

Comparison of Audio-Visual Learning Effectiveness with Conventional Media on Student Learning Outcomes in the Operation of Lathe Machine Lesson For Class XI Students of SMK Private Satrya Budi I Perdagangan

Sugiani¹, Iman Syahbudi², Wilma Handayani³

^{1,2}SMK SWASTA SATRYA BUDI I Perdagangan, North Sumatra, Indonesia

³SMKN 10 Medan, North Sumatra, Indonesia

Corresponding Author: Sugiani

ABSTRACT

This study aims to determine the comparison of student learning outcomes taught using audio-visual media with conventional media as well as provide creative and innovative learning media development components / elements of the machine and the operation of the lathe to improve student learning outcomes. The making of this learning media uses software visual studio 11, laptop hardware and material components / elements of the machine and the operation of the lathe. The research method uses an experimental method with a Quasi-experimental research design. Data collection techniques used are observation, documentation and test. There are two classes in this study, namely the experimental class given learning using conventional and audio-visual media and the control class using only conventional media. The results showed a difference as well as an increase in student learning outcomes in the experimental class using audio-visual media compared to conventional media.

Keywords: Audio-visual learning, Machine Components, Lathe operation

INTRODUCTION

In the world of school education is a formal institution that functions to print students into intelligent and educated people. Efforts to improve the quality of teaching and learning processes and student learning outcomes, at every level of education need to be realized in order to obtain the quality of Indonesian human resources that can support national development. Teaching and learning activities are the main activities in the educational process at school, therefore the success of achieving educational goals is highly dependent on the quality of the implementation of the teaching and learning process. One of the developments of human resources is through education in vocational schools as well as in Vocational High Schools (SMK). Based on the consideration that SMK graduates have top priority must have the competence to carry out certain jobs, so they can develop themselves both vertically and horizontally so able to compete in the era of globalization that has the ability to live life well based on scientific approaches. Learning needed at this time is innovative and creative learning, one of which is among others developing learning media in the classroom. Learning media must increase student innovation. Additionally, it stimulates students to

remember what they have learned, in addition to providing new learning stimuli. Good media will enable students to provide responses, feedback, and encourage students to do the right practices.

Conventional learning media are media that are often used in the learning process. This media is often used by teachers in teaching because the preparation is the easiest, but tends to make students bored because there is only one-way interaction, namely from the teacher to students, an example of conventional media is a blackboard. The use of teaching media that is less precise will result in suboptimal impacts on student learning outcomes, the learning process that is less effective is a factor causing the low learning outcomes.



Picture 1. Conventional media

Audio-visual media is an alternative that can be used as a learning media because it can give more insight to the material that will be delivered by the teacher to students. Aside from using manuals and modules, the delivery of material using audio-visual media is felt to be more attractive to students. That way students are expected to better understand the material delivered by the teacher. Media education using audio-visual is still rarely used by educators to assist in the teaching and learning process. This is because making audio-visual as a learning medium is not as easy as making other media such as power points. In

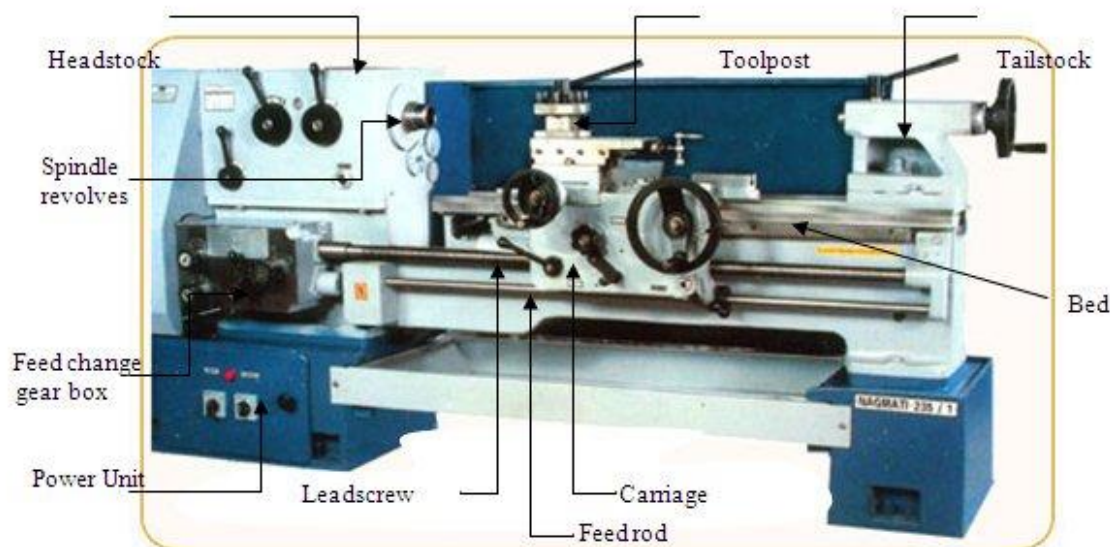
addition, making audio-visual also requires special programs or software, time is not short and adequate expertise. Learning media in the form of audio-visual is useful in supporting teaching and learning activities, but not many audio-visuals are made for learning functions in schools.



Picture 2. Audio-visual Media

Learning outcomes are very important in education because they are indicators of achieving planned targets. For teachers learning outcomes are not only an indicator of success in delivering material to students but the use of the methods used in the teaching and learning process and determine students who have achieved minimal completeness and are entitled to proceed to the next material. For students learning outcomes become a benchmark for mastery of the material delivered by the teacher. For schools good learning outcomes increase the credibility and reputation of the school both in the community and the world of education. For departments and other educational institutions learning outcomes are the material for evaluating curriculum implementation in schools.

Lathe is one of the metal cutting machine with the main motion rotating. The working principle is that the workpiece is gripped by a chuck and rotates while the chisel moves forward to cut and eat. Lathe process is the machining process to produce cylindrical machine parts which are carried out using a lathe.



Picture 3. Lathe Component

Working Principle of Lathe

Turning process is a machining process that uses a chisel with a cutting edge to remove material from the surface of a rotating workpiece. The tool moves in a linear direction parallel to the rotating axis of the workpiece as seen in the picture. With this mechanism of action, the lathe process has the specificity of making cylindrical workpieces. The workpiece is ticked with a spindle shaft with the help of a chuck that has a jaw at one end. The spindle shaft will rotate the workpiece through the carrier plate so that it rotates the gear on the spindle shaft. Through the connecting gear, rotation will be conveyed to the screw shaft gear. By threaded clamps, the rotation of the screw shaft is transformed into translational motion on slashes carrying chisels. As a result, the workpiece will occur in the form of a threaded incision.

There are other studies regarding audio-visual as a learning medium including:

1. Berk (2009: 14), in his research entitled "Multimedia Teaching with Audio-visual Clips: TV, Movies, YouTube, and mtvU in the College Classroom" explains in his conclusion audio-visual multimedia can improve memory, understanding, understanding, and study deeper.

2. Greene and Crespi (2012: 281), in their study entitled "The Value of Student Created Audio-visuals in The College Classroom - an Exploratory Study in Marketing and Accounting" concluded that the positive thing students make audio-visuals and enjoy the project is more interesting learning, more active, new experiences, and personal involvement of students will be established.

3. Wottipong (2014: 209), in his research entitled "Effect of Using Audio-visual Materials in the Teaching of Listening Skills for University Students" in the conclusion section explains that learning using audio-visual looks effective because there is a significantly higher posttest score than the pre-test scores and student responses through questionnaires indicate that students are more interested if the teacher uses audio-visual as teaching material.

MATERIALS & METHODS

Materials

The description of learning activities using audio-visual carried out in class XI Technical light vehicle is as follows; 1) Division of groups consisting of 4 people and 5 people from 37 students namely 8 groups; 2) A brief description of the

material; 3) Distribute paper to students in the form of short and interesting material; 4) Students have a discussion about the kinds of face shapes; 5) Each group presents the results of the group; 6) The teacher demonstrates tips on drawing faces; 7) Each group chooses one kind of face shape that is used; 8) Students collect and are given group assessments; 9) Announce the value obtained by each group; 10) Reviewing together between teacher and students about the material; 11) Question and answer and assignment. The instruments used were curriculum, lesson plans, syllabus, teaching materials / materials, instruments and observation sheets. About the assessment of attitudes, student activity in performance and student success / student mastery in drawing.

Research methods

Research procedures consist of: action planning, implementation, observation of actions and reflection. In the first to third learning is a meeting for adaptation for students. Data collected by assignment techniques (drawing individuals), interviews, observations. About the attitudes, activities and activeness of students in learning. The assignment technique is to draw individuals and fill in the questionnaire sheets about students' attitudes to the subject.

Research Instruments

This class action assessment was carried out at SMK Private Satria Budi 1 Perdagangan for Lathe Design subjects, as subjects in this study were students of class XI technical light vehicle with a total of 37 students, all women.

Data analysis technique

This study uses SPSS version 17.0 in data processing. The test that will be discussed to explain all the aims and objectives of the study is explained based on the results of testing by SPSS.

RESULT

HYPOTHESIS TESTING

The hypothesis is a temporary answer to the research problem, until proven through the

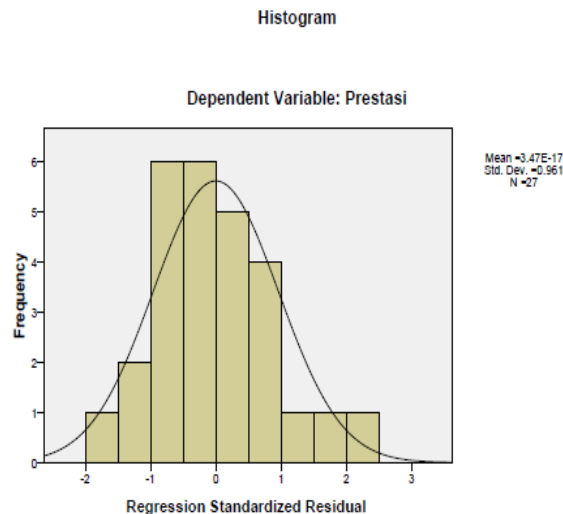
data collected (Arikunto 2010: 110). Based on the above frame of thinking, the following research hypotheses can be formulated:

Ha: There are differences in student learning outcomes in the operation of the lathe between classes using audio-visual media with conventional media.

Classical Assumption Test (Effect student learning outcomes in the operation of the lathe using audio-visual media)

1. Normality Test

The use of a regression model for prediction will produce an error (residue), which is the difference between the actual data and forecasting data. Existing residues should be normally distributed. Normality test aims to test whether the regression model of independent and dependent variables have a normal distribution or not. The histogram facility and the normal probability plot will find out the residual normality from the regression model.



On the histogram, the residual value distribution (error) data shows the normal distribution (bell-shaped picture).

Test the residual normality by using a graph that is by looking at the spread of data at the diagonal source on the Normal P-P plot. Plot of regression standardized residual. As a basis for decision making, if the points spread around a line and follow a

diagonal line, the residual value is normally distributed. Because these points spread around the line, the assumption of normality towards the residual distribution is fulfilled.

2. Multicollinearity Test

Multicollinearity test aims to test whether the regression model found a correlation between independent variables (independent). Multicollinearity can be seen from the tolerance value and the opposite variance inflation factor (VIF), if the tolerance value is greater than 0.1 and the VIF is less than 10, it can be concluded that there is no multi-collinearity. Multicollinearity test results can be seen in the following table:

Table 1. Collinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
1 Innovation	.985	1.016
Lathe Design	.985	1.016

a. Dependent Variable: Student Outcome

Table 1 shows that the tolerance value is smaller than 1, namely 0.985, and the VIF value is less than 10 at 1.016. Thus it can be concluded that this study shows that there is no multicollinearity between the independent variables of innovation and learning Lathe Design with audio-visual media. This identifies that there is an influence between the two variables on student achievement.

Statistical Testing (the influence of innovation and Lathe Design learning with audio-visual on student achievement)

1. Multiple linear regression

The analysis model that will be used in this research is multiple linear regression analysis which can be seen from the following table:

Table 2. Regression Test

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.043	37.334		.215	.831
	Innovation	.053	.124	.084	.427	.673
	Lathe Design	.546	.415	.260	1.316	.201

a. Dependent Variable: Prestasi

Coefficients^a

Model	Collinearity Statistics	
	Tolerance	VIF
1 Innovation	.985	1.016
Lathe Design	.985	1.016

a. Dependent Variable: Student Achievements

$$\text{Achievement} = 8.043 + 0.053 \text{ Innovation} + 0.546 \text{ Lathe Design(audio-visual)} + e$$

The equation of the multiple regression model above can be interpreted as follows:

a. If the innovation and learning of Lathe Design (use of audio-visual) is equal to 0, then the achievement will be worth 8,043 units. While other variables are considered unchanged.

b. If innovation is increased by 1 unit, it will be followed by an increase in achievement by 0.053 units.

c. If the Lathe Design learning (use of audio-visual) is increased by 1 unit, it will be followed by an increase in achievement by 0.546 units.

Thus it can be concluded that the relationship created between innovation, learning Lathe Design with audio-visual media, with achievement is a positive relationship in the same direction.

2. Partial Test (T Test)

Partial test is used to determine the effect of each independent variable on the dependent variable. If Sig. Count ≤ 0.05 , reject H0 accept Ha. The partial test results of this study can be seen in Table 2.

Table 2 shows that the significance value on innovation greater than 0.05 of 0.673 means there is an influence between innovation and achievement. The magnitude of the effect of innovation on achievement by 5.3%. Furthermore, the significance

value of the Lathe Design of 0.201 is greater than 0.050, it can be concluded that there is an influence between learning Lathe Design and audio-visual media with student achievement. The magnitude of the effect of learning Lathe Design with audio-visual on achievement amounted to 54.6%.

3. F Test

This test is conducted to determine the effect of independent variables on the dependent variable simultaneously (simultaneously). If the Sig. value is 0.05, then the alternative hypothesis is accepted, and vice versa.

The results of this F test can be seen in the following table:

Table 3. ANOVA

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	158.605	2	79.303	1.043	.368 ^a
	Residual	1824.802	24	76.033		
	Total	1983.407	26			

Based on Table 3 above, the probability value or Sig. is 0.368. Because the value is greater than 0.05, the effect of the two variables simultaneously (simultaneous), namely the influence of innovation and learning of Lathe Design with audio-visual on achievement is real or meaningful (Ha accepted).

4. Determination Test

This test was conducted to find out how much the percentage of innovation and learning design Lathe Design with audio-visual media are able to explain the student achievement variable. The results of this coefficient can be seen in the following table:

Table 4. Determination Test

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.283 ^a	.080	.003	8.720

Table 4 shows the R-Square value of this study is 0.080 or equal to 8%, meaning that the ability of innovation and learning of Lathe Design with audio-visual in explaining achievement is 8% while the remaining 92% is explained by other variables not included in the model this research.

CONCLUSION

Based on the analysis and discussion it can be concluded that:

1. There are differences in student learning outcomes between classes taught using audio-visual media with conventional media on material components / elements of the machine and the operation of the lathe.

Sugiani et.al. Comparison of audio-visual learning effectiveness with conventional media on student learning outcomes in the operation of lathe machine lesson for class XI students of SMK private Satrya Budi I Perdagangan

2. The increase in learning outcomes in the experimental class is higher than in the control class with a large increase in the experimental class with the help of audio-visual as a learning medium is 53% while those without the use of audio-visual learning (conventional media) have increased by 42%. Probability value or Sig. is 0.368. Because the value is greater than 0.05 (Alpha), the effect of the two variables simultaneously, namely the influence of innovation and learning of Lathe Design with audio-visual on achievement is real or meaningful (H_a accepted).

REFERENCES

1. Arikunto, Suharsimi. 2010. Prosedur Penelitian. Jakarta:PT. Rineka Cipta.
2. Berk, Ronald, A. 2009. Multimedia Teaching with Audio-visual Clips: TV, Movies, YouTube, and mtvU in the College Classroom. *International Journal of Technology in Teaching and Learning*.5(1): 1-21.
3. Greene, Henry dan Cheryl Crespi. 2012. The Value of Student Crated Audiovisuals In The College Classroom – An Exploratory Study In Marketing and Accounting. *International Journal of Arts & Sciences*. 5(1): 273-283.
4. Hamdani. 2011. Strategi Belajar Mengajar. Bandung:CV Pustaka Setia.
5. Haryoko, Spto. 2009. Efektivitas Pemanfaatan Media Audio-Visual Sebagai Alternatif Optimalisasi Model Pembelajaran. *JurnalEdukasi@Elektro*.5(1):1-10.
6. Sari, Dian Maya dan Sahat Siagian. 2013. Pengembangan Media Audio-visual Pembelajaran Pangkas Rambut Lanjutan Berbasis Komputer Program Studi Tata Rias Rambut.*Jurnal Teknologi Pendidikan*. 6(1):1-15
7. Solih, Rohyana. 2004. Melakukan Pekerjaan Dengan Mesin Bubut. Bandung: Armico.
8. Suartama, I Kadek. 2010. Pengembangan Multimedia untuk Meningkatkan Kualitas Pembelajaran pada Mata Kuliah Media Pembelajaran.*Jurnal Pendidikan dan Pengajaran*. 43(3):253-262.
9. Sudjana. 2005. *Metoda Statistika*. Bandung: Tarsito.
10. Sugiyono. 2010. *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.
11. Unnes. 2011. *Pedoman Akademik Unnes*. Semarang: Unnes Press.
12. Woottipong, Kretsai. 2014. Effect of Using Audio-visual Materials in the Teaching of Listening Skills for University Students. *International Journal of Linguistics*. 6(4): 200-212

How to cite this article: Sugiani, Syahbudi I, Handayani W. Comparison of audio-visual learning effectiveness with conventional media on student learning outcomes in the operation of lathe machine lesson for class XI students of SMK private Satrya Budi I Perdagangan. *International Journal of Research and Review*. 2020; 7(3): 37-43.
