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The Influence of Learning Style Utilization towards Experimental Learning Outcomes of Cadets in Boarding School / Vocational Education

Yuyun Suprapto*[1,2], Luthfiyah Nurlaela[1], Siti Masitoh[1]

[1]Post-graduate Program of Education Technology, Universitas Negeri Surabaya, East Java, Indonesia

[2]Politeknik Penerbangan Surabaya East Java, Indonesia

[*] Corresponding author email: yuyunatkp11@gmail.com

Abstract

Learning style is the way individuals begin to concentrate on, process, internalize, and remember new and difficult academic information or skill. Learning styles or human learning modalities generally consist of visual, auditory and kinesthetic learning styles which are all related to the eye-brain. Although most humans have access to all three learning style modalities, but generally humans tend to be one of the learning modalities that stand out as a vehicle for learning, processing and communication. This research was related in order to investigate learning outcomes on experimental learning through the use of each lerning style in boarding school education. Boarding school is an educational institution where students not only study, but they live and live together in the institution. The research instrument used were questionnaires and tests, while the data analysis used two ways of ANOVA. The statistical analysis showed that there was difference learning outcomes in Electronica Solid State Subject among experimental learning with CBT and analog experimenter and each learning

style. Furthermore, there is no influence of learning styles on student learning outcomes.

Key words: Analog Experimenter; learning outcomes; experimental learning method

Introduction

Aviation Polytechnic of Surabaya is one of the institution that implementing the boardig school system. Oxford Dictionary (Victoria Bull, 2001:43), "Boarding School is school where pupils live during the term". As avocational education in general, the provision of education in the Surabaya Aviation Polytechnic prioritizes the practice with the proportion of 70% of the entire educational curriculum. With such a dominant proportion, the students are required to master all aspects of practicum, both in terms of understanding and applying the principles and concepts. Solid State Electronics Subject is a science subject which is one of the subjects of science an skills in the curriculum of Air Navigation and Telecommunication Engineering and Airport Electrical Engineering (TLB) in which the outcomes of students learning was that the students are expected to be able to understand and apply the principles and concepts of solid state electronics as well as able to apply the procedure of design and application of solid state electronics.

Learning style a prefered way of thinking, processing, and understanding information. Each person prefers a pattern of thought and behavior that influences his or her learning process. Learning style generally consist of visual, auditory and kinesthetic learning styles. Visual learning style is understood as the tendency of someone to choose and use the sense of sight to process information. Audio learning style is a way for someone to process information by prioritizing his hearing abilities. Kinesthetic learning style is a way for someone to process information by prioritizing information acquisition through the sense of touch.

As explain above boarding school is an educational institution where students not only study, but they live and live together in the institution. Therefore, students at the Surabaya Polytechnic (Poltekbang) at the beginning of entry need to adjust to existing regulations, where there are provisions from waking up to going to sleep again.

Challenges that arise for changes and adaptation of students in an environment filled with provisions make students the main target in learning change, but more than that is competence and value that can pass the passing grade. In some subjects, especially solid state electronics.

Method

Research Design

The method chosen in this reserach is the quasi-Tuckman experiment method. [8] Research is in a design where two or more variables are manipulated at the same time to study the influence caused by interactions of several variable. [9] The Variables in this study are independent variables, moderator variables dan dependent vaariables. The dimensions of the independent variable are computer based training media and experimenter analog media, moderator variables namely visual, auditory and kinesthetic learning styles. Then the dependent variables are learning outcomes measured at the level of understand relationships and apply skills classified in the learning taxonomy of Reigeluth (1999). So that the research design was in the form of a 2x3 factorial design. Therefore, [10] the data analysis used two

ways, ANOVA and SPSS 20.

To know the influence of CBT which refers to EWB software utilization towards the learning outcomes in Solid State Electronics subject, sampling was conducted on experimental group and control group. Tests were conducted simultaneously in each group after the lecture with EWB software and the lecture using analog experimenter.

Inaccordance with the relationship between variables mentioned in the previous chapter, then the research can be described in the diagramas follows.

Table 1. Relationship between Variables

Learning Media Learning model	Computer -based Training Media (X_1)	Analog experimenter Media (X_2)
Visual (A_1)	X_1,A_1	X_2,A_1
Auditory (A_2)	X_1,A_2	X_2,A_2
Kinesthetic (A_3)	X_1,A_3	X_2,A_3

Table1. Relationship between variables

Information:

X_1,A_1 : the interaction between computer-based training learning media and visual learning model.

X_2,A_1 : the interaction between analog experimenter learning media and visual learning model.

X_1, A_2 : interaction between computer-based training learning media and auditory learning model.

X_2, A_2 : the interaction between analog experimenter learning media and auditory learning model.

X_1, A_3 : the interaction between computer-based training learning media and kinesthetic learning model.

X_2, A_3 : the interaction between analog experimenter learning media and kinesthetic learning model

Population and Sample

The population of this research involved all students of the Air Navigation and Telecommunication Engineering (TNU) and Airport Electrical Engineering (TLB) at the Surabaya Aviation Polytechnic. In the Air Navigation and Telecommunication Engineering (TNU), there was two class of students of first semester with 49 students. Meanwhile, in the

Airport Electrical Engineering (TLB), there was two class of students first semester consisting of 46 students.

Technical Data Analysis

In this research technical analysis used was two-way ANOVA. For that, previously performed hypothesistest was firstly tested following the requirements below:

1) Normality test,

Normality testing to evaluate the null hypothesis (H_0) on media which states that data is normally distributed.

Table 2. Normality test of Media Data in

Learning (One-Sample Kolmogorov-Smirnov Test)

		CBT	AE
N		49	46
Normal Parameters[a,b]	Mean	50.41	74.40
	Std. Deviation	11.506	13.491
Most Extreme Differences	Absolute	.145	.110
	Positive	.082	.059
	Negative	-.145	-.110
Kolmogorov-Smirnov Z		1.013	.746
Asymp. Sig. (2-tailed)		**.256**	**.633**

a. Test distribution is Normal.
b. Calculated from data.

From table 2 above, for all groups, it can be seen the normality for learning outcomes for learning strategies with the use of computer based training media, the significance of which is 0.256>0.05, meaning that the data is normally distributed.

2) Homogeneity Test

The homogeneity test of the population variant was done through Levene Test.Through the homogeneity test, it can be found that the similarity of variant of bound variable (learning outcome) was basedon each variances core of the independent variable (CBT and analog experimenter and Learning Style). The homogeneity test summary was presented in the following table.

TABLE 3. HOMOGENEITY TEST RESULT THROUGH LEVENE TEST

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Learning_Outcomes

F	df1	df2	Sig.
.570	5	89	.723

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Strategi + Learning_Model + Strategy * Learning_Model

Result and Discussion

Hypothesis

Table 4. Tests Of Between-Subject Effect

Dependent Variable: Learning_Outcomes

Source	Type I Sum of Squares	df	Mean Square	F	Sig.
Model	386187.552[a]	6	64364.592	450.130	.000
Strategi (Media CBT dan AE)	385739.082	2	192869.541	1348.823	.000
Error	12726.198	89	142.991		
Total	398913.750	95			

a. R Squared = .968 (Adjusted R Squared = .966)
b. Computed using alpha = .05

The hypotheses in this research are:

H0: There is no influence between students who have visual, auditory and kinesthetic learning styles on learning outcomes

H1: There is the influence between students who have visual, auditory and kinesthetic learning styles on learning outcomes

From table IV shows that coefficient value. Sig for learning style on learning outcomes is 0,870, this means :

Koef. Sig $0.870 \leq 0.05$ stated H_0 accepted

F Count $0.140 > 2.70$ stated H_0 accepted

So, based on the calculation it can be concluded that the null hypothesis is accepted,

which means “there is no influence between students who have visual, auditory and kinesthetic learning styles on learning outcomes” solid state electronics at Aviation Polytechnic of Surabaya.

TABLE VII Estimates Marginal Mean between learning model influence toward learning outcomes

Dependent Variable: Learning_Outcomes

Learning_ Model	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Visual	63.346	1.675	60.018	66.674
Audio	60.813	2.618	55.611	66.014
Kinesthetic	62.535	2.636	57.296	67.773

Based on table VII, shows the overall average learning outcomes of students between learning styles which are more or less the same or do not have a significant difference. Where, the average value of learning outcomes of students who have a visual learning style is 63.35, while the average value of learning outcomes of students who have an auditory learning style is 60.81 and the average value of learning outcomes of students who have learning style kinesthetic is 62.53.

Conclusion

There is no influence of learning styles on student learning outcomes, known in the sig value. count 0.870> 0.05 and the calculated F coefficient 0.140 <2.70 so that Ho is accepted and it is concluded that there is no difference in learning outcomes between students who have a visual, auditory, and kinesthetic learning style towards learning outcomes. In general, the average student has a visual learning style. Where, out of 95 students who have a visual learning style of 51 students with an average learning outcome that is equal to 63.35. Students who have auditory learning styles 23 students with an average score of 60.81. Students who have kinesthetic learning styles with a total of 21 students and the average learning outcomes are 62.53.

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