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The Influence of Cognitive Loads (Low and High) of Multimedia in Direct Learning and Leraning Style to the Results of Reading Comprehension for the Second Grade of Senoir High School Students

Mufdalifah[1] Punaji Setyosari[2] Utami Widiati[2] Sihkabuden[2]
1.Student Instructional Technology State University of Malang, 6 Surabaya Street Malang, Indonesia
2.Advisor Instructional Technology State University of Malang, 6 Surabaya Street Malang, Indonesia

Abstract
This study aims to analyze (1) the differences in learning result between groups of learners who are taught using low and high cognitive loaded multimedia in direct learning; (2) the differences in learning result among learners who have visual, auditory and kinesthetic styles; and (3) the interaction of cognitive load (low and high) usage in direct learning and learning styles to reading comprehension learning result.This study uses quasi experiments with factorial design (2x3) involving two groups of subjects, taking into account the moderator variables that may influence experiments on the results obtained. The study subjects were chosen randomly and then predicated. Two select subject groups received different treatment, group 1, were taught using low cognitive loaded and group 2 multimedia, were taught using high cognitive loaded multimedia. Both hypotheses were tested using a two-lane variance analysis technique (ANOVA). All statistical analyzes used the SPSS 20.0 statistical program and all null hypothesis testing was performed at a significance level of 5%.The results showed that: (1) there was a difference in learning result among high school class XI students, between groups of learners who were taught using low cognitive and low cognitive loaded multimedia in direct learning. Learning groups using low-cognitive burdened multimedia provide higher learning result than learning groups that are taught using high cognitive-loaded multimedia (2) there is a difference in learning result among high school class XI students, between learners' groups who have visual, auditory and kinesthetic learning styles; and (3) there is interaction of cognitive (low & high) cognitive load usage in direct learning and learning style to learning comprehension result of the second grade of senior high school students class.Based on the research findings, some suggestions are given to the learner: (a) the learner should carefully design the lesson and develop guidelines at each stage of the learning process; (b) the learner should be advised to learn the teaching materials and the student's worksheet before the learning process to explore the initial idea. For further research, it is hoped that there will be classroom action research to get the quality of process of learning based on technology and media more optimally, so it can be depicted the effectiveness level of certain cognitive loaded multimedia usage in direct learning.
Keywords: multimedia cognitive load, direct learning, learning style, reading comprehension, reading result

1. Introduction

The use of media in learning refers to the presentation of the material by using words, pictures and objects that can facilitate learning attitudes. The case that supports the use of the media as a learning tool lies in the premise that learners can better understand the explanation if it is communicated with media support rather than not using media. In this case Degeng (1989) emphasized that the use of media consider the interaction of learners with the media used in addition to the form of learning itself. According to Winn (1996) in learning, the media can serve as a special messenger, forming an intermediary environment that helps learners to explore the understanding of knowledge, and the development of cognitive ability as a model or extension of ability.

However, the use of media in learning to date is still a controversy between opinions that consider the media influence on learning result and vice versa. Clark (1994) argues that the media, however, will not affect learning result. Smaldino, et al., (2008) states that comparative studies of media over the years suggest that what facilitates learning is a non-technological or media strategy. As Felton and others (2001) claim that the use of media in the learning process significantly increases the achievement of learning result.

Meanwhile, the digital revolution sparked the re-thinking of learning methods, where multimedia as a bridge that conveys educative messages can be packaged in an interactive form, otherwise known as multimedia. Mayer (2001) predicts three possible learning result using media, ie; (1) there is no learning at all if the transfer performance is bad and the retention work is bad, (2) learning occurs but bad if the transfer performance is bad but the retention performance is good, and (3) meaningful learning or meaningful learning if the transfer performance and retention performance are equally good. Transfer and retention activities are sensory activities used by learners in recording and storing any incoming information during learning activities.

Mayer's (2001) opinion about the possible failure of multimedia-assisted learning may be due to the complexity of materials and interactive elements that overwhelm the learner's brain. This is explained by the findings of Sweller, et al., (1998) that learners, in addition to accommodating various kinds of information that

enters simultaneously into the brain, on the other hand learners also have to cultivate interactivity between these elements in order for learning to occur. Similarly, Sousa (2011) who argues that the brain can not do multitasking or task shifting while it is working. The brain can only focus on one task at a time. Distraction between one task to another task that is too often done, will result in losses.

If it is hapened, the question is how the brain can learn well? The findings of Paas & van Merriënboer (1994) suggest that the brain will learn if the learning conditions match the cognitive architecture of learners, which includes three performance, namely: (1) sensory memory or register, (2) working memory, and (3)) long-term memory. Sensory memory or register memory deals with stimuli received by sensory devices that include light, sound, smell, taste and touch (Feinberg and Murphy, 2000). Working memory, according to Baddeley (1992) is a system consisting of three parts, namely: a central system of action as a controller of attention, and two support systems are: visuospasial sketch board that serves to manipulate visual images, and phonological repeating that serves to store and recall information-based talks (in Feinberg and Murphy, 2000). While long-term memory refers to the body of knowledge and skills stored in a form that can be accessed relatively permanently-in other words, everything that is known to be stored in long-term memory-in contrast to working memory, long-term memory is almost limitless (Feinberg and Murphy, 2000).

These cognitive structures work and deal with the cognitive load experienced by learners in receiving and processing information. The cognitive load itself is a construct of a particular task that weighs on the cognitive system. The cognitive load can be task dimension (mental burden) and the dimension of learners (mental effort). Both dimensions jointly or individually affect the ability and learning result (Sweller, et al., 1998).

The results of Sweller's research, et al., (1998); Sweller (2004); and Kalyuga (2009) found three types of cognitive load, namely: (1) intrinsic, (2) extraneous, and (3) germane. The magnitude of the intrinsic cognitive load experienced by learners is determined by the degree of interactivity between important elements of information (Kalyuga, 2011). The level is relative, in accordance with the ability of learners in receiving and processing the information being studied. Extrinsic cognitive loads relate to instructional design, a charge unrelated to achievement of learning objectives (Sweller and Chandler, 1994). The load is usually a mental activity that must be pursued by the learners caused by the ways of managing and presenting the learning. While constructive cognitive loads are mental efforts that point to the amount of cognitive power capacity actually allocated to accommodate the burden posed by the task (Sweller, 1998).

With regard to cognitive load in the use of multimedia learning, Mayer (2001) argues that in designing messages, multimedia always reflects a basic conception of how people learn, even when the underlying learning theories are not stated. Some of the findings point to three basic assumptions of how cognitive work is about multimedia: (1) multiple channels, humans have separate channels for processing visual information and auditory information (Baddeley, 1992); (2) limited capacity, humans have limitations in the amount of information that can be processed in each channel at the same time (Chandler & Sweller, 1991; Baddeley, 1992); and (3) active processing, human learning by selecting relevant incoming information, organizing information into coherent mental representations and integrating with other knowledge (Mayer, 1999).

The early cognitive load theory revolves around one principle, that the reduction of extrinsic cognitive load offers a more effective way of learning, but Paas, et al. (2004) caution that the reduction of extrinsic cognitive loads often assumes that cognitive loads should always be maintained at a minimum level during the learning process, but designers assume that reducing cognitive loads is not always beneficial, especially if the working memory capacity is not exceeded and the load can be well managed, the problem is not the load level but the source of the load. If the load is caused by mental activity that interferes with the formation and automation of the scheme, then it is an extrinsic cognitive load, an unimportant load and negatively affecting the learning activity. If the burden is caused by mental activity that is relevant to the learning activity, then the burden is constructive, effective load and will have a positive effect on the learning activities.

In a study of reading comprehension, the findings of Pass, et al. (2004) are evidenced by research by Mangen, et al. (2012) that students who read texts in print are significantly better than students who read in digital texts.) Theoretically, texts in print does not have an extrinsic cognitive load when compared to digital texts that have some inherent features attached to the device when turned on. Unlike Chun and Plass (1996) findings that show the mastery of masculinity is more effective when taught by the use of visual and verbal multimedia This is in accordance with Mayer's (2001) theory of multimedia cognitive work which assumes that humans have separate channels for processing visual information and auditory information or called multiple channels. This result also confirms the statement of Pass, et al. (2004) that enabling not to reduce cognitive loads if capacities s working memory in managing information is not exceeded and its cargo can still be managed properly.

Regardless of the controversy about multimedia theory, cognitive load and learning result, when designing a lesson, Roblyer (2006) argues that multimedia technology can be integrated with both objective and constructivist learning. While Muijs & Reynolds (2008) stated that direct instruction model is highly relevant if integrated with multimedia because direct learning gives the teacher the flexibility to plan, prepare, and carry out the learning activity. Especially for language learning, Turkmen (2006) and So and Kong (2007) found that the integration of

multimedia technology in learning using the direct learning model approach has the potential to increase learners' understanding.

Another important factor in the study of language learning is the learning style of learners. In a study of language, Kirna (2010) and Suyanto (2012) prove that learning styles play an important role in the effectiveness of process and learning result, in which innovation strategies and learning multimedia can be applied effectively to learners with certain characteristics and learning styles, the other hand can harm the learners who have different characteristics and learning styles. In principle, learners will enjoy the learning process if they learn according to their own learning styles, besides that learning context with appropriate to the environment of the students' life (Suprapto, et al., 2017).

Based on the three assumptions about how cognitive work in multimedia (Baddeley, 1992; Chandler & Sweller, 1991; Baddeley, 1992; Mayer, 1999), cognitive load theory, direct learning strategies, learning styles of learners and previous research results on reading comprehension, then this research is done by designing a set of direct instructional activities by using multimedia that has cognitive load level intrinsic and extreme cognitive load level and grouping of different learning styles (auditory, visual and kinesthetic) to know the effect on reading comprehension learning result.

2. Method

This study uses factorial design (2x3) by observing the presence of moderator variables that may influence experimental results. In choosing the research group conducted at random. Prior to the experiments conducted in both groups, prates were performed and after the treatment was carried out the test to the group. Thus the experimental procedure consists of prates, treatments and posttest

Through factorial design pattern can be determined main effect and interaction effect of all treatment variables. By using this design, the main influence and interaction effects of each treatment variable can be demonstrated easily and clearly, as stated in the research hypothesis.

The main influence of treatment variables is divided into two types, namely the main influence of multimedia cognitive load variable in direct learning without seeing the influence of learning style variables and the main influence of different learning style variables without seeing the effect of multimedia cognitive load variable in direct learning. The effect of interaction provides information about the interaction between multimedia cognitive load variable in direct learning and the different learning style variables to the learning result variable that become the focus of the research.

The research subjects involved were the students of class XI SMA Negeri 2 Sampang and SMA Negeri 1 Sampang in the academic year 2016/2017, which followed the learning of English and received the research treatment. Determination of subject group that is determined follow the pattern of subject group (class) as already structured in SMA Negeri 2 Sampang, which consists of 2 classes each class there are 30 students and SMA Negeri 1 Sampang, which consists of 2 classes each class there are 30 learners. Thus, the researcher did not sort the subjects in a class, so the subject group's research was in accordance with the presence or intact group (Vockell & Asher, 1995; Tuckman, 1999; Campbell & Stanley, 1996).

Based on the study design, there are two groups of subjects required to test the research independent variables. To determine which subjects were treated differently from each other, randomization, to which the first group of subjects were subjected, was treated using text and voice / narration (low cognitive load) and second subject groups, treated using text and multimedia image (high cognitive load) in direct learning.

After the data collected, then performed data analysis to answer the problems of research and test the research hypotheses. In this study, statistical analysis used is parametric inferential statistical analysis. As parametric statistics, comparative analysis requires the fulfillment of the assumptions of paraphrase. Two types of metaphor assumptions were performed before a two-lane variance analysis was performed, ie the normality test of posttest value data in all treatment groups was performed by Kolmogorov-Smirnov Test method. While the variance homogeneity test was performed with Levene's Test. All of the assumptions of the parametric measurements were carried out at a significance level of 5%.

Hypothesis testing is done by using two-way variance analysis technique. ANOVA is used as a tool to analyze the main data, namely: to test the significance of the effect of independent variables of cognitive burden of multimedia extrinsic in direct learning and learning style to the dependent variable of learning result. In this study, the multimedia cognitive load (as the independent variable) and the learning style as the moderator variable). Multimedia cognitive loads have 2 (two) categories, and learning styles have 3 (three) categories. Thus the way of writing is 2 x 3 ANOVA. This means that in this study independent variables have 2 (two) categories and moderator variables have 3 (three) categories (McMillan & Schumacher, 2006).

Two-way ANOVA can also test the significance of the interaction between the two variables. All hypotheses testing as previously stated, performed at a significance level of 5% using SPSS 20, for Windows computer assistance.

3. Results

3.1 Preview results

Descriptive analysis of the value of learning comprehension reading comprehension on each cell, the largest average value in the multimedia group is a group of low-cognitive burdened multimedia users in direct learning, while the greatest average value in the learning style group is the visual learning group.

In general, the standard deviation of the value of prates of learning result in each treatment group has a narrow range that indicates no outlier data. Boxplot test results reinforce that there is no value data prates outlier learning result, both in multimedia groups and learning style groups.

Table 1 Posttest Value Condition Learning Result in each Treatment Group

Descriptive Statistics

Cognitive load on multimedia	Learning Style	Mean	Std. Deviation	N
LOW Cognitive load on multimedia	Visual	71.25	9.65	28
	Auditory	63.25	11.25	16
	Kinesthetic	65.56	13.89	16
	Total	69.00	11.01	60
HIGH Cognitive load on multimedia	Visual	72.18	10.99	28
	Auditory	71.50	10.31	16
	Kinesthetic	71.38	12.35	16
	Total	71.78	12.21	60
Total	Visual	73.21	10.30	56
	Auditory	67.38	11.41	32
	Kinesthetic	68.47	13.26	32
	Total	70.38	11.66	120

A two-track ANOVA test was conducted to confirm the equality of multimedia treatment groups in direct learning and learning styles. Two-lane ANOVA test results on prates learning result showed that there was no significant difference between treatment group, either multimedia group or learning style group. Thus, the subject of the study in each treatment group is equivalent seen from the value of prates learning result.

Results Post test

The average value of learning result of learners who have visual learning styles seen higher than those who have auditory and kinesthetic learning styles, namely 86.89, 83.53 and 82.62 respectively. As for multimedia groups, the use of low cognitive loaded multimedia and high cognitive loaded multimedia mean value learning result of learners who have visual learning styles look higher than those that have auditory and kinesthetic learning styles.

Table 2 Posttest Value Condition Learning Result in each Treatment Group

Descriptive Statistics

Dependent Variable : POSTTEST LEARNING STYLE

Cognitive load on Multimedia	Learning Style	Mean	Std. Deviation	N
LOW Cognitive load on multimedia	Visual	88.71	4.87	28
	Auditory	82.81	4.26	16
	Kinesthetic	84.81	5.37	16
	Total	86.10	5.52	60
HIGH Cognitive load on multimedia	Visual	85.07	3.94	28
	Auditory	84.00	4.82	16
	Kinesthetic	80.44	5.82	16
	Total	83.55	5.04	60
Total	Visual	86.89	4.76	56
	Auditory	83.53	4.69	32
	Kinesthetic	82.62	6.10	32
	Total	84.86	5.45	120

Based on table 3 it can be seen that the mean value of posttest of learning result between groups of learners using low cognitive loaded multimedia in direct learning is higher than that of learners who use high cognitive loaded multimedia in direct learning. Student groups that have visual learning styles have a higher average learning outcome score than those of learners who have auditory and kinesthetic learning styles.

3.2 Testing Requirements

Test the normality of data of each treatment group using Kolmogorov-Smimov statistic test, and test homogeneity variant using Levene's Test method. All assumption tests use a 5% significance level. After the normality and homogeneity test requirements are met then the hypothesis test is done, namely the test of the main influence and interaction between the research variables.

3.3 Normality test

Normality test aims to determine the normality or asymmetry of the distribution of the value of Posttest as the unit of analysis. The decision-making method for normality test is done by Kolmogorov-Smirnov Z method, ie if significance (Asymp.sig)> 0,05 then data is normally distributed.

Table 3 Test Results Normality using One Sample Kolmogorov-Smirnov Z Method

One-Sample Kolmogorov-Smirnov Test						
		Low Cognitive load Multimedia	High Cognitive load Multimedia	Visual	Auditory	Kinestetik
N		60	60	56	32	32
Normal	Mean	86.1000	83.5500	86.8929	83.4062	82.6250
Parameters[a.b]	Sdt Deviation	5.51946	5.04026	4.76227	4.51420	6.09997
Most Extrem	Absolute	.167	.120	.158	.234	.135
Differences	Positive	.106	.094	.096	.234	.135
	Negative	-.167	-.120	-.158	-.102	-.082
Kolmogorov-Smirnov Z		1.294	.929	1.181	1.325	.761
Asymp.Sig. (2-tailed)		.070	.354	.123	.060	.608
a. Test distribution is Normal						
b. Calculated from data						

The Kolmogorov-Smirnov One-Sample test result against the learning result pascates indicates the price of Asymp.Sig. (2-tailed) all treatment groups greater than 0.05, ie: (1) Asymp.Sig prices. (2-tailed) multimedia groups; the group using low cognitive loaded media was 0.070, the group using high cognitive loaded multimedia was 0.354; and (2) the price of Asymp.Sig, (2-tailed) learning style groups; the learning group with visual learning style was 0.123, the learning group with auditory learning style was 0.060 and the learning style group with the kinesthetic learning style was 0.608. This means that the value of learning result in all treatment groups is normal distribution or the assumption of normality is met.

3.4 Homogeneity Test of Variants

Homogeneity test aims to determine whether the value of variant posttest individual learning result homogeneous, between treatment groups. The homogeneity test of variants using Levene's Test Statistic is to assess the similarity of variants of different subject groups.

Table 4 Homogeneity Test Results of Variance with Levene's Test Method

Levene's Test of Equality of Error Variances (a)

Dependent Variable: Posttest

F	df1	df2	Sig.
1.179	5	114	.324

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

a Design: Intercept + Multimedia + Style + Multimedia * Style

In Table 4 it can be seen that, the significance value on the dependent variable of posttest learning outcome is 0.324 or greater than 0.05. This means that, assuming the homogeneity of variant is fulfilled and it can be concluded that, the group of learning result data between learners who are taught with low and high cognitive loaded multimedia in direct learning and learning style have the same variant.

3.5 Hypothesis testing

The analysis is used as a tool to test whether there is a direct influence of cognitive load-bearing multimedia-independent variable and learning styles on learning result, meaning whether there is a difference in learning result based on two groupings (low cognitive and extrinsic-burdened multimedia and learning styles).

Tabel 5 Summary of the result analyses

Tests of Between-Subjects Effects

Dependent Variable: posttest

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	808.941[a]	5	161.788	6.876	.000
Intercept	796078.627	1	796078.627	3.383E4	.000
Multimedia	145.145	1	145.145	6.169	.014
Learning style	458.749	2	229.375	9.748	.000
multimedia * learning style	155.117	2	77.558	3.296	.041
Error	2682.384	114	23.530		
Total	866925.000	120			
Corrected Total	3491.325	119			

a. R Squared = .232 (Adjusted R Squared = .198)

if the predefined null hypothesis is rejected (Sig <0.05), then there is a significant difference, it will be tested between treatments by using multiple comparisons Scheffe (Winer, 1977), to find out further what different mean values significantly. The results are calculated using the help of computer program SPSS 20 for Windows with a significance level of 5%.

Based on Table 5, statistical test results of cognitive load-dependent multimedia independent variables on learning result can be interpreted as follows. In cognitive-weighted multimedia variables it is seen that the significance value is less than 0.05 at significance level (a) 0.05, meaning the null hypothesis (Ho) is rejected. This suggests that there is a difference in learning result among high school class XI students, between those taught by using low cognitive loaded multimedia and high cognitive loaded multimedia in direct learning.

Based on Table 6, the result of statistical test of learning style moderator variable toward learning result can be interpreted that the learning style variable of significance value is 0.000. Because of the significance of 0,000 <0,05 (α), the null hypothesis is rejected. In lian words there is a difference in average learning result, between learners who have visual learning style, auditory and kinesthetic.

Based on Table 6, the results of two-lane ANOVA calculations, the interaction between the cognitive load-free variable of multimedia and the moderator of the learning style variables on the learning result can be interpreted as follows. The interaction of multimedia cognitive load and learning style, it is seen that the significance value is 0.041, the significance value is smaller than 0.05 this means the null hypothesis (Ho) is rejected. In other words it can be stated that, the interaction between multimedia cognitive load in direct learning and learning style is significant to the learning result of class XI high school students.

4. Discussion

4.1 The Effect of Multimedia Cognitive Expenses in Direct Learning on Learning Result

From the calculation result of two path ANOVA obtained value of significance 0,00 at significance level (α) 0,05, this means null hypothesis (Ho) rejected. The statistical decision concludes that, the cognitive (low and high) load of multimedia in direct learning gives a different effect on the reading comprehension result of class XI high school students.

This finding is in line with the theory that, the use of integrated technologies and multimedia with well-planned learning strategies can improve learning (Smaldino et al., 2008). Also supported by research findings that the use of multimedia influences on learning result (Pasaribu, 2005, Kirna, 2010), the positive effect of technology utilization in science learning, both at elementary school, high school and college (So and Kong, 2008; Ketelhut, et al., 2009; Wang, 2008), and the results of Remus research, et al., (2008) also show the effect of multimedia on the decision of learners, and the type of multimedia gives a different influence to the learners.

4.2 Effect of Learning Styles (Visual, Auditory and Kinesthetic) on Learning Result

Hypothesis test results concluded that there are differences in learning result of class XI high school students, among learners who have visual learning style, auditory and kinesthetic. This finding is in line with studies of study psychology and research findings that report that the effectiveness of an instructional innovation is determined by the characteristics of the learners. The inconsistency of learning result by applying certain cognitive-charged multimedia usage in direct learning is likely to be due to incompatibility of multimedia delivery strategies with learning styles of learners. According Kirna (2010), utilization of a technology in learning can be effective for certain learning style characteristics, but sometimes inhibits learning for learners with other learning styles.

Differences in both treatments need to be further studied, namely by testing the difference in mean values between treatments to find out further which treatments have different effects. Is it true that the treatment of multimedia with certain cognitive loads affects learners' learning result or vice versa, that the learning result happen by chance? For that purpose, further tests were conducted using Scheffe's multiple comparisons technique, with the aim of knowing whether the different treatments given to these three groups of subjects actually resulted in significantly different learning result.

4.3 The Influence of Visual Vs Learning Styles on Auditory Learning Styles in Direct Learning

The results of the test using multiple comparisons Scheffe concluded that there are significant differences between learners and visual learning styles in direct learning with learners with auditory learning style in direct learning. This is indicated by a difference ratio of 4.9732 * (significance of 0.000). Thus, the results of this study show unequal effectiveness between groups of subjects who have visual learning styles in direct learning with those who have an auditory learning style in direct learning.

On the basis of this study, the visual learning style in direct learning has resulted in better result than those with learners who have an auditory learning style in direct learning.

4.4 The Effect of Using Visual Learning Style Vs Kinesthetic Learning Styles in Direct Learning

The result of the test using Scheffe multiple comparisons technique concluded that, there is no significant difference between visual learning styles in direct learning with kinesthetic learning style in direct learning. This is indicated by the difference ratio of 2.4732 (significance 0.098). Thus, the results of this study show the same effectiveness, between subject groups that have a visual learning style in direct learning, with learners who have kinesthetic learning styles in direct learning.

On the basis of this research, to improve learning result of class XI high school students, can be done with learners who have a visual learning style in direct learning and students who have kinesthetic learning style in direct learning. In other words, learners with visual learning styles in direct learning and learners with kinesthetic learning styles in direct learning provide equal opportunities to learning in class XI, to improve learning result.

4.5 Effect of Learning Style Auditory Vs Kinesthetic Learning Styles in Direct Learning

The test result using Scheffe multiple comparisons technique concluded that, there is no significant difference between learners with auditory learning style in direct learning with learners with kinesthetic learning style in direct learning. This is indicated by a difference ratio of 2,500 (significance 0.154). Thus, the results of this study show the same effectiveness, between subject groups that have an auditory learning style in direct learning, with learners who have kinesthetic learning styles in direct learning.

On the basis of this research, to improve learning result of class XI high school students, can be done to learners with auditory learning style in direct learning and learners with kinesthetic learning style in direct learning. In other words, auditory learning styles in direct learning and kinesthetic learning styles in direct learning provide equal opportunities to learners in class XI, to improve learning result.

4.6 The Influence of Interaction between Cognitive Weighted Multimedia Use in Direct Learning and Learning Styles on Learning Result

Two-way ANOVA calculation result, the interaction between cognitive (low and high) cognitive significance level (α) 0.05, meaning the null hypothesis (Ho) is rejected. This shows that there is an interaction between the use of cognitive (low and high) loaded multimedia in direct learning and learning styles to the learning result of high school class XI students. The types of interactions that occur include ordinal interactions (Hair, et al., 2006).

Ordinal interaction pattern shows, the influence of interaction between the use of cognitive-loaded multimedia (low and high) in direct learning with learning style (visual, auditory, kinesthetic) to learning result. Associated with ordinal interactions, Hair, et al., (2006) provide assertion “When significant interactions are ordinal, the researcher must interpret the interaction term to ensure that its results are acceptable conceptually. Here the researcher must identify where the variation in group differences occurs and how that variation relates to the conceptual model underlyingthe analysis. If so,then the effects ofeach treatment mustbe described in termsofthe other treatments it interacts with”.

It can be concluded that the hypothesis test cannot be expressed simply by simply stating the presence and absence of different treatment groups on the dependent variable. The existence of ordinal interactions makes the hypothesis test hypothesis more explicit that: (1) the use of low cognitive loaded multimedia in direct learning is more effective than using high-cognitive loaded multimedia in direct learning, in reading comprehension, for learners who have visual, auditory, kinesthetic , (2) learning group having higher learning style than learning with auditory learning style and kinesthetic learning style, (3) learners who have superior visual learning style in the use of low cognitive load multimedia in direct learning from inside the use of high cognitive-load multimedia in direct learning, (4) the use of high cognitive load-rich multimedia in direct learning does not inhibit learning for

learners groups who have visual, auditory, kinesthetic, and (5) interaction among the cognitive-loaded (low and high) multimedia used in direct learning with visual-auditory-kinesthetic learning styles, asserting that visualization in the use of cognitive-weighted multimedia positively affects learners with this different learning style contributes to improved English learning result reading comprehension.

5. Conclusion & Suggestions

5.1 Conclusion

Based on the research hypothesis testing can be submitted several conclusions of the research results: (1) there is a significant difference between the learning result of the learning groups using cognitive (low and high) loaded multimedia in direct learning, (3) there is a significant difference between learning result from groups of learners who have visual, auditory and kinesthetic learning styles, and (3) there is an interaction between the use of certain cognitive-charged multimedia in direct learning and learning styles to learning result, meaning that there is a difference in learning result, from the interaction between the use of certain cognitive-charged multimedia in learning direct and learning styles.

5.2 Suggestion

In this study the use of low cognitive loaded multimedia in direct learning is recommended to be used in reading comprehension learning to improve learning result. To optimize direct learning, the learner is advised: (a) to carefully design the lesson and ensure that there are guides at every stage throughout the learning process and anticipate possible problems when learners engage in activities; (b) the learner should ask the learners to learn the teaching materials and LKS at home before the classroom learning process; (c) training in the ability to ask questions, questions asking for evidence, asking questions and questions asking for the implications of the learners 'opinions, and (d) motivating learners to convey their ideas, and commenting and responding to learners' opinions. Multimedia with low cognitive loads equipped with voice narration, it is advisable to optimize the goals related to learning comprehension reading English literacy, can also increase technology literacy, an important aspect of life skill in today's information and technology era. Research shows that, visual, auditory and learning styles

Kinesthetic has no effect on learning result. However, the interaction between the use of multimedia with certain cognitive loads in direct learning and learning styles has an effect on learning result. The main goal of each learner is to meet the needs of each learners so as to achieve maximum learning result. For that it is advisable learner in designing the use of multimedia in strategy learning, to adjust the multimedia format and learning style of learners as well as pay attention to the cognitive load that will cause.

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