



## THE EFFECT OF LITERACY BASED ON EXPLORATION OF SCIENCE WITH CULTURAL INSIGHTS ON THEMATIC CONTENT MASTERY AND SOCIAL ATTITUDE

I. W. Widiana\*<sup>1</sup>, T. D. Hermayuni<sup>2</sup>, G. N. Sastra Agustika<sup>3</sup>, F. A. Kusumastuti<sup>4</sup>

<sup>1,2,3</sup>Universitas Pendidikan Ganesha, Singaraja, Indonesia

<sup>4</sup>Universitas Bina Nusantara, Jakarta, Indonesia

DOI: 10.15294/jpii.v9i4.25043

Accepted: October 18<sup>th</sup> 2020. Approved: December 28<sup>th</sup> 2020. Published: December 31<sup>st</sup> 2020

### ABSTRACT

This study aimed to analyze the effect of literacy learning with cultural insight on science learning outcomes and the social attitudes of students in elementary schools. This research was a quasi-experimental study using a non-equivalent post-test only control group design. The population of this study was 140 students, while the sample was selected by random sampling. The number of samples in this study was 100 students who were divided into two classes. The instrument used was a test of learning outcomes in the form of multiple-choices and social attitude questionnaires. Validation of the learning outcomes instrument used content validity with the Gregory test, and item validity used biserial point correlation, the reliability of the test used KR-20, different power, and difficulty level. Meanwhile, validation on social attitude instruments used content validity with the Gregory test, item validity was used product-moment correlation, and test reliability was used KR-20. The data collected were analyzed by Multivariate Analysis of Variance. The results showed that the results of the significance of all three hypotheses are 0,000, which means less than 0.05 ( $0,000 < 0.05$ ). So, it can be concluded that there was a positive effect of literacy based on the exploration of science with cultural insights on thematic content mastery and social attitude. The novelty of this research integrates literacy learning with Balinese cultural insight on science learning outcomes and social attitudes.

© 2020 Science Education Study Program FMIPA UNNES Semarang

Keywords: literacy; Balinese cultural insights

### INTRODUCTION

Science is one of the subjects that can develop skills in the 21<sup>st</sup> century because it relates to technology development and living concept harmonic with nature and providing direct experience in the learning process (Paramitha & Margunayasa, 2016; Hastuti et al., 2018; Suryandari et al., 2018). Science mastery is essential in Elementary School because students are easier to understand abstract concepts through concrete objects and directly doing by themselves. Furthermore, it also cannot be separated from the development of attitudes and values in the teaching and learning

process concept development (Özgelen, 2012; Juniati & Widiana, 2017). Boleng (2014) stated that critical thinking skills, social attitudes, and cognitive biology learning outcomes of students are still low so that the management of the biology learning process is specifically needed to allow students to work independently, work together in small groups, and can share with other groups.

The social attitudes of students are still relatively low, and teachers need to develop students' social attitudes. Social attitude is one of the essential aspects that need to be presented in the learning process, especially science. Science lessons emphasize providing experience to develop students' abilities to be able to explore and understand the natural environment scientifically. This

\*Correspondence Address

E-mail: wayan\_widiana@yahoo.co.id

ability will be realized if science education successfully fosters the ability to think logically, critically, creatively, and take the initiative towards change and development. Science is knowledge about the universe and its contents which is applied through a process and is based on observations and experiments to obtain the truth and can improve character emotions (Alfiani & Sopiyan, 2014; Irianto, 2016; Khusniati et al., 2017; Kim, 2020).

Science learning is also able to increase positive attitudes towards students, one of which is to improve students' social attitudes. Social attitude is an individual's awareness that determines the real action in social activities. Social attitude is an expression or action of someone in responding to something in human social life both within the group or outside the group (Sanjiwana et al., 2015; Tiara & Sari, 2019; Azam et al., 2020). An excellent social attitude will make students become intelligent students, not only smart in knowledge but also will have an honest, discipline, responsibility, tolerance, cooperation, polite, and confident attitude (Sanjiwana et al., 2015). Various efforts have been made by the government to improve the quality of education. Juniati & Widiana (2017) stated that these efforts included improving the curriculum from the Competency-Based Curriculum (KBK) to the Education Unit Level Curriculum (KTSP). The enactment of SBC requires a paradigm shift in education and learning. These changes must be followed by teachers who are responsible for organizing learning in schools, improving teacher quality, procuring textbooks, procuring media and learning resources, and developing science learning innovations. Government efforts are expected to be able to improve the quality of education, especially student learning outcomes and social attitudes.

In some areas in Bali, science learning outcomes have not shown optimal results. It can be seen from the results of the observations of the student learning outcomes in schools of cluster II, East Selemadeg Subdistrict. The students' science scores at the End of Semester Examination (UAS) were relatively low with an average of 61.24, which below the KKM score (Minimum completeness criteria) of Science which is 70. The results of observations on the students' answers were found that students experienced difficulties in the questions related to the understanding of student concepts. Besides, observations also found that students' social attitudes were still low. It can be seen from some student activities

including, the lack of students' confidence when expressing opinions in class, lack of students' honesty in doing the assignments given by the teacher, lack of students' courtesy in behaving in front of the teacher and colleagues, lack of students' discipline, a sense of helping others and a sense of student tolerance.

The cause of the students' low learning outcomes and social attitudes is strengthened when observing the teacher in the class with low thematic learning outcomes in science content which is because of the students' difficulty in accepting, developing, and constructing new knowledge, so students experience obstacles. Thus, students have not been able to associate what they learn in class and their use in their daily lives. They just sit in class and listen without understanding what the intent and purpose of learning are being done. Also, the teacher plays a crucial role in influencing student learning outcomes. The role of the teacher, especially for elementary school-age children, cannot be replaced by a set of computers, television, radio, or other devices. However, the teacher who should be able to be a facilitator in the learning process only relies on the lecture method. The teacher only emphasizes insights nationally on students but does not emphasize local insights contained within the student's environment, so students are reluctant to communicate well with friends or teacher. The teacher also has never applied innovative learning, such as discovering new things that cause boredom in students.

The results of the observations contradict the statement made by Susanto (2014) which stated that learning outcomes consist of three kinds including understanding concepts (cognitive aspects), process skills (psychomotor aspects), and student attitudes (affective aspects). The three types of learning outcomes must be balanced and optimally achieved by students. To be cognitively and psychomotor intelligent, students need to be effective too (attitude), especially in their social attitudes at school. Gusviani (2016) also suggested that social attitudes are one of the essential aspects that need to be presented in the learning process, especially science. One way to improve student learning outcomes and social attitudes is to change the way students learn by applying the Culture of Literacy Learning in Bali. Literacy Learning is implemented following the breakthrough that is currently being intensified by the government in the world of education, namely the Literacy Movement. Understanding Balinese culture is meant because most of the peop-

le who live and receive education in Bali have a predominant characteristic when implementing learning.

Literacy learning, known as the School Literacy Movement (GLS), is an attempt to achieve one of the nine priority agendas (Nawacita), which is to revolutionize the nation's character. Literacy can also be interpreted as the ability to implement the knowledge possessed by students to solve problems in real life (Windiyarani et al., 2016). Good literacy will be able to sharpen skills such as critical thinking, creative and innovative thinking, and foster student character (Afriana et al., 2016; Akbar, 2017)

Literacy learning is appropriate to be applied in elementary schools because education is now more developing character-based education. Only by character education, various problems in society can be resolved peacefully and well by remaining based on the principles of science (Isdaryanti et al., 2018). Character-based education adopts local wisdom, one of which is an insight into the surrounding culture and abilities following the talents and potential of students. Cultural insight needs to be developed in education because it has the benefit of producing competent and dignified generations, reflecting local cultural values namely Balinese culture, shaping the nation's character, and taking part in preserving the nation's culture. Students who are studying science in Indonesia are inseparable from the values that develop in society (Parmin et al., 2015).

Literacy learning is applied in this study to grow elementary school students' interest in reading, especially in science learning. So, students, who are getting used to reading, are easier to understand and more confident in expressing their opinions. Research on literacy learning is mostly conducted to improve students' reading culture in Indonesian language lessons. However, in this study, the application of literacy learning is to improve students' learning outcomes of science and social attitudes and the renewal that is done is to integrate literacy learning with insight into Balinese culture. The success of national education can be achieved by grasping the character of citizens including those related to tradition or culture (Gularso et al., 2019)

Analysis of the findings from Muskania & Wilujeng (2017) study showed that science learning tools based on project-based learning developed in the form of RPP, LKPD, and authentic assessment are appropriate to be used with excellent criteria under the results of validation and testing in the science learning process at the

junior high level. The developed learning tool can equip the foundational knowledge of individual students on ICT literacy with excellent criteria. It can facilitate students to improve the scientific literacy of junior high school students as indicated by the results of the independent sample t-test, which is  $\text{sig} > 0.005$ . The results of Dewi et al. (2019) study found that the development of scientific literacy needs to be done in preparation for the next generation. Science literacy through a culture-based curriculum is carried out to produce more contextual learning, especially learning resources used in the classroom. This type of learning resource will facilitate students' understanding because it is connected to the culture of the community in everyday life so that pedagogic ethnoscience in chemistry learning can develop students' scientific literacy in terms of content, competence, context, and attitude. The results of research conducted by Flores (2018) found that using PbS (problem-based science) as a model of scientific literacy enabled students to practice thinking and making typical habits such as scientists and inventors, besides training to make initial identification in the STEM field. The results of other studies conducted by Wen et al. (2020) found that student-guided inquiry with simulations could support student scientific literacy and student scientific achievement. A total of 49 eighth grade students at Public Middle Schools in North Taiwan participated. Data were collected to measure their scientific literacy. The results provide evidence that the designed simulation influences students' scientific literacy. The results of research conducted by Setiawan et al. (2017) stated that the developed local wisdom-based natural science module is suitable to improve the ability of students' science literacy either theoretically or empirically.

This research aimed to find the difference between learning about literacy with cultural insight and learning without cultural literacy towards mastering thematic content with the theme of Science in elementary school students. The research was also to analyze the significant differences between literacy learning with Balinese culture and conventional learning towards social attitudes. Cultural insight literacy is meant in this research by integrating Balinese culture, which includes traditions and ceremonies in Bali. Mastery of thematic content with the concepts of science referred to in this study is the result of student learning as a result of learning that integrates Balinese culture. The theme of science in this research is light. The social attitude referred to in

this research is to know the surrounding environment, actively interact with friends and teachers, and be confident in expressing an opinion.

## METHODS

This research was a type of quasi-experimental research (Budiarti et al., 2020). The design used in this study was the non-equivalent post-test only control group design. The population in this study were all fifth-grade students, amounting to 96 students. The population was selected using a random sampling technique to determine the sample used in this study. This drawing technique is carried out because it does not allow holding randomized research subjects from the existing population. After all, the subject (students) naturally have formed in one group (one class). The random sampling technique was done by a lottery system.

Based on the results of the drawing, two sample classes were obtained, namely class V SD Negeri 1 Tangguntiti and class V SD Negeri 1 Beraban. Class V SD Negeri 1 Tangguntiti was selected as an experiment class with a total of 50 students and class V with SD Negeri 1 Beraban with a total of 50 students. The experimental class was given treatment by applying literacy learning with a Balinese culture that was associated with light, and the control class was given using conventional learning that was usually done by the teacher and not applying literacy learning with Balinese culture insight.

In this study, treatment was given to the experimental class using Literacy learning. Whereas the control class was not given special treatment which means that literacy learning was not used, but the learning that was applied in the control group was learning that the teacher had usually applied in the learning process. After treatment, both the control class and the experimental class were given a post-test to find out the learning outcomes and social attitudes of each group. Because in this study, controlling students' social

attitudes are measured using a questionnaire given after the implementation of learning. To find out the social attitude of students in each group.

The data collected in this study were the scores of science learning outcomes and social attitudes of students in science subjects of fifth-grade elementary school students. Data collection methods used in this study were test methods and questionnaire instruments. Data collection instruments used in this study were objective tests consisting of 30 items and a social attitude questionnaire that referred to Ernst (2019) consisting of 25 items. It was given to the sample group first to do instrument validation to determine whether the instrument is appropriate. Validation of science learning outcomes tests includes content validity using the Gregory formula, the validity of the test items using the biserial point correlation formula, reliability tests using the KR-20, different test power, and the level of difficulty of the test. While the trials for the social attitude questionnaire include content validity using the Gregory formula, item validity using the product-moment correlation formula, and KR-20 reliability.

The MANOVA was used to analyze data in this study. Before testing the hypothesis, the prerequisite tests for analysis including the normality of data distribution, the variance homogeneity test, and the correlation test between two variables were conducted. All tests were carried out using SPSS 21.0 for Windows.

## RESULTS AND DISCUSSION

The results of this study are presented in two results, namely the results of an analysis of literacy learning with Balinese culture insight and empirical results.

### Exploration of Balinese Cultural Insights in Science Learning

The results of an analysis of the potential for Bali cultural insights in Literacy Learning are presented in Table 1.

**Table 1.** Analysis of the Potential of Bali Cultural Insights in Literacy Learning

Meeting	Material	Potential of Balinese Cultural Insights	Description
1	Light travels in straight	Fire War Tradition before Day of Silence ( <i>Nyepi</i> Day)	The fire war tradition which is held before <i>Nyepi</i> Day in Bali contains the meaning of fire which in the dark with its light that can illuminate the universe. This tradition is one of the cultures in Bali that is closely related to the material learned by students.

2	Light Passes Translucent Objects	The Meaning of <i>Rahinan Purnama</i>	The meaning of <i>Rahinan Purnama</i> tells about the light of the moon in the full moon, which shines brightly at night until it enters the house through the windows of the house.
3	The Characteristics of a Shadow by Plane Mirrors	Tooth Cutting Ceremony/ <i>Mependes</i>	Tooth cutting/ <i>mependes</i> in Bali is a tradition that must be performed when a child has reached adolescence. Many types of equipment needed one of which is a mirror. When students read about the tooth-cutting ceremony, students not only know about the characteristics of shadows but also know the culture of the people in Bali.
4	The Characteristics of a Shadow by Concave Mirror	<i>Melis</i> Ceremony Before Day of Silence ( <i>Nyepi</i> Day)	<i>Melis</i> is a Hindu tradition especially in Bali to purify <i>bhuana agung</i> and <i>bhuana alit</i> . The tradition of <i>melis/melasti</i> is usually done before celebrating <i>Nyepi</i> . When doing this <i>melis</i> tradition many people walk and some are riding motorbikes or cars. The reading about the tradition of <i>melis</i> can be related to the material about the mirror that is concave because the concave mirrors can be used, one of them on vehicles both motorcycles and cars.
5	The Characteristics of a Shadow by Convex Mirror	<i>Megibung</i> tradition in Bali	The <i>megibung</i> tradition in Bali has been around for a long time, usually in the Karangasem area. <i>Megibung</i> is an activity of eating together in one container with many people. In this <i>megibung</i> tradition, we usually use hands instead of spoons to eat. If related to the <i>megibung</i> tradition, convex mirror learning material is very suitable. Students will find out about the convex mirror that is usually on the back of a tablespoon. Students will also know about the <i>megibung</i> tradition so that the students' insight increases after reading the <i>megibung</i> tradition.
6	Refraction	Pura Tanah Lot	Tanah Lot Temple is one of the biggest temples in Bali. Besides Tanah Lot Temple as a sacred place, this temple is also often visited by tourists because it has a very enchanting natural beauty.
7	The Colors That Make the White Light	The Peace Bell of Bali's Island of Love ( <i>Pulau Cinta Kasih</i> Bali)	The story of the Peace Bell from Bali's Love Island tells us that Bali has incredible faith, based on Tri Hitha Karana. This story tells about the island that emits light only Bali Island. This story can give students extra insight into Bali and they can relate it to the lessons they have learned.

### Empirical Test Results

Based on the results of the descriptive analysis that has been done about the results of the learning science and social attitudes of students, it shows that the learning outcomes of science in the experimental class, data distribution was negative because  $M_o > M_d > M$  ( $27 > 25 > 24.57$ ), while the distribution of data in the control class was positive because of  $M_o \leq M_d < M$  ( $16 \leq 16 < 16.70$ ). From the distributi-

on of science learning outcomes, data scores in the experimental class and the control class show that most of the experimental class scores tend to be high, which means that the observation data of science learning outcomes in the experimental group has more observational values that are above the average value, while in the control class tends to be low. If the average scores of learning outcomes of the experimental class and the control class with the category of five were converted,

it was obtained an average score of science learning outcomes of students in the experimental class was 24.57 included in the very good category. While the average score of the science learning outcomes of the control class students was 16.70 in the sufficient category, it shows that the science learning outcomes in the experimental class are better than in the control class. While the social attitudes of students in the experimental class, data distribution was negative because  $Mo > Md > M$  ( $86 > 83 > 81.91$ ).

While the data distribution in the control class was positive because  $Mo < Md < M$  ( $55 < 58 < 59$ ). The distribution of students' social attitude score data in the experimental class and control class shows that most of the experimental class scores tend to be high, while in the control class tends to be low. If the average scores of social attitudes of the experimental class and the

control class with the category on a scale of five were converted, it was obtained the average score of students' social attitudes in the experimental class was 81.91 included in the very good category. While the average score of students' social attitudes of the control class was 59 in the sufficient category. It shows that the social attitudes of students in the experimental class are better than in the control class.

After doing a descriptive analysis of the science learning outcomes and social attitudes of the experimental class and control class, then continued the hypothesis test. Before testing the hypothesis, the prerequisite tests were done. That was normality, homogeneity, and correlation between dependent variables. Based on data normality tests using Kolmogorov Smirnov with the help of SPSS 21.0, it is presented in Table 2.

**Table 2.** Recapitulation of Data Distribution of Normality Test Results with the Kolmogorov-Smirnov Test

Measured variable	Learning model	Shapiro Wilk		
		Statistic	Df	Sig.
Science Learning Outcomes	Literacy Learning with Balinese Culture	0,154	23	0,168
	Conventional learning	0,148	27	0,134
Student social attitude	Literacy Learning with Balinese Culture	0,139	23	0,201
	Conventional learning	0,106	27	0,201

Based on table 2 above, it shows that the Shapiro Wilk statistic has a significant number  $> 0.05$ . Then all distribution according to the learning of literacy with Balinese culture insight is usually distributed.

The second prerequisite test is the variance homogeneity test. Homogeneity test was carried out in two ways. The first were jointly using the Box's M test as can be seen in Table 3 below.

**Table 3.** Analysis of Box's M Test Results

Box's M	7,502
F	2,387
df1	3
df2	3.472
Sig.	0,067

The second was individually using the Levene's Test with the help of SPSS 21.0 for windows presented in Table 4.

**Table 4.** Analysis of the Levene Test

	F	df1	df2	Sig.
Science Learning Outcomes	3,450	1	48	0,069
Student social attitude	0,851	1	48	0,361

Based on the results of the data analysis above, the significance number generated from the learning outcomes of science and social attitudes of students together and individually was  $> 0, 05$ . Thus, it can be concluded that the analysis of science learning outcomes and social attitudes of students is homogeneous so that the hypothesis test using MANOVA analysis (Multivariate Analysis of Variance) can be continued.

The third prerequisite test is a correlation test between two variables. A correlation test was calculated with the help of SPSS 21.0 for windows, the result was 0.684 (rounded up to 0.7), which means it is less than 0.8. So, this shows

that the correlation between the dependent variable can be ignored, and MANOVA is worth doing.

After obtaining the prerequisite test results for data analysis, continued with testing the re-

search hypothesis using the MANOVA test with the help of SPSS version 21.0 for windows.

The results of calculations on the first and second hypotheses in the Tests of Between-Subjects Effects are presented in Table 5.

**Table 5.** First and Second Hypothesis Test Results Tests of Between- Subjects Effects

Source	Dependent Variable	Df	RJK	F	Sig
Literacy Learning with Balinese Culture and Conventional Learning	Science Learning Outcomes	1	767,598	69,613	0,000
Literacy Learning with Balinese Culture and Conventional Learning	Student Social Attitude	1	6520,594	105,960	0,000

Based on data from the MANOVA calculation results in the first hypothesis in Table 5,  $F_{hit}$  obtained 69.613 with a significance score of 0.000 with a significance level of 0.05. Significance (sig) is smaller than 0.000 ( $0.000 < 0.05$ ). Thus,  $H_0$  is rejected, and  $H_1$  is accepted. It means that there are significant differences in science learning outcomes between students who were taught with literacy learning with a Balinese culture perspective, and students who were taught with conventional learning. As for the results of

the second hypothesis test presented in Table 5,  $F_{hit}$  obtained 105.960 with a significance value of 0.000 with a significance level of 0.05. Significance (sig) is smaller than 0.000 ( $0.000 < 0.05$ ). Thus,  $H_0$  is rejected, and  $H_1$  is accepted. It means that there is a significant difference in social attitudes between students who were taught with literacy learning with insight into Balinese culture, and students who were taught with conventional learning and for the third hypothesis test presented in Table 6.

**Table 6.** Results of Analysis of the Third Hypothesis Test - Multivariate Test

Effect	Value	F	Hypothesis df	Error df	Sig.	
Intercept	Pillai's Trace	0,991	2,594	2,000	47,000	0,000
	Wilks' Lambda	0,009	2,594	2,000	47,000	0,000
	Hotelling's Trace	110,402	2,594	2,000	47,000	0,000
	Roy's Largest Root	110,402	2,594	2,000	47,000	0,000
A	Pillai's Trace	0,765	76,389	2,000	47,000	0,000
	Wilks' Lambda	0,235	76,389	2,000	47,000	0,000
	Hotelling's Trace	3,251	76,389	2,000	47,000	0,000
	Roy's Largest Root	3,251	76,389	2,000	47,000	0,000

From the results of the calculation of the third hypothesis in Table 6 above obtained  $F_{hit}$  score on Pillae Trace, Wilks' Lambda, Hotelling's Trace, Roy's Largest was 76.389 with a significant number of 0,000 or  $< 0, 05$ . It is based on the analysis of these data so that the null hypothesis ( $H_0$ ) is rejected and the alternative hypothesis ( $H_1$ ) is accepted. So, from the results of the third hypothesis that there are significant differences in science learning outcomes and social attitudes

that were taught by learning literacy with Balinese culture and with conventional learning taught simultaneously between students in Elementary School II East Selemadeg Subdistrict, Tabanan Regency Academic Year 2017/2018.

After the hypothesis testing was done, the estimated marginal means score of learning outcomes and social attitudes of the students was calculated. The results of the calculation of estimated marginal means are presented in Table 7.

**Table 7.** Estimated Marginal Means

Dependent Variable	Literacy Learning with Balinese Culture	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Science Learning Outcomes	Literacy Learning with Balinese Culture	24,565	0,692	23,173	25,957
	Conventional Learning	16,704	0,639	15,419	17,989

Student social attitude	attitude	Literacy Learning with Balinese Culture	81,913	1,636	78,624	85,202
		Conventional Learning	59,000	1,510	55,965	62,035

Based on the calculation of estimated marginal means using SPSS 21.0 for windows, the estimated results of the estimated marginal means of students' learning outcomes in science which were taught by using literacy learning with insight into Balinese culture was 24.565, and student learning outcomes in science which were taught by conventional learning was 17.989. Comparison of the estimated marginal means results of learning science in the experimental class was 24.565 higher than the estimated marginal means in the control class of 17,989. Thus, the literacy learning of Balinese culture has a positive effect on the learning outcomes of Natural Sciences. Whereas, the social attitudes of students who were taught by using literacy learning with Balinese culture had an estimated marginal means of 81,913 and the social attitudes of students who were taught with conventional learning had an estimated marginal means of 59,000. Comparison of the estimated marginal means of the social attitudes that were taught with the literacy learning of Balinese cultural insights was higher than the social attitudes that were taught by conventional learning. Thus, literacy learning with Balinese culture has a positive effect on students' social attitudes.

Based on data from the MANOVA calculation results in the first hypothesis in Table 5,  $F_{hit}$  obtained 69.613 with a significance score of 0.000 with a significance level of 0.05. Significance (sig) is smaller than 0,000 ( $0,000 < 0, 05$ ). Thus,  $H_0$  is rejected, and  $H_1$  is accepted. It means that there are significant differences in science learning outcomes between students who were taught with literacy learning with a Balinese culture perspective, and students who were taught with conventional learning. If converted into an average score of science learning outcomes in the experimental class and the control class with a category on a scale of five, the average score of students' learning outcomes in the experimental class was 24.57 included in the very good category, while the average scores of students' learning outcomes in the control class was 16.70 in the sufficient category. It shows that the science learning outcomes in the experimental class are better than the science learning outcomes in the control class. In the experimental class that was given treatment in the form of learning literacy with insight into Balinese culture in natural science

subject make students more eager to learn, accustom students to read, explore information, and find concepts by themselves and students are more enthusiastic about reading because reading material is integrated with the culture in Bali. While in the control class that used conventional learning, students look passive, and they were just waiting for an explanation from the teacher without wanting to search for themselves about the material being taught. In the experimental class that was given treatment in the form of literacy learning with Balinese culture insight in thematic learning makes students eager to learn and is more enthusiastic about reading because the reading is a story or something familiar to students, so students are not burdened in understanding the contents of the reading. Literature with insight into Balinese culture in the form of reading forms about the traditions and culture that exist in Bali related to science material. Like reading about the tradition of fire wars carried out before the *Nyepi* day and is associated with natural science material that is light propagating straight. The noble values of Balinese culture are also more internalized with learning that is insightful in Balinese culture. This finding is in line with research conducted by Morris et al. (2019), who found that the internalization of culture in learning had an impact on knowledge acquisition.

In science subjects, literacy learning with Balinese culture is very appropriate to be applied because science subjects are closely related to the real world and the environment around students. Besides students know the concepts of science students also gain insight into the relationship between science lessons with culture in Bali, namely culture related to the religious rituals of the Balinese people. Thus, the student learning experience is not just an understanding of the concept of the material being taught. However, also able to increase students' knowledge about the surrounding culture (Lee et al., 2012; Atmojo et al., 2018) especially Balinese Culture obtained through reading so that later learning outcomes will increase. Thematic teaching materials that integrate Balinese culture have a positive effect on the learning outcomes of Natural Sciences. This result is reinforced based on this research that the existence of thematic teaching materials that integrate Balinese culture can add insight into students' knowledge not only by understanding the



concept of science but students can also find out science concepts that are directly related to Balinese culture in the surrounding environment. It will increase student interest in learning. It was demonstrated during the learning process, and during the discussion, students were able to give good and polite responses.

The results of research conducted by Flores (2018) found that using PBS (problem-based science) as a model of scientific literacy allows students to practice thinking and perform typical habits such as scientists and inventors, besides training to make initial identification. As in this study, it is seen that integrating culture as a form of scientific literacy has a positive influence on students. It is because students will be motivated to read about the concepts of natural science material related to culture, especially Balinese culture such as reading the concept of natural science material with straight propagating light associated with culture in Bali is the tradition of the Fire War which was carried out before the *Nyepi* holiday. That is because Balinese culture exists in the environment around students so that it can be easily understood by students and is associated with the science concept so that it will bridge students' knowledge and concepts.

Based on the results of data analysis and research that strengthens this research, it can be found that literacy learning with a Balinese cultural perspective affects the learning outcomes of science students in grade V elementary school in Cluster II, East Selemadeg District, Academic Year 2017/2018. The results of this research support that literacy learning is not only able to be applied in natural science subjects but also other subjects. Besides, it needs to be integrated with other insights or learning innovations that make student learning outcomes better. Integrating or linking culture in the learning process makes it easier for students to master thematic learning content because learning in that way will make the learning process centered on students and give students a direct learning experience. After all, students directly know and are confronted with something tangible (concrete) in their environment. So that it will be easier for students to understand and master the concepts of learning (Setiawan et al., 2017).

Based on the results of the second hypothesis test in this study, literacy learning with Balinese culture has a positive effect on students' social attitudes. It is proven directly through observation when the learning process takes place. In the experimental class, after applying the literacy learning with a Balinese perspective, chan-

ges were seen in students. Students were more familiar with the surrounding environment, more active in interacting with friends and teachers, and more confident in expressing their opinions because learning was integrated with the surrounding cultural environment. Through reading activities, students gain much experience and gain broader insights than those taught by conventional teachers. Students are also more familiar with the surrounding environment so that they are not indifferent to the surrounding environment, more actively interacting with friends and teachers, and more confident in expressing opinions (Richardson et al., 2017; Guo et al., 2018; Sloan et al., 2020). It has a good impact because these things are needed in the learning process, and the student is socializing with the surrounding environment.

Literacy in the learning process has a positive influence on children's psychology, including the mastery of thematic content, especially Science material. Learning by integrating culture into reading culture can be influential because students are accustomed to reading, so reading will become a habit and will have an impact on mastery of learning material and content. It is reinforced by the results of research conducted by Tantri & Dewantara (2017) regarding the effectiveness of literacy culture to improve the reading culture of elementary students. From these studies, it is obtained results by doing literacy learning can increase student motivation in learning; besides that, students are more confident in appearing in front of the class. Then a research conducted by Istijabatun (2019) regarding improving student learning outcomes and social attitudes through the J-Trow cooperative model integrated peer assessment. Based on this research, it was found that student learning outcomes and social attitudes improved through the J-Trow cooperative learning model integrated peer assessment.

Literacy learning with Balinese culture influences the learning outcomes of science and social attitudes together. Literacy learning with Balinese culture emphasizes the process of full student involvement to find the material learned through the process of reading and link it to real-life situations and cultural environments to encourage students to be able to apply it in their lives. As stated by Windyariani et al. (2016), literacy is the ability to implement the knowledge possessed by students to solve problems in real life. It is reinforced by research conducted by Flores (2018) by stating that the scientific literacy model allows students to practice thinking and carry out unique habits such as scientists and

inventors, also trains to make initial identification in the STEM field. Then, this research can become a pattern elsewhere by integrating local culture because it can enrich learning material so that specific values, morals, habits, customs/traditions, and culture that become people's daily lives can be known and learned by students. Besides, students can also find out the relationship between learning material with something concrete that exists in the surrounding environment and will have an impact on student learning outcomes and also social attitudes.

Literacy learning with Balinese culture makes students more enthusiastic about learning. Students are enthusiastic about learning because students have gained preliminary knowledge through literacy activities about texts related to the material they are learning (Sukri et al., 2018). Besides that, the material used as literacy material is reading related to the culture of the environment around students themselves. Therefore, students, besides being enthusiastic about learning, also look fun. Students are also more active and more confident in conveying questions and answers and discussing both with the teacher and their peers. The potential to challenge the insight of Balinese culture that is most popular with students as literacy material is the Fire War Tradition before *Nyepi*. This potential is favored by students because in this reading material, the unique culture in Bali is seen, and it tells the story of the war with fire. Students prefer to read and are more enthusiastic, primarily related to the material about the nature of light that propagates straight.

### CONCLUSION

The learning of literacy with a Balinese cultural perspective in learning science influences the learning outcomes of science; the learning of a Balinese insight culture influences the social attitudes of students. Learning with Balinese cultural insight literacy affects the learning outcomes science and social attitudes of students who are learned together. Literacy based on the exploration of science with cultural insights affects thematic content mastery and social attitude. Literacy learning with cultural insights as a form of acculturation of scientific literacy in this study provides a new contribution to the development of thematic learning in primary education namely literacy learning with Balinese cultural insight on science learning outcomes and the social attitudes of students in elementary schools.

### REFERENCES

- Afriana, J., Permanasari, A., & Fitriani, A. (2016). Project based learning integrated to stem to enhance elementary school's students scientific literacy. *Jurnal Pendidikan IPA Indonesia*, 5(2), 261–267.
- Akbar, A. (2017). Membudayakan literasi dengan program 6M di sekolah dasar. *Jurnal Pendidikan Sekolah Dasar*, 3(1), 42.
- Alfiani, D. A., & Sopiyan, S. (2014). Pengaruh model pembelajaran cooperative learning tipe student teams achievement division (STAD) terhadap hasil belajar IPA siswa kelas V di SD Negeri 1 Tersana Kecamatan Pabedilan Kabupaten Cirebon. *Al Ibtida: Jurnal Pendidikan Guru MI*, 1(1).
- Atmojo, S. E., Rusilowati, A., Dwiningrum, S. I. A., & Skotnicka, M. (2018). The reconstruction of disaster knowledge through thematic learning of science, environment, technology, and society integrated with local wisdom. *Jurnal Pendidikan IPA Indonesia*, 7(2), 204–213.
- Azam, N. R. A. N., Rashid, B., Zainol, N. A., & Mohamad, M. (2020). Multi-Dimensional Values on Customers' Intention to Revisit Green Resorts: The Cultural Case in Malaysia. *Journal of Innovation in Educational and Cultural Research*, 1(2), 41-51.
- Boleng, D. T. (2014). Pengaruh model pembelajaran Cooperative Script dan Think- Pair-Share terhadap keterampilan berpikir kritis, sikap sosial, dan hasil belajar kognitif Biologi siswa SMA multietnis. *Jurnal Pendidikan Sains*, 2(2), 76–84.
- Budiarti, I. S., Suparmi, A., Sarwanto, & Harjana. (2020). Effectiveness of generation, evaluation, and modification-cooperative learning (Gem-cl) model selaras bakar batu cultural practice in papua. *Jurnal Pendidikan IPA Indonesia*, 9(1), 32–41.
- Dewi, C. A., Khery, Y., & Erna, M. (2019). An ethno-science study in chemistry learning to develop scientific literacy. *Jurnal Pendidikan IPA Indonesia*, 8(2), 279–287.
- Ernst, A. (2019). Research techniques and methodologies to assess social learning in participatory environmental governance. *Learning, Culture and Social Interaction*, 23(October 2018), 100331.
- Flores, C. (2018). Problem-based science, a constructionist approach to science literacy in middle school. *International Journal of Child-Computer Interaction*, 16, 25–30.
- Gularso, D., Sugito, S., & Zamroni, Z. (2019). Kawruh pamomong: children education based on local wisdom in Yogyakarta. *Cakrawala Pendidikan*, 38(2), 343–355.
- Guo, Q., Zhou, J., & Feng, L. (2018). Pro-social behavior is predictive of academic success via peer acceptance: A study of Chinese primary school children. *Learning and Individual Differences*, 65(88), 187–194.

- Gusviani, E. (2016). Analisis kemunculan sikap spiritual dan sikap sosial dalam kegiatan pembelajaran IPA kelas IV SD yang menggunakan KTSP dan kurikulum 2013. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 8(1), 96–100.
- Hastuti, P. W., Tiarani, V. A., & Nurita, T. (2018). The influence of inquiry-based science issues learning on practical skills of junior high school students in environmental pollution topic. *Jurnal Pendidikan IPA Indonesia*, 7(2), 232–238.
- Irianto, D. M. (2016). Pengaruh model pembelajaran terhadap kemampuan memecahkan masalah lingkungan hidup pada siswa yang mempunyai hasil belajar IPA tinggi di sekolah dasar. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 6(2), 61–73.
- Isdaryanti, B., Rachman, M., Sukestiyarno, Y. L., Florentinus, T. S., & Widodo, W. (2018). Teachers' performance in science learning management integrated with character education. *Jurnal Pendidikan IPA Indonesia*, 7(1), 9–15.
- Istijabatun, S. (2019). Peningkatan hasil belajar dan sikap sosial siswa melalui model kooperatif J-Trow terintegrasi penilaian peer assessment. *Jurnal Pendidikan Sains (Jps)*, 7(1), 22.
- Juniati, N. W., & Widiana, I. W. (2017). Penerapan model pembelajaran inkuiri untuk meningkatkan hasil belajar IPA. *Jurnal Ilmiah Sekolah Dasar*, 1(2), 20–29.
- Khusniati, M., Parmin, & Sudarmin. (2017). Local wisdom-based science learning model through reconstruction of indigenous science to improve student's conservationist character. *Journal of Turkish Science Education*, 14(3), 16–23.
- Kim, D. (2020). The correlation analysis between Korean middle school students' emotional level and friendship in science learning. *Jurnal Pendidikan IPA Indonesia*, 9(1), 22–31.
- Lee, H., Yen, C. F., & Aikenhead, G. S. (2012). Indigenous elementary students' science instruction in Taiwan: indigenous knowledge and western science. *Research in Science Education*, 42(6), 1183–1199.
- Morris, J., Slater, E., Fitzgerald, M. T., Lummis, G. W., & van Etten, E. (2019). Using local rural knowledge to enhance STEM learning for gifted and talented students in Australia. *Research in Science Education*.
- Muskania, R. T., & Wilujeng, I. (2017). Pengembangan Perangkat Pembelajaran Project-Based Learning Untuk Membekali Foundational Knowledge Dan Meningkatkan Scientific Literacy. *Jurnal Cakrawala Pendidikan*, 36(1), 34–43.
- Özgenel, S. (2012). Students' science process skills within a cognitive domain framework. *Eurasia Journal of Mathematics, Science and Technology Education*, 8(4), 283–292.
- Paramitha, I. D. A. A., & Margunayasa, I. G. (2016). Pengaruh model inkuiri terbimbing, gaya kognitif, dan motivasi berprestasi terhadap pemahaman konsep IPA siswa kelas V SD. *Jurnal Pendidikan Dan Pengajaran*, 49(2), 80.
- Parmin, Sajidan, Ashadi, & Sutikno. (2015). Skill of prospective teacher in integrating the concept of science with local wisdom model. *Jurnal Pendidikan IPA Indonesia*, 4(2), 120–126.
- Richardson, E. A., Pearce, J., Shortt, N. K., & Mitchell, R. (2017). The role of public and private natural space in children's social, emotional and behavioural development in Scotland: A longitudinal study. *Environmental Research*, 158(July), 729–736.
- Sanjiwana, P. P. C. M., Pudjawan, K., & Margunayasa, I. G. (2015). Analisis sikap sosial siswa kelas V pada pembelajaran dengan kurikulum 2013. *Mimbar PGSD Universitas Pendidikan Ganesha*, 3(1).
- Setiawan, B., Innatesari, D. K., Sabtiawan, W. B., & Sudarmin, S. (2017). The development of local wisdom-based natural science module to improve science literacy of students. *Jurnal Pendidikan IPA Indonesia*, 6(1), 49–54.
- Sloan, S., Winter, K., Connolly, P., & Gildea, A. (2020). The effectiveness of Nurture Groups in improving outcomes for young children with social, emotional and behavioural difficulties in primary schools: An evaluation of Nurture Group provision in Northern Ireland. *Children and Youth Services Review*, 108(November 2019), 104619.
- Sukri, A., Rizka, M. A., Sakti, H. G., Maududy, K. U., & Hadiprayitno, G. (2018). Designing an integrated curriculum based on local primacy and social reconstruction perspectives of West Nusa Tenggara, Indonesia. *Jurnal Pendidikan IPA Indonesia*, 7(4), 467–475.
- Suryandari, K. Ch., Sajidan, S., & Rahardjo, S. B. (2018). Project-based science learning and pre-service teacher's science literacy skill and creative thinking. *Cakrawala Pendidikan*, 3, 345–355.
- Tantri, A. A. S., & Dewantara, I. P. M. (2017). Keefektifan budaya literasi di SD N 3 Banjar Jawa untuk meningkatkan minat baca. *Journal of Education Research and Evaluation*, 1(4), 204–209.
- Tiara, S. K., & Sari, E. Y. (2019). Analisis teknik penilaian sikap sosial siswa dalam penerapan kurikulum 2013 di SDN 1 Watulimo. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 11(1), 21.
- Wen, C. T., Liu, C. C., Chang, H. Y., Chang, C. J., Chang, M. H., Fan Chiang, S. H., Yang, C. W., & Hwang, F. K. (2020). Students' guided inquiry with simulation and its relation to school science achievement and scientific literacy. *Computers and Education*, 149, 103830.
- Windiyariani, S., Setiono, S., & Sutisnawati, A. (2016). Pengembangan bahan ajar berbasis konteks dan kreativitas untuk melatih literasi sains siswa sekolah dasar. *Jurnal Bioedukatika*, 4(2), 19–25.