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THE INFLUENCE OF THE FIELD TRIP LEARNING METHOD ON ELEMENTARY SCHOOL STUDENTS' SCIENTIFIC LITERACY COMPETENCIES

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Abstract

Learning methods are supporting components of learning. Learning methods can support the effectiveness of the learning process. The selection of learning methods needs to consider student characteristics, environmental conditions, learning materials, and the applicable curriculum. This research aims to describe and explain the influence of the field trip learning method on scientific literacy competencies at elementary school levels. This research used an ex post facto research method with a correlation design. Data were collected by conducting observations, interviews, and distributing questionnaires. The sample for this research was 10 teachers and 35 students in class IV of State Elementary School 1 Pungangan, Mojotengah Sub-district, Wonosobo District, Central Java. The analysis obtained the Adjusted R-Square (Coefficient of Determination) value of 0.786. This means that the field trip learning method provides 78% influences on scientific literacy competencies which is included in the very influential category. Based on the results of the research, it can be concluded that the implementation of the field trip learning method significantly and effectively increases scientific literacy competencies in Natural and Social Sciences (IPAS) subjects, particularly for Chapter 1 Plants are the Source of Life on Earth.

Keywords: Field trip learning method, scientific literacy competencies, elementary school.

INTRODUCTION

The world has significantly changed since the last decade and the community calls it the 'Industrial Revolution 5.0' (Akhmedov, 2023). All aspects of life shift towards modernization (Ally & Perris, 2022). This industrial revolution brought good, relevant, and reforming influence, particularly in the field of education. Education becomes a benchmark for the improvement in human resources which is the main goal of the Industrial Revolution 5.0 (Tanriogen, 2018).

All human beings need equal opportunities to access education (Elayyan, 2021). In this era, the quality of human resources determines the future of every human being (Arrington & Wagner Friedman, 2022). The Industrial Revolution 5.0 influenced education in terms of the development of learning tools including learning methods (Sadykhan et al., 2022).

Learning methods are a systematic and structured way to convey and explain learning materials to students (Dilber-Özer & Baysal, 2022). Learning methods make it easy for teachers to encourage students to obtain learning outcomes in accordance with learning achievement (CP) and learning objectives (TP) (S. A. Rahmawati & Katoningsih, 2023). Each teacher uses learning methods that suit students' abilities, natural and social environmental conditions, the material presented, and the

applicable curriculum. Currently, Indonesia implements an independent curriculum (Pearce & Lee, 2021).

The independent curriculum has some components that are different from the previous curriculum, including the subjects (Hadi et al., 2023). The independent curriculum has new subjects, namely the integration of Natural Sciences and Social Sciences subjects into Natural and Social Sciences (IPAS) subjects (Wanti & Chastanti, 2023). This subject requires different learning methods considering that this subject focuses both on natural and social life. One of the relevant learning methods for this subject is the field trip learning method (R. F. Rahmawati et al., 2020).

The field trip learning method is the latest learning innovation where students can have a trip to a certain area to obtain objects outside the school environment (Wibowo & Setiawati, 2023). This aims to introduce and invite students to carry out learning activities such as observing, reasoning, asking, and investigating learning objects directly (Kim et al., 2022). This method was based on the development of constructivist learning theory which emphasizes contextual learning processes. Learning encourages participants to improve various competencies including scientific literacy competencies (Han, 2020).

The field trip learning method has some advantages such as 1) implementing modern learning oriented towards the surrounding environment, 2) presenting learning materials in accordance with everyday life conditions and the surrounding environment, 3) stimulating critical, creative, and innovative thinking skills, 4) improving scientific literacy competencies, 5) presenting comprehensive and integrative learning material, 6) responding to the challenges of the times, 6) carrying out the learning process directly and touching objects directly, 7) finding concrete information, 8) encouraging students to analyze, reason, ask questions and solving problems, 9) improving learning motivation, and 10) improving learning outcomes (Atchison & Kennedy, 2020).

A previous study by (Muchsin et al., 2021) has proven that the use of the field trip learning method and the PlantNet application can improve learning outcomes and learning motivation, particularly for materials related to the identification and classification of Spermatophyta plants. This can be seen from the percentage of students who can pass the minimum completeness criteria, namely 88% which is included in the very effective category.

Based on observations and interviews conducted in class IV of State Elementary School 1 Pungangan in September 2023, the teacher faced some obstacles in the learning process in the Natural and Social Science subject. These obstacles are 1) as a new subject, the Natural and Social Science subject gives difficulties for students to understand the materials, 2) students' low scientific literacy levels, 3) decreasing learning outcomes, 4) the inability of the learning process to increase students' motivation and interest in learning, and 5) monotonous learning methods. Moreover, the learning process has not considered contextual aspects, so students cannot optimally develop their scientific literacy competencies.

Students' low scientific literacy competencies indicate a decrease in learning outcomes in the Natural and Social Sciences subject in class IV. The homeroom teacher for Class IV explained that 68% of students have not met the minimum completeness criteria. Therefore, it is important to develop scientific literacy competencies to enrich students' insight and knowledge which ultimately can increase learning outcomes (Aydın Gürler, 2022).

Scientific literacy competencies for students function to understand, reason, and communicate everything related to science both verbally and in writing, and to analyze, formulate hypotheses, and create solutions as an effort to appropriately and responsively solve problems in the surrounding environment (Gao et al., 2021). This competency provides students with a high sense of sensitivity regarding phenomena or problems within themselves and in the surrounding environment (Noor, 2021).

Students who can develop scientific literacy competencies well will be able to 1) develop critical and creative thinking skills, 2) respond to phenomena within themselves or the surrounding environment, 3) solve problems, 4) improve insight and knowledge, and 5) increase learning outcomes (Palines & Cruz, 2021).

Moreover, the researcher found that teachers have prepared reform plans and used more varied learning methods. They applied the field trip learning method during the Natural and Social Science learning process in class IV. On this field trip, students went to the vegetable garden in Pungangan Village, Mojotengah Sub-district, Wonosobo District, Central Java. The selection of areas is based on the local wisdom in the school environment and environmental characteristics considering that this area is suitable for the Natural and Social Sciences (IPAS) subject in class IV, particularly for materials in Chapter 1 'Plants are the Source of Life on Earth'. This research aims to describe and explain the influence of the field trip learning method on the increase in scientific literacy competencies in Class IV.

METHOD

This research used ex post facto methods with a correlation design. The ex post facto method focuses on the actions that have already occurred (John W. Creswell, 2012).

The subject in this research was class IV of State Elementary School 1 Pungangan which is located at Kleyang Jurang Street, Pungangan Village, Mojotengah Sub-district, Wonosobo District, Central Java. The sample size was 10 teachers and 35 class IV students. Data were collected by conducting observations, interviews, and distributing questionnaires. The questionnaire about the field trip learning method was distributed to the teachers while the questionnaire about scientific literacy competencies was distributed to the students. The data obtained from the questionnaire were used to describe the influence of the field trip method on scientific literacy competencies.

Data analysis covered 1) normality tests, 2) linearity tests, 3) simple correlation tests, 4) simple linear regression tests, and 5) coefficient of determination tests.

Ta|ble 1.1 The questionnaires about field trip methods

No.	Aspect	Indicator
1	Pedagogy	The learning process is student-centered.
		Teachers act as facilitators in the learning process.
2	Field trip method	Complex and up-to-date learning models.
		Suitable with the learning needs.
		Suitable with the characteristics of students.
		Communicative.
		Attract students' interest in learning.
		Impressive.
		Meaningful.
		Challenging.
		develops effective, cognitive and psychomotor abilities.
		Active and responsive.
		Critical thinking.
		Creative and innovative.
		Organizing classes.
		Communication skills.
		Discussion

(Source: Data processed by researchers)

Ta|bel 2.1 The questionnaires about scientific literacy competencies

1	Attitude towards data and facts	Directly observing learning objects.
		Directly interacting with the surrounding environment.
2		Critical thinking attitudes.
		Responsive thinking attitudes.

	The ability to think and work in collaboration	Relating learning material to phenomena and events in everyday life.
		Using the surrounding environment as literature.
		Reasoning from direct observation.
		An open perspective and summarizing the results of direct observations.
3	Attitudes of discovery and creativity s	Presenting the results of observations.
		Discussions with the audience, receiving responses and objections
		Carrying out the learning process in the surrounding environment in an orderly manner.

(Source: Data processed by researchers)

RESULTS

This research includes some tests for describing the influence of the field trip learning method on the increase in students' scientific literacy competencies. The first test was the data normality test to determine the distribution of data in a group of data or variables whether they are normally distributed or not.

If the Sig value is > 0.05, then the data are considered normally distributed, but if the Sig value is < 0.05, the data are not normally distributed. The results of the normality test can be seen in Table 1.3 below.

Table 1.3 Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		10
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	1,67886379
Most Extreme Differences	Absolute	.215
	Positive	.215
	Negative	-.175

Test Statistic	.215
Asymp. Sig. (2-tailed)	.200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the table above, the Sig value is 0.200 > 0.05. This means that the residual value is normally distributed. Then, the data are considered normally distributed so it is continued with the linearity tests.

The linearity test is to find out whether the two variables used in this research are linear or not, namely the field trip learning method and scientific literacy competency variables. If the p-value> 0.05, then there is a relationship between the two variables, but if p < 0.05, there is no relationship between the two variables. The results of the linearity test are presented in Table 1.4 below.

Ta|ble 1.4 Linearity Test

ANOVA Table

			Sum of Squares	Df	Mean Square	F	Sig.
Scientific Literacy (Y) * Field Trip Method (X)	Between Groups	(Combined)	10.100	5	2.020	.505	,764
		Linearity	.733	1	.733	.183	,691
		Deviation from Linearity	9.367	4	2.342	.585	,692
	Within Groups		16,000	4	4.000		
	Total		26,100	9			

Based on the table above, the Sig value is 0.692 > 0.05 which means that there is a relationship between the field trip learning method and increasing scientific literacy competencies. After

knowing that the data are declared linear or have a relationship, it is continued with a simple correlation test to see the relationship between the two variables.

The next test is a simple correlation test to measure the strength of a relationship between two variables or the form of the relationship between the two variables. This relationship refers to quantitative data, namely the field trip learning method variable (X) on increasing scientific literacy competency (Y). In this case, if the Sig. (2-tailed) > 0.05, then the relationship between variables is not significant, but if Sig. (2-tailed) < 0.05, then there is a significant relationship between variables. The results of the simple correlation test are presented in Table 1.5.

Ta|ble 1.5 Simple Correlation Tests|

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	80.383	2.213		36.330	.000
	FieldTripX	.067	.011	.900	5.839	.000

a. Dependent Variable: LiterasiSainsY

Based on Table 1.5, the Sig. (1-tailed) is 0.000 < 0.05 which means that there is a positive and significant relationship between the field trip learning method and increasing scientific literacy competencies. The higher the field trip learning method, the higher the scientific literacy competencies. Then, the researcher also carried out a simple linear regression test to determine the influence between variable X and variable Y.

The next test is a simple linear regression test to determine the influence of the independent variable (field trip learning method) on the dependent variable (scientific literacy competencies). If the Sig value is > 0.05, then there is an influence of variable X and variable Y. The results of the simple linear regression test are presented in Table 1.6.

Ta|ble 1.6 Simple Linear Regression Tests

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.733	1	.733	.231	.644[b]
	Residual	25.367	8	3.171		

Total	26.100	9			

a. Dependent Variable: Scientific LiteracyY)

b. Predictors: (Constant), Field Trip Method (X)

Based on the table above, the Sig value shows the influence of variable X on variable Y of 0.644 > 0.05. This indicates that there is an influence between variable X and variable Y. The next test is the coefficient of determination test to see the influence of variable X on variable Y.

The next test is the coefficient of determination test to measure how far variable X (field trip learning method) influences variable Y (scientific literacy competency). The results of the coefficient of determination test are presented in Table 1.7

Ta|ble 1.7 Coefficient of Determination Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.900[a]	.810	.786	.13194

a. Predictors: (Constant), Field Trip X

Based on Table 1.7, the Adjusted R-Square value (coefficient of determination) is 0.786 which means that variable X (field trip learning method) influences variable Y (scientific literacy competency) by 0.786.

DISCUSSION

The field trip learning method is a learning method based on the constructivist learning theory (Aristiyanto et al., 2023). This method emphasizes a contextual comprehensive, and well-structured learning process. This method provides opportunities for students to experience the learning process outdoors (classroom) and introduce students to the biodiversity in the environment (Sukri Syamsuri & Rahayu, 2023). It also provides freedom for students to recognize, observe, reason, and communicate objects that are the focus of learning (Sukri Syamsuri & Rahayu, 2023).

The subjects in this research are students from Class IV at State Elementary School 1 Pungangan where the students carry out the learning process in the vegetable garden located in Pungangan Village, Mojotengah Sub-district, Wonosobo District, Central Java. The beautiful atmosphere of the garden also encourages students' enthusiasm and motivation in learning. This research focuses on Natural and Social Science subjects, particularly materials in Chapter 1 'Plants are the Source of Life on Earth'. This chapter presents three main topics, namely 1) Topic A (parts of the plant

body), 2) Topic B (photosynthesis as the most important process on earth), and 3) Topic C (plant growth).

Before carrying out the field trip, students received a textbook that explains all the material in Chapter 1. They are also provided with some pieces of paper to summarize all the important activities and materials presented. During the field trip, students and teachers focus on various types of plants such as chilies, potatoes, carrots, mustard greens, shallots, garlic, radishes, and others. Students look enthusiastic in taking notes based on the teacher's explanations regarding the material. Students are given time to read the textbooks provided, but because they are too enthusiastic, some continue to read after the break.

Students are enthusiastic during the learning process. This is proven and strengthened by the results of the questionnaires. The simple correlation test shows a Sig value. (2. tailed) of 0.000 < 0.05. Moreover, it is strengthened by the results of the Adjusted R-Square (Coefficient of Determination) value of 0.786. Based on the results of the analysis, it can be concluded that the influence of the field trip learning method (X) on scientific literacy competency (Y) reaches 78%. This means that the field trip learning method can significantly increase scientific literacy competencies. This learning method is not only effective for the Natural and Social Science subjects but also for other subjects. |

CONCLUSION

The field trip learning method is a relevant learning method for the Natural and Social Science subject. This method can adapt the material presented and encourage higher learning motivation. Therefore, it will help students to develop their scientific literacy skills well.

Students study the material presented in the textbook carefully and directly relate it to the learning object. This observation certainly creates critical thinking skills in constructing knowledge obtained through scientific literacy with the objects they found.

The results of the simple correlation test show a Sig. (2.tailed) is 0.000 < 0.05 with an Adjusted R Square (Coefficient of Determination) value of 0.786. Therefore, it can be concluded that the influence of the field trip learning method (X) on scientific literacy competency (Y) reaches 78%.

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