table 4 validation result of Media expert

No	Indicators	Score	statement
1.	Presentation of Media	83,75	Very Valid
2.	Presentation of material	86	Very Valid
3.	interactivity	76,6	Valid
4.	Exercises	60	Less Valid
	Total	76,5	Valid

Table 4 shows that the results of the quantitative data from validation of media expert indicated that media presentation score 83.75% which means valid, then presentation of the material score 86% which means it is valid, while the interactivity reached scored 76.6% that means valid, because this media is not an interactive learning media only to support teacher in teaching process. Furthermore, test items obtained the same score of 60% because the test items were separated from instructional media. The test items were tested separately after learning activities using media and application of *Make a Match* learning model. The calculation Results of the total score assessment of media experts towards this media was 76.5%. It concluded that it is feasible to use for the learning activities based on Table 2, Feasibility Criteria of Score media according to Riduwan (2011: 15). The media validator suggested to improve media presentation by distinguishing the sound as the change section with an explanation of the material, after the purposes part, the discussed material was displayed. On every turn of the section, show the number of sub chapters use bullet and numbering. He also suggested to pay attention to the speed of the display changes, and add background sound. At the presentation of the material, an overview of each section should be added. Remarks on each image will simply made student's understanding. Media experts claimed that the general media is good / feasible to use. Though, the media has some drawbacks, so that the researchers need to perform revisions recommended by the media expert.

3.1.5 Limited Group Testing

Limited Group Testing was conducted to 6 selected students based on the score of Mid-term test which has been classified into high, medium and low score from control class, AP2 XI at SMK 1 Ngawi, East Java, Indonesia. The testing then was conducted to 6 students who are taught with *Corel VideoStudio Pro X7*-based learning multimedia. In The end of the process, they were given a questionnaire to measure the level of validity of the media developed by researcher. The questionnaire results of limited group testing can be seen in Table 6 below:

Table 5 Questionnaire result of student's limited group testing

No	Indicators	Score	Statement
1.	Attitude towards the lesson material	95	Very Valid
2.	Ability	93,3	Very Valid
3.	Knowledge	94,5	Very Valid
4.	Understanding	94,4	Very Valid
5.	Achievement	94,8	Very Valid
	Total	94,4	Very Valid

The results of the quantitative data validation of media expert on indicator of media presentation obtained 83.75% which means valid.

Table 5 shows that the results of quantitative data validation of limited students testing questionnaire on the indicator of attitude towards presentation obtained 95% which means very valid, the ability achieved 93.3%, which means very valid, whereas in the knowledge aspect was 94.5% that means very valid. Next, the score on the understanding aspect was 94.4% that is very valid, and the achievement received score of 94.8% which means very valid. From the results of the validation above, it shows that total of limited students testing questionnaire validation of 6 randomly selected students received total score of 94.4% which means very valid as stated in Table 2 Criteria of Score for media feasibility according to Riduwan (2011: 15). Questionnaire from limited students testing was obtained from criticism and suggestions given by students to improve the media to catch students' interest in studying. Overall, it is understood that the result of limited students testing questionnaire showed that the media is in very good condition. Yet, it still has some weaknesses. As for that reason, the researchers need to perform revisions as student's recommendations.

3.1.6 Experiment Group Testing

The Experiment Group Testing was conducted towards the class of XI AP1 at SMK 1 Ngawi, East Java, Indonesia. This experiment Group Testing was conducted to 33 students of class XI AP1 using multimedia-based learning media *Corel VideoStudio Pro X7*. The test was done by teaching and learning activities; the difference is only the use of media. The final process of Experiment Group Testing is giving posttest and questionnaire to measure differences score and suggestion to the media developed by researcher. The questionnaire results of Experiment Group Testing can be seen in Table 6 below:

Table 6 Questionnaire Result of Experiment Group Testing

No	Indicators	Score	Statement
1.	Attitude to the lesson	92,8	Very Valid
2.	Ability	91,7	Very Valid
3.	Knowledge	93,5	Very Valid
4.	Understanding	94,4	Very Valid
5.	Achievement	93,8	Very Valid
	Total	93,2	Very Valid

Table 6 shows that the results of the questionnaire for validation of experiment group testing at the attitude indicator towards the presentation reached 92.8% which means valid, the ability got score 91.7%, which means valid, whereas the knowledge aspect obtained score of 93, 5% which means valid, the understanding got score of

94.4% that is valid, and the appreciation received score of 93.8%, which means very valid. The results above show total of validation of the experiment group testing questionnaire received 93.2%. That is concluded very valid as stated in Table 2 Feasibility Criteria of Score media according to Riduwan (2011: 15). Criticism and advice given by the experimental class students is used to improve the media particularly in conformity knowledge indicator between the explanation and appearance. Overall, it can be concluded that the questionnaire results of experiment group testing stated that the media is very good or in very good condition. But the media has some weaknesses. The researcher needs to revise some items recommended by the students.

Learning Outcomes Before and After Using *Corel VideoStudio Pro X7*-based Multimedia Learning Media on Field Test

To measure student learning outcomes of class XI AP1 and AP2, researchers used the score of midterm. It is known that the class XI AP1 has lower score than the class XI AP2. XI AP1 class succeeded to obtain 63 while XI AP2 class got 69.4. Thus, researchers determined class XI AP1 as an experiment class and class XI AP2 as control class. The following diagram is infrastructure administration Midterm test.

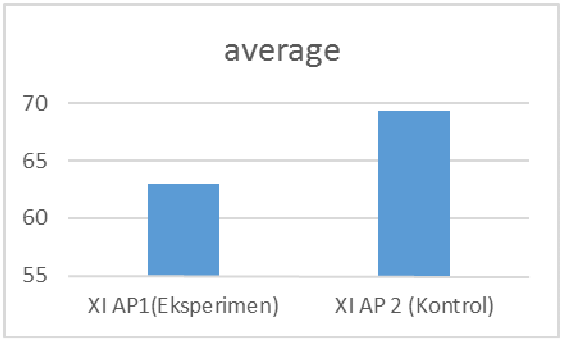

Diagram 1 average of infrastructure administration midterm test

In addition, score also was obtained from the post-test conducted by researchers after using media. Learning was done by researcher himself so that researchers know how the learning process and outcomes when using media developed by researchers. Analyses were performed using the average score of the class after and before using the media developed, Diagram of average value of the class after using the media is as follows:

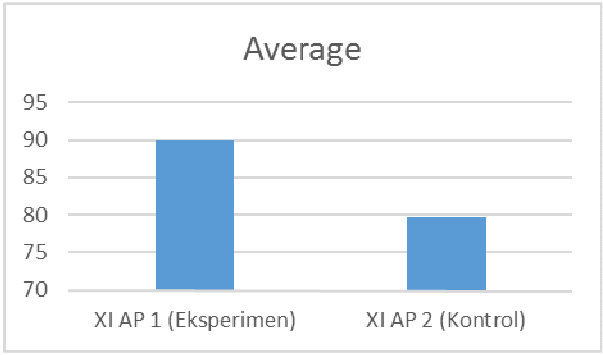

Diagram 2 Average Score after Using Learning Media

From the above data, it can be concluded that there is a difference in student learning outcomes before and after using the media. The average midterm of student learning outcomes on infrastructure administration of XI AP 1 as an experimental class was 63, while the average results of students of class XI AP 1 as an experimental class after using the media achieved 90. The average midterm score of student learning outcomes on infrastructure administration of XI AP 2 as a control class was 69,4, while the average score of students of class XI AP 2 as an experimental class after using the media achieved 79,7. The data above concluded that the media improve student's learning outcomes of class XI APK 1 on infrastructure administration subject at SMK 1 Ngawi, East Java, Indonesia. The following is diagram of the student posttest results after using learning media:

3.1.7 Products Revision

The data analysis of material and media experts concluded that *Corel VideoStudio Pro X7*-based Multimedia Learning Media on Infrastructures Administration and the topic on factors of Spatial Office was considered valid / very feasible to use in the learning process. Before applying this instructional media, the product should be revised as the suggestions from the expert material and media.

3.2 Discussion

Learning media is a tool or means used to convey the material from the teacher to the students in the classroom. The media can also be used as an alternative for teacher in the classroom so that learning is not teacher-centered. It is in line to the aim of curriculum 2013 which demanded more active students and teachers as facilitators. Therefore, researchers developed media that aims for students to be involved directly in the learning process and the presentation of material in the form of instructional media to make the learning process more attractive and fun.

The products produced in the form of research and development of *Corel VideoStudio Pro X7*-based Multimedia Learning Media is equipped with a manual instruction of the product so that the user will be easy to use the media. This media can combine variety of colors, sounds, images, and text in the form of material factors of Layout Planning Office which aims to provide convenience to the student in understanding the material presented by the teacher for students who are audio or visual can be facilitated using this media. Teachers could perform fairly to students who have different learning styles. Research conducted by Oyebolu, (2013: 178) states that computer assisted by instruction complement traditional teaching techniques helping students to learn much faster.

Media developed by researchers is in accordance with the media expressed by (Miarso in Fadillah, 2012: 206). Learning media is everything that used to deliver the message and can stimulate the mind, feelings, concerns, and willingness of the learners in order to encourage the learning process intended, designed and controlled. The view on *Corel VideoStudio Pro X7*-based Multimedia Learning Media consists of the Home view, the main display, and the final view. Each part has different background music and designs to reduce the boredom of students in using this media. It is consistent with studies conducted by Azlina (2014: 156) which states that joined multimedia within learning, multimedia applications must have the potential to connect the activities with object media that are integrated with learning media.

In the development of *Corel VideoStudio Pro X7*-based Multimedia Learning Media, researchers combine pictures, music, text and animation. It aims to make it look attractive so that students are interested in and not get bored using this media. If students have been interested, they will be easier to learn and will increase learning outcomes. In this media, researchers also provide examples related to the material taught. The purpose in using the examples of this media is in accordance with the theory of cones experience created by Edgar Dale (Sadiman, 2010: 8) that the more concrete of the students' learning, the more knowledge and experience will be gained. Because the images are inserted into the granting of this media makes the students who initially could only imagining can see objects directly related to the material taught, namely factors of office layout.

Corel VideoStudio Pro X7-based Multimedia Learning Media is designed with the aim of facilitating the students to understand the material of office layout factors. Since students are able to learn audio and visual, this media is considered to be something new in the world of education. This media is equipped with animation, music and various writing. Moreover, students can learn independently without having to wait for the teacher, and the exercise is arranged to be done individually in limited timeto reduce cheating. This is in line with research conducted by (Volman & Van Eck, 2001; de Corte et al, 2003 in Atsumbe, 2012: 56) which states that the use of ICT offers powerful learning environment and modify teaching and learning process so students can handle the knowledge actively, independently, and directed in constructive way. The explanation of *Corel VideoStudio Pro X7*-based Multimedia Learning Media uses communicative language to make students easier understanding the material. The use of different animations makes students enjoy the media. So, even though the media is played repeatedly, students do not feel bored. This is consistent with research conducted by Rattanathammatee (2012: 177) states that courses emphasize on the use of Learning Management System: LMS, the system adopts multimedia online with text, numbers, images, and audio clips with the objectives that teachers will teach students effectively. This also help them to learn more quickly, more efficiently and create knowledge-based society. This method can improve students' learning and encourage student's motivation as online multimedia can be easily accessed by teachers and students.

The weaknesses of this media are the requirement of supported facilities such as laptop or computer, LCD and projector, so that this media cannot be implemented in all schools, only particular schools with such facilities

that could use this media.

Benefits of *Corel VideoStudio Pro X7* learning media are, for students, this media can be easily understood by teachers. Besides, the students are able to know the score he/she has achieved directly since the evaluation process uses QuizCreator. For teachers, it helps them teaching materials more effectively and efficiently because teachers will professionally teach the students who have studied material presented in audio or visual.

The results of development on *Corel VideoStudio Pro X7*-based multimedia learning has been validated and revised to be applied in teaching and learning as reference for teachers and students. According to the research finding, the use of *Corel VideoStudio Pro X7*-based multimedia is able to improve student learning outcomes. The reference of student's learning outcomes is cognitive because the score given by the teacher to determine the control and experiment class is midterm test, while the affective and psychomotor are only used as support. From the midterm score, it showed that the value of class XI AP1 is lower than class XI AP2, thus XI AP 1 was decided as experiment class and class XI AP 2 serves as a control class.

The learning process was done in the experiment class by presenting learning materials using *Corel VideoStudio Pro X7*-based multimedia learning media, when students learn using the media, they are motivated in studying. The evidence showed they were interested in media during teaching and learning and it's proved that none of them spoke with students who sit next to them. They followed the class seriously. After presenting the media, the students asked about some of unclear points. Teachers implemented instructional model of *Make a Match* that begun with the distribution of cards consist of questions and answers. Student received one card, teacher asked them to find partner and did the exercise on piece of paper and collected to the teacher. After the application of student's learning models of *Make a Match*, the outcomes were measured by conducting Posttest.

Learning process conducted in control class as well as in the experiment class. The difference is control class did not use this media. Students were given lecture and had no relevant media to support. It was teacher-centered. Therefore, the students were given handouts and listening to the teacher explanation. After that, the activity will be continued with asking and answering. Then teacher applied *Make a Match* as he did in the experiment class and giving the posttest to measure student's outcomes.

Results of the post-test showed raising. The increase of student learning outcomes of experiment class using the class average score which indicates the average score of experiment has increased from an average score of midterm score on subjects of infrastructure administration. The control class average value of midterm score on infrastructure administration also increases but not as high as the experiment class. The comparison concluded that learning using *Corel VideoStudio Pro X7*-based multimedia has significantly improved student learning outcomes in class XI APK 1 on subjects of infrastructures administration at SMK 1 Ngawi, East Java, Indonesia.

The dissimilarity of the posttest score is caused by the media used in teaching. The media attracted students to have more motivation on studying. It made students easily to understand the lesson as the research conducted by Sharma et al (2011: 1) which stated that technology has become more suitable media to have actively interaction of experts and students to achieve the goal. In addition, a research of Mahajan (2012: 5) states that the multimedia tool can facilitate and accelerate learning. From the result above, it can be concluded that the use of media in the learning process is an effective way to improve student learning outcomes. This is according to research conducted by Okedeyi, O. S, et al (2015: 150), he concluded that in middle school, when the teacher taught using instructional multimedia, students easily understand. Yet, teachers do not perform learning by using multimedia because the limited availability and they do not have the skills to create multimedia with their improvisations. This show that the needs of multimedia are indispensable. It would also be useful to improve and make the learning process becomes effective.

This is in line with research conducted by Tumbel (2013: 176). He states that "There is a significant effect of experimental, computer-based multimedia and conventional learning methods of biology achievement". Student achievement is affected by varied biology learning process. There was significant difference among average score on biology between student who are teaching by using multimedia or not. There was a significant difference on biology outcomes between students taught by experiment teaching method and students taught by conventional method. There was a significant difference on biology achievement between students taught by multimedia computer-based teaching method and students taught by conventional method. In addition, research by Siagian, et al (2014) states that "Almost students gave positive feedback about learning using multimedia of instructional design, learning interactive multimedia, which brings benefits, interesting, and increasing student motivation to learn. It was retrieved on data of need analysis. 98% students required interactive learning media that can be used as learning individually. "it is also consistent with the theory that expressed by (Hamalik in Arsyad, 2011: 15) which states that "the use of the instructional media in the learning process may stimulates

new desire and interest, raises motivation and learning activities, and even bring psychological influences on students".

4. Conclusions and Suggestions

4.1 Conclusions

According to the research problems, objectives, findings and discussion of the development of instructional media, it can be suggested that there were some items need to be revised. Firstly, expert validation of materials towards subject of infrastructure administration shows that the indicators of material presentation, exercises, and feedback have very valid category. It shows that *Corel VideoStudio Pro X7*-based multimedia is very suitable to be applied in the learning process. Secondly, expert validation of media towards learning media towards subjects of infrastructure administration shows the presentation of media indicators obtained, presentation of the material, interactivity, and the exercise have valid category, which means that this media is feasible for learning process. Thirdly, the result of questionnaire for limited group about try-out of instructional media towards infrastructure administration subject shows that the attitude indicator towards the presentation, the ability, knowledge, understanding, and the achievement can be categorized as very valid. Fourth, the result of the questionnaire for limited group students towards instructional media of infrastructure administration indicators on presentation attitude, ability indicator, knowledge, understanding, and the achievement are also categorized as very valid. To sum up, it can be concluded that the instructional media based *Corel VideoStudio Pro X7* are compatible to be utilized in learning process.

4.2 Suggestions

According to the findings described in the conclusions as well as the implications of the research result, there are some suggestions: first, the development of instructional media based *Corel VideoStudio Pro* can be interactive multimedia that do not require teacher to explain the material, secondly, quizzes inserted in this media in the form of QuizCreator can be used in any computer without any installation. Third, it can be combined with other interactive media to increase students' interest in learning.

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