

The effect of thematic learning model, learning style, and reading ability on the students' learning outcomes

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The effect of thematic learning model, learning style, and reading ability on the students' learning outcomes

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Abstract: This study aims at gaining empirical findings of the effectiveness of thematic instructional model as compared to conventional instruction; and the potential capacity of thematic instructional model in accommodating different learning styles and reading abilities. This is an experimental research design with 140 elementary students as research subject. The data were collected by using achievement test, learning style questionnaire, and reading comprehension test, and analyzed by using Anava. The results indicate: there is a significant difference in achievement between students who use thematic instructional model and those using conventional model; a significant difference in achievement between students with visual learning style and those having auditorial learning style; a significant difference between students with high reading ability and those with low reading ability. Student's achievement is influenced by the interaction between instructional model and student's learning style. Student's achievement is not influenced by the interaction between instructional model and student's reading ability, the interaction between student's learning style and student's reading ability, and the interaction among instructional model, learning style and student's reading ability. The conclusion is thematic instructional model was more effective than conventional instruction and thematic instructional model had a capacity in accommodating different learning styles and reading abilities.

1. Introduction

Integrated learning is believed to confer a benefit on the achievement of instructional and nurturant effects [18]. By using a more student-focused approach, integrated learning provides opportunities for involving a wide range of students' potentials in the learning process, and it will make learning more meaningful. The integrated learning model provides enough opportunity for the involvement of various students' experiences because the raised themes are selected from the things students put forward, which may be originated from previous experience, and based on the perceived needs of students [3].

There have been a great number of studies concerning the thematic integrated learning. It has proved to be reliable not only to improve students learning outcomes but also for the student-student and student-teacher interaction. In addition, the thematic learning is also able to foster the collaborative activity, giving rise the nurturant effect by increasing the responsibility and ability to cooperate with students [35].

A study conducted by Mavropoulos, et al [11] addressed the application of interdisciplinary (integrated) approach in the learning of chemistry. In this study, the researchers concentrated on the teaching model applying an interdisciplinary approach to the topic of "food". The results indicated that there was an increase in student-instructor interaction and the similar application of interdisciplinary models to another topic was recommended.

Ruth [13] investigated the comparison between the scores of students in elementary reading that implemented an integrated thematic learning in the experimental group with the students' scores in the



control group using conventional learning. During the two-year period, the experimental school students' scores showed an increase of 16%, while the control school only achieved an increase of 3%.

In addition, learning will run well when students' differences and cognitive processes are well understood by the teacher [15]. Students with different learning styles (visual or auditory) will be studied in accordance with the type. How they learn will affect their academic achievement [16]. In the thematic learning presenting the lessons based on themes that connect the various related subjects might provide different learning outcomes for each student with different learning styles.

The integrated learning facilitates children with visual learning styles. Rose and Nicholl state that more often a person uses visual models, easier to understand and remember because he uses the largest part of the human brain, the part that is dedicated to visual processing. Concept mapping and visual representations help learners think about a subject globally and allow flexibility in their thinking [12]. Based on these descriptions, it can be said that the learning outcome of the child with visual learning style is likely to be better than the one with auditory learning style.

Another factor that also must be considered in students, especially first-grade students, is the early reading ability since they are generally still in the early stages of learning to read or early reading. Activities of reading and writing will empower students to conduct exploration, researching, and enjoy the contents of knowledge according to the needs and interests of their own as independent learners [17].

In connection with the model of learning, the thematic models can accommodate differences in students' reading ability. The thematic learning models make all students active and engaged, regardless of reading ability. By using a more-focused student-centred approach, the thematic learning provides opportunities for a variety of potential involvement in the learning process, as well as accommodating students' individual differences including their reading ability.

Based on this background, this study focused on the effect of learning model, students' learning styles, and students' reading abilities on their learning outcomes in the 1st grade in Surabaya city. The learning model included thematic and conventional models, while the students' learning styles were categorized as 'visual' and 'auditory'. Furthermore, the students' reading skills are categorized as 'high' and 'low'. The models of learning, student learning styles, as well as students' reading skills, are what are regarded as factors affecting the students' learning outcomes.

2. Method

The present study employed an experimental research with a factorial design (2x2x2). This experimental study involved two groups of subjects (70 students in the experimental group, and 70 students in control group). The experimental group received the thematic learning model as the treatment and the control group had the conventional model. At the beginning of learning, a pretest was administered to measure the students' early ability of to determine whether or not the two groups have the same ability. Furthermore, the reading ability test, in which students read a text one by one, and then two people who had been trained as the observer, assessed their reading skills. A questionnaire on learning was completed by the class teacher, assuming that he knew each student well, considering they had been taught in the classroom since the first semester. The reason why it was the teachers who completed questionnaires student's learning style because it is assumed the 1st-grade students did not quite have the ability to understand the items on the learning style questionnaire developed in this study if it was completed by the students themselves, it was possible to cause bias. The independent variable was the learning model, which fall into two categories: thematic learning and conventional learning models. The moderator variable was the students' learning styles and reading abilities. Learning styles can be classified into two, namely, visual and auditory. The reading ability was also divided into two, namely, high and low. The dependent variable was the learning outcomes, i.e. cognitive learning outcomes, covering the aspects of knowledge and understanding (comprehension).

The influence of background variables was controlled by the subject to subject randomization in multi-stage cluster random sampling or random sampling stages. The achievement test administered for the conventional learning included the Indonesian, Mathematics, Science and Social Sciences subjects. While the test for the integrated learning refers to the themes developed, covering: Food and Animal. Such tests before being used for real research were first tested in the 1st grade of Wonokromo 1 Elementary School, to measure the content validity and the reliability of the instrument

To measure the validity, the Pearson correlation formula was used, while the reliability testing technique used the split-half Spearman-Brown formula [1]. The learning style instrument was developed based on the characteristics of each learning style, namely visual and auditory as well as modified from the instrument for learning styles by Bradway and Hills. The test for reading skills of the students used the proposed criteria by Kartika (2004), in the form of technical reading skills tests (reading aloud). The reasons for selecting the tests were that the tests were in accordance with the first-grade students' expected competencies putting an emphasis on the technical reading ability. The test for instrument reliability of teaching skills used the technique of inter-observer agreement [6]. An instrument is regarded as reliable if the reliability values obtained is ≥ 0.75 [2]. The data analysis regarding the research hypothesis testing used the three-way Analysis of Variance using the SPSS.

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3. Results and Discussion

3.1. Requirement Test Analysis

The results of normality test found that almost all the group data are normally distributed with Kolmogorof-Smirnov and Shapiro-Wilk statistical values showing $p > 0.05$, except the conventional data-visual-low, for its Kolmogorof-Smirnov statistical value show $p < 0.05$; but the Shapiro-Wilk statistical value indicates $p > 0.05$. Therefore, the overall data of the dependent variable for both groups are of a normal distribution.

The results of the homogeneity test found that the p-value of all the variables is above 0.05. It is therefore concluded that all the variance between groups is homogeneous. Thus, the data can be further analyzed by ANOVA.

3.2. Results of Data Analysis

The summary of the results of ANOVA is shown in Table 1. The null hypothesis (H_0) is rejected if $p < 0.05$. Based on the table 1, it reveals that the results of the hypothesis testing by $df = 1$ and a significance level of 5% obtained are: (1) $F = 9.651$ and significance level or p-value = 0.002, meaning that the learning outcomes showed a significant difference between the variations of models of learning, (2) $F = 13.844$ and level of significance of p-value = 0.000, meaning that the learning outcomes showed a significant difference between variations in learning styles, (3) $F = 6.428$ and the significance level or p value= 0.012, meaning that the learning outcomes showed a significant difference between the variation the ability to read. (4) $F = 6.768$ and figures of significance $p = 0.010$, means that the learning outcomes are influenced by the interaction between the learning model and the students' learning styles, (5) $F = 0.055$ and significance level or p value= 0.814, meaning that learning outcomes are not influenced by the interaction between model of learning and the students' reading ability. Although individually, the learning model affects the learning outcomes, as well as the reading ability; but it turns out that the interaction between them has no effect, (6) $F = 0.207$ and significance level or p-value = 0.650, meaning that the learning outcomes are not influenced by the interaction between the learning style and students' reading skill, and (7) $F = 0.977$ and level of significance or pvalue = 0.325, meaning that the learning outcomes are not influenced by the interaction among the learning models, learning styles and students' reading ability.

Table 1. Summary of ANOVA Results

Tests of Between-Subjects Effects					
Dependent Variable: POSTEST					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4096.543 ^a	7	585.220	5.295	.000
Intercept	767132.858	1	767132.858	6941.462	.000
Learning Model	1066.533	1	1066.533	9.651	.002
Learning Styles	1529.920	1	1529.920	13.844	.000
Reading Ability	710.437	1	710.437	6.428	.012
Learning Model*Learning Styles	747.910	1	747.910	6.768	.010
Learning Model*Reading Ability	6.111	1	6.111	.055	.814
Learning Styles * Reading Ability	22.912	1	22.912	.207	.650
Learning Model*Learning Styles*Reading Ability	107.943	1	107.943	.977	.325
Error	14587.926	132	110.515		
Total	804130.810	140			
Corrected Total	18684.469	139			

a. R squared = .219 (Adjusted R Squared = .178)

3.3. Interpretation of Data Analysis Results

3.3.1. Thematic and Conventional Learning in Achieving learning outcomes.

From the results of the hypothesis testing, it showed that the learning outcomes of students who took the thematic learning model were higher than the learning outcomes of students who took the conventional learning model. This proves that the thematic learning significantly and more highly influence the achievement of learning outcomes as compared to the conventional model of learning.

These findings are consistent with the findings of previous research, including (1) Research by Ruth (1989) found that the reading scores of elementary school students who applied the thematic learning during the two-year period showed an increase of 16%, while elementary schools applying the traditional model only reached an increase of 3%; (2) Buechler (1993) suggests one of the research results of the application of the thematic learning model called CLASS-a program in Indiana that used thematic models. The study analyzed the performance of 100 elementary schools in terms of testing the progress of learning called ISTEP (Indiana Statewide Testing for Educational Progress). His findings were that schools with ISTEP CLASS obtained a score higher than other primary schools in the state and that scores on CLASS schools continued to increase over time.

Benson (2005) suggested that the thematic learning involved a set of activities related and designed around topics or themes, and to reach some areas of the curriculum. The themes provide an environment that encourages learning process involving all students actively. The theme also builds

the student interest a ³ prior knowledge by focusing on topics relevant to their lives. The setting assists the students to relate to real life experience and develop what they know. The theme gives one of the best tools to integrate the content area in a way that makes sense for students and help them make connections to transfer the knowledge they have learned and apply it in meaningful ways. Another benefit of using the themes in teaching elementary school children includes: learning of factual information in depth, physically involved in the study, study skills processes, integrating learning in a holistic way, increasing closeness of the group, focusing on individual needs, and motivating students and teachers [9].

Numerous studies indicate the existence of the thematic learning advantages compared to the conventional learning. The advantages of thematic learning are also confirmed by the opinions of Shoemaker (1989) stating that the thematic learning allows students to learn in the most ³ natural way. Teachers can make a deal to build a web of themes that attract students, and beneficial for all. These advantages include more coverage of the curriculum to learn naturally, to build students' interest, teaching skills in a meaningful context, and more flexibility.

3.3.2. Thematic and Conventional Learning in Accommodating Learning Styles.

Based on the hypothesis testing, it is known that the learning outcomes were influenced by the interaction between the learning models and the students' learning styles. From the results of the descriptive analysis, the learning outcomes of the students with visual learning styles were higher than the learning outcomes of the ones with auditory styles, both in the thematic and conventional learning groups.

The character of a child with visual learning styles is that he relies heavily on vision when absorbing information. By nature, the child is interested in the visual familiar sights and reminds visual signs such as motion, colors, shapes, and sizes. Most children have an excellent visual hand-eye coordination is. They are also visually superior in all fine motor activities, i.e. activities that require eyes and small muscles, such as those in the fingers. They enjoy reading and writing neatly remaining on the line. Relevant to the statement of Rose and Nicholl revealing the characteristics of children with visual styles in more detail, among other things are neat and orderly, meticulous to detail, good spelling and be able to see the words that are actually in their mind, considering what is seen rather than heard, having the visual association, usually not bothered by the commotion, read quickly and diligently, rather read than recite, and requires the views and overarching goals and be vigilant before mentally feeling sure about a problem [12].

Conversely, children prefer the auditory sounds and words on information provided to the views and touch. In general, children are very verbal auditory, therefore, are often warned for talking too much during the class. Unlike the visual children who love reading and writing neat, auditory ones would rather read out, or when he reads his own, his voice tends to be hard as giving instructions. Comparing to children with visual styles, auditory children's writing, in general, is less tidy. Rose and Nicholl state that auditory children are easily distracted by noise, find it difficult to write, like to talk, as well as have problems with jobs ³¹ involve visualization [12].

Based on these characteristics, it can be understood that in this study, the learning outcomes of visual children tend to be better than the ones of auditory children. This does not mean the visual learning style better than the auditory one. In this context, study materials which are designed in the form of Student Book are more favourable to the visual children. Rose and Nicholl cite that the visual children use a global or general format which allows the information indicated in a similar manner as the brain functions in multiple directions simultaneously because he uses the largest part of the human brain, the part that is dedicated to visual processing [12].

3.3.3. Thematic and Conventional Learning in Accommodating Reading Ability.

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Based on the results of hypothesis testing, it turns out that the learning outcomes were not influenced by the interaction between the learning model and the students' reading ability. Although individually, the learning models affected the student learning outcomes, as well as the reading ability. The interaction between them had no effect on the learning outcomes. Based on the descriptive analysis, the learning outcomes of the students with higher reading ability turned out to be better than the students with low reading ability.

Studies on literacy have been reported by various sources. MacGilchrist suggested that there is one important finding of the role of reading, where the level of students' abilities at the age of 7 years is a good predictor of the top level of achievement in the future. A correlation was obtained between the reading ability at the age of 7 and the level of achievement exam at the age of 16 [10].

Reading ability is thus so important that it is necessary to provide a conducive learning environment, so as to create a literate generation [14]. The education system needs to be reformed in order to be able to develop the literacy skills of children from an early age. Learning should be directed towards developing students' creativity and thinking. Starting primary school, children should be accustomed to the reading assignments. In connection with this, the conventional learning encouraging the growth of interests and reading habits should be enhanced. The learning models that are better able to create a literate learning environment which can improve the students' reading ability should considerably be applied.

3.3.4. *The Effects of Learning Models, Learning Styles, and Reading Ability on Student Learning Outcomes.*

The thematic learning is more accommodating to differences in students' reading ability because it provides the conditions that encourage students to develop the ability to read. This learning makes students active and engaged no matter how their reading ability is. This leads to students' increased interest in reading, thus leading to increasing reading skills. As previously noted, theoretically, there is a relationship between reading and reading skills. The higher interest in reading is, the better a person's ability to read. In the thematic learning, learning strategies lead to increased students' interest in reading, which will then lead to increased reading ability, and ultimately lead to better learning outcomes.

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This also applies to the interaction between the learning styles and the reading ability. The results showed that there was no interaction between the learning outcomes, both on the thematic and conventional learning. The learning styles individually affect the learning outcomes and the reading ability. The interaction between them had no effect on the learning outcomes. Research has shown that reading ability is more influenced by the interest in reading, and not one's learning style [4]. In other words, children with high ability to read and any learning style, whether visual or auditory, will achieve higher learning outcomes.

The Student books provided in this study was a material which was feasible to qualify, because it presented the concept and the structure and activities that the students had been identified. Then during learning, the teacher provided scaffolding to provide assistance to students. They were very beneficial for students to develop the reading ability, both for visual and auditory children.

Based on the previous discussion, it can be understood when it was later discovered that there was no interaction between learning models, learning styles and literacy on learning outcomes. Therefore, there was no interaction between the learning model with the reading ability, and there was no interaction between learning styles and the reading ability; then by itself, the interaction among these three (models of learning, learning styles and the ability to read) on learning outcomes was discovered.

10 Conclusion and Suggestion

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Based on the findings, the conclusions of this study are summarized into seven points, they are as follows: 1) there is a difference in the learning outcomes for the students who use the thematic learning

model and the students who use the conventional learning model. The learning outcomes of the students who take the thematic learning are higher than the students who follow the conventional teaching; 2) there is a difference between the learning outcomes of students who learn with visually style and ones with auditory learning style. The learning outcomes of students who learn with visual styles are higher than students with auditory learning styles; 3) there is a difference in the learning outcomes between the students with high reading ability and the students with low reading ability. The learning outcomes of students who have high reading ability are better than students who have low reading skills; 4) There is an interaction between the learning models and students' learning styles in the learning outcomes; 5) There is no interaction between the learning models and the reading ability in the students' learning outcomes; 6) There is no interaction between learning style and the reading ability in the students' learning outcomes.; and 7) There is no interaction between among the learning models, learning styles and reading ability in the students' learning outcomes.

Based on the conclusions, as an empirical implication, several suggestions can be put forward as follows: 1) The importance of the thematic learning to apply the learning in elementary school, especially the lower class; 2) The importance of attention to individual differences of students, in particular learning styles; 3) Reading ability should also be a concern, considering the elementary students, in general, are still in the early stages of learning to read or early reading.

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