Development Science Learning Media Based on Ispring Suite 8 to Increase Scientific Literacy at Primary School

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Abstract:- The research that has been done in developing science learning media based on Ispring Suite 8 with *four D model* development model to improve students' scientific literacy in the subject of Sound to producing science learning media. The target of this study is science learning media that tested on 30 grade 4 students at SDN Kandangan I / 121 Surabaya with One Group Pretest-Postest Design. The analysis of the results of the perceives feasible which includes categories: (1) valid, in accordance with the assessment of the validator to the learning media developed; (2) practical, appropriate for the reliability of students ' learning and activities that are relevant to the lesson; (3) effective, in according to the results of students' scientific literacy tests that perceive all students complete with N-gain mode and good responses given by students. This research conclusion, which is a science learning media based on Ispring Suite 8 deserves to improve the science literacy of primary school students.

I. INTRODUCTION

Efforts to develop skills in the 21st century that can be done by teachers, one was science literacy through science learning. Science literacy is a scientific skill so that, it can identify questions, acquire new knowledge, explain scientific phenomena, draw conclusions according to facts, understand the characteristics of science, be aware of science and technology that affect the environment, intellectually and culturally, and care about related issues science (OECD, 2016). Through science learning, students can get direct experience, so they can receive, store, and process information, and develop and apply the concepts they have learned (Kemendikbud, 2017).

The cognitive development of elementary school students according to Piaget belongs to the category of concrete operation is at the age of 7 years to 11 years, at this stage students can understand logically with the help of concrete objects. In the 2013 curriculum, the elementary school level has emphasized the implementation of literacy strategies for high-thinking skills of elementary school students (Kemendikbud, 2018). The application of scientific literacy to elementary school students is needed to shape the mindset, behavior and character building so that they are caring and responsible for themselves,

society, and the universe, as well as problems in modern society (Kemendikbud, 2017).

The computer-based learning media can contain difficult simulations through direct experiences so students can have concrete experiences (santyasa, 2007). In line with research carried out by Rosandi (2016) on flash multimedia development of multimedia science that is worthy of improving middle school students' science centers. The above statement can be explained that with the application of the learning media with computer help will motivate and make the lesson more interesting and concrete. One of the applications that can be used in media production is ispring suite 8. The ispring suite 8 application can incorporate written, visual, video, and sound materials to make learning more meaningful, appealing, and enjoyable. The computer-based learning media can contain difficult simulations through firsthand experiences so students can gain experiences.

The ispring suite 8 learning media can be an alternative to concrete delivery of sound material. The research performed by Himmah (2017) has developed an interactive multimedia-based ispring Suite 8 on sub material additives in class VIII SMP and obtained the results that the multimedia is valid, practical, and effective to improve student learning outcomes. Ispring Suite 8 is an application that is used to convert presentation files into Flash form and form SCORM/AICC, which is the usual form of e-learning (Alfiandra, 2016). The features in Ispring Suite 8 are used to develop learning products in the form of PPT teaching materials, animated videos, and quizzes. Learning Media based ispring Suite 8, sound material presented in the form of flash, so that students can gain a concrete experience such as listening to the ears and are expected to master the concept and able to apply in Daily life. Learning Media such as animation and simulation can provide insight into science learning in improving student science literacy (Fan and Geelan, 2012). Similar research has done Azimi (2017) has developed science learning based literacy material and nature in class IV elementary school and obtained the results of learning material and nature using Learning Media Based Science Literacy in elementary school is effective and practical. Previous research on media development aimed to improve the learning outcomes that can be used as a reference for research to be done.

II. METHOD

The type of this research is development research use *four D model* (Thiagarajan dkk ,1974). The objective in this study is ispring suite 8 based science learning media in improving scientific literacy which will be tested on 30 fourth grade students at Kandangan I / 121 Surabaya Elementary School.

The tecnique used in this development research is validation, observation, giving tests and question naires. The design of the research used for learning media trials is to use the One Group pretests-posttest. The trial design will be given pretests and given posttest after treatment. Research plans by Fraenkel, Wallen, and Hyun (2012) are described as follows:

Interval Score	Rating category	Information
$3,6 \leq P \leq 4,0$	Very valid	Can be used without revision
$2,6 \leq P \leq 3,5$	Valid	Can be used with the slight revision
$1,6 \leq P \leq 2,5$	Less valid	Can be used with many revisoins
$1,0 \leq P \leq 1,5$	Invalid	Unable to use still requires consultation

Table 1:- (Ratumanan dan Laurens, 2011)

Testing of the reliability of the instrument using the following formula :

$$R = \left[1 - \frac{A-B}{A+B}\right] \text{x } 100\% \qquad \text{(Borich, 1994)}$$

Information:

R = instument of reliability
A = frequency aspect of high values from validator
B = frequency aspect of low values from validator

$$P = \frac{\text{the number of stage of the lesson plan that ware successfully implemented}}{\text{total stage of the lesson plan}} \text{ x } 100\%$$

Interval	Kategori
$0\% \leq P < 25\%$	Not done
$25\% \leq P < 50\%$	Poorly done
$50\% \leq P < 75\%$	Well done
$75\% \leq P < 100\%$	Very well done

Table 2:- Percentage of Criteria Implementation of The Lesson Plan (Riduwan, 2012)

C. Analysisi of Student Activities

Observation data of student activity sheets were analyzed using the average percentage formula. The average percentage formula is as follows; (Rosidi, 2013)

$$P = \frac{\sum R}{\sum N} \text{ X } 100\%$$

Students are said to be active if the percentage is more than 50 %, if not then students are said to be not active in participating in learning.

Pretest	treatment	Postest
O1	X	O2

The purpose of data analysis in this study was to answer the next research question to formulate conclusions. The data analysis used is quantitative descriptive analysis, which includes:

A. Analysis of the validity of learning media

The results of the learning Media validation are further analyzed in a quantitative descriptive, by calculating the average rating score of the indicator. The average accrual of the score is converted using the conditions:

B. Analysis of the Implementation of the Lesson Plan with the Media

The analysis of the implementation of the Learning Plan was analyzed in a quantitative descriptive, by calculating the results of the packaging by two observers, then in the search for a percentage of the implementation of RPP in the learning process. The percentage of implementation of RPP (P) is as follows:

D. Analysis of Student Activities

The determinant analysis of student's scientific literacy by calculating Normalized Gain by using the gain score (score increase) which is done on the overall results of student's scientific literacy skills.

The amount of increase or N-gain is analyzed using the following formula:

$$g = \frac{(Spost) - (Spre)}{(Smaks) - (Spre)}$$

While the gain classification is as follows:

g- heigh   : (g) > 0,7
g- medium   : 0,7 ≥ (g) ≤ 0,3
g-low   : (g) < 0,3

E. Analysis of Student Response
Riduwan (2012) suggests that studen't response questionnaires are used to determine student's opinions about the application of learning tools that have been developed by researchers. The student responses are quantitative descriptively responses are formulated as follows:

$$P = \frac{\Sigma R}{\Sigma N} \text{ x } 100\%$$

The percentage of student responses can be converted with the following criteria:

Persentase	Kriteria
0% - 20%	Very less
21% - 40%	Less
41% - 60%	Enough
61% - 80%	Good
81% - 100%	Excellent

Table 3:- Percentage of Student Response Criteria   (Riduwan,2012)

III. RESULTS AND DISCUSSION

The results of research a learning media development based on Ispring Suite 8 on the sound that changed performed by adapting the 4D model . The following results in data analysis of the validity, practicability, and effectiveness of iSpring suite based Learning Media:

A. The Validity of Learning Media
Validation is measured using instructional media validation instrument that researchers create are provided to the expert validators to validate the ispring suite based learning media.
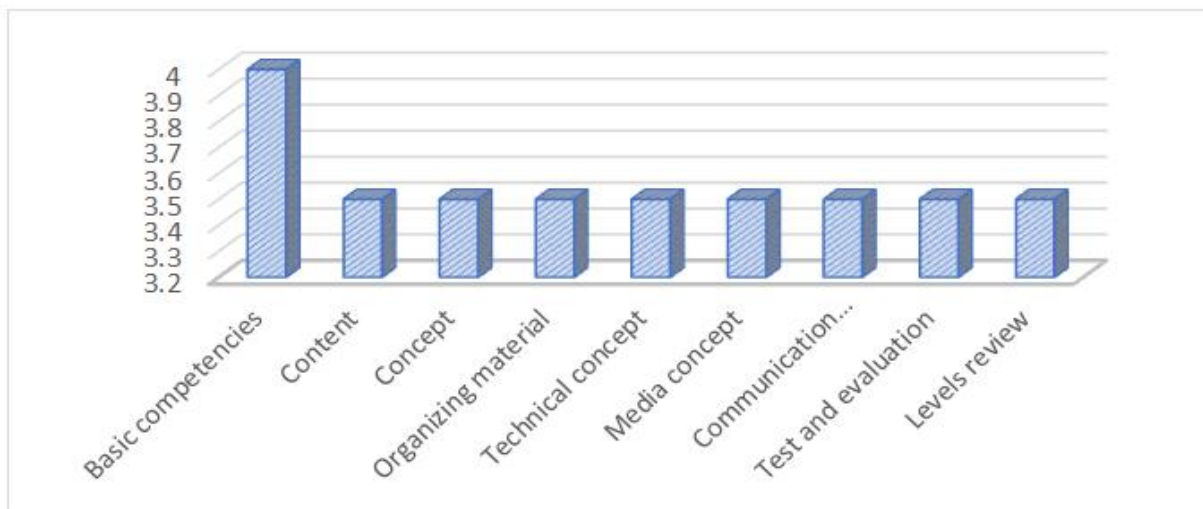
Fig 1:- Results of the Validity Analysis of Learning Media

Based on the result of the analysis perceive in Figure 1, the average value of the total validity of the ispring suite 8 based learning media in the sound material used obtained is 3,55. It can be concluded that the category is " valid".

B. Practicality of Learning Media
Practical test of learning media based on the implementation of learning and student activities.

➢ *Implementation of Learning*
The impleentation of learning in accordance with . Table 4 Results of Learning Implementation Implementation.

No	Assessment Aspect	RPP1		RPP2		RPP3		Average	Implementation (%)
		V1	V2	V1	V2	V1	V2		
I.	KBM OBSERVATION								
A.	Opening								
1.	Saying greetings	4	4	4	4	4	4	4,0	100
2.	Giving time for children to pray	4	3	4	4	4	4	3,8	96
3.	Checking student attendance	4	3	4	4	4	4	3,8	96
4.	Apperception	4	4	4	3	4	4	3,8	96
5.	Delivering learning objectives	3	4	4	4	4	4	3,8	96
B	Core activities								
1	Creating a learning environment that is ready to be oriented to learning material	4	3	4	3	4	4	3,7	92
2	Conducting activities that encourage students to formulate problems	4	3	4	3	4	4	3,7	92
3	Conducting activities that encourage students to form hypotheses	4	3	3	3	4	4	3,5	88
4	Conducting activities that encourage students to collect data	3	3	4	3	3	3	3,2	79
5	Conducting activities that encourage students to test hypotheses (conducting experiments / group discussions)	4	3	4	3	4	4	3,7	92
6	Conducting activities that encourage students to form conclusions	4	3	4	3	3	4	3,5	88
7	Guiding students to present the results of group work	4	3	4	3	4	4	3,7	92
8	Guiding students to evaluate	4	3	3	3	4	4	3,5	88
C	Closing Activity								
1	Guiding students to conclude the material	4	3	4	4	4	4	3,8	96
2	Giving reflection	3	3	4	4	4	4	3,7	92
3	Closing the lesson and give further assignments	3	4	4	4	4	4	3,8	96
II	CLASS SITUATION								
1	KBM is in accordance with the learning objectives	4	3	4	3	4	4	3,7	92
2	Time allocation as planned	3	3	4	3	4	4	3,5	88
3	Mastery of concepts	4	4	4	3	4	4	3,8	96
4	Class management	3	3	4	3	4	4	3,5	88

Table 4

Based on the results of observations of the implementation of learning with *ispring suite*-based learning media on sound material obtained scores from observers of 3.5 to 3.8 with the percentage of 82% to 96% the categories implemented very well.

➤ *Student Activities*
    Table 5 Observation Results of Student Activities

No	Observed Aspects	Percentage of each meeting						Average (%)
		P1	P2	P1	P2	P1	P2	
1	Making questions / formulation of the problem	60	67	53	53	80	67	63,3
2	Practicing the use of learning media	87	73	80	87	93	100	86,7
3	Reading teaching materials to find important information	100	80	93	87	93	93	91,1
4	Discussing student work sheet with groups	100	87	80	93	100	100	93,3
5	Conducting experiments / observations in accordance with the student work sheet instructions	80	80	67	80	100	100	84,4
6	Presenting the results of group discussions	87	60	87	80	87	87	81,1
7	Listening to the presentation	80	80	93	87	87	100	87,8
8	Asking questions / ideas / ideas	53	53	67	67	80	80	66,7
9	Evaluating learning outcomes	80	80	87	87	100	100	88,9

Table 5

Student activity Data During KBM can be categorized actively due to students ' requirements that correspond to the activity criteria as long as the learning reaches 66.7% to 93.3% (> 50%)

C. Effectiveness of Learning Media

Test the effectiveness of ispring-based learning media based on learning outcomes in determining the skills of Science literacy and student response.

➢ *Science Literacy Skills*

Table 6 Results of Science Literacy Tests

No	Student Names	Pretest		Posttest		N-gain	Category
		Score	Completeness	Score	Completeness		
1	A1	50	Not Complete	80	Complete	0,6	Sedang
2	B1	30	Not Complete	80	Complete	0,7	Tinggi
3	C1	50	Not Complete	80	Complete	0,6	Sedang
4	A2	20	Not Complete	80	Complete	0,8	Tinggi
5	B2	50	Not Complete	90	Complete	0,8	Tinggi
6	C2	40	Not Complete	90	Complete	0,8	Tinggi
7	A3	60	Not Complete	80	Complete	0,5	Sedang
8	B3	60	Not Complete	90	Complete	0,8	Tinggi
9	C3	60	Not Complete	90	Complete	0,8	Tinggi
10	A4	50	Not Complete	80	Complete	0,6	Sedang
11	B4	80	Complete	90	Complete	0,5	Sedang
12	C4	80	Complete	90	Complete	0,5	Sedang
13	A5	80	Complete	90	Complete	0,5	Sedang
14	B5	50	Not Complete	80	Complete	0,6	Sedang
15	C5	50	Not Complete	80	Complete	0,6	Sedang
16	A6	30	Not Complete	80	Complete	0,7	Tinggi
17	B6	40	Not Complete	80	Complete	0,7	Tinggi
18	C6	30	Not Complete	80	Complete	0,7	Tinggi
19	A7	50	Not Complete	80	Complete	0,6	Sedang
20	B7	40	Not Complete	90	Complete	0,8	Tinggi
21	C7	40	Not Complete	90	Complete	0,8	Tinggi
22	A8	40	Not Complete	80	Complete	0,7	Tinggi
23	B8	40	Not Complete	80	Complete	0,7	Tinggi
24	C8	50	Not Complete	90	Complete	0,8	Tinggi
25	A9	60	Not Complete	80	Complete	0,5	Sedang
26	B9	50	Not Complete	80	Complete	0,6	Sedang
27	C9	40	Not Complete	80	Complete	0,7	Tinggi
28	A10	50	Not Complete	90	Complete	0,8	Tinggi
29	B10	40	Not Complete	90	Complete	0,8	Tinggi
30	C10	30	Not Complete	80	Complete	0,7	Tinggi

Table 6

Information : U1 = Pretest

U2 = Posttest

Table 6 perceives that learning media based on Ipsring's suite of sound materials can improve student science literacy characterized by increased score between before and after learning.

> *Student Response*

No	Questions	Student Response (%)	
		Yes	No
1	The topic of learning media is in accordance with sound material	100	0
2	Allocation of time given is enough to complete all sound material	86,7	13,3
3	Display of ispring suite 8 based learning media is interesting	100	0
4	The concept of material is presented in sequence	86,7	13,3
5	Learning media can help students find concepts	100	0
6	The language used in learning media is according to EYD	80	20
7	Learning media can motivate students to be actively involved in learning	90	10
8	Learning media explain material that is not observed by the eye	100	0
9	Learning media can help students analyze problems in everyday life	100	0
10	Learning media can make it easier to learn sound material	100	0
11	Learning media can help students have scientific literacy in sound material.	90	10
12	Do you find it easy to answer the items in scientific literacy tests	90	10
		93,6	6,4

Table 7:- Results of Student Response

Based on table 7 perceives that the learning has been done with a very strong response from the students. Most students respond positively to the learning that has been done. It can be seen from the average repos provided by students, which is 93.6% of students give a positive response and 6.4% give a negative response.

IV. CONCLUSION

The results of the research and the conclusion discussion on science learning media based on Ispring Suite 8 which has been developed in terms of validity and that includes the validation of learning media and learning devices, practicality includes implementation Students ' learning and activities, while the effectiveness of the students ' science literacy test results and student responses in improving the science literacy of elementary school students.

REFERENCES

[1]. Alfiandra & Mulkan, Mulyadi. 2016. Pengembangan Produk Pembelajaran Melalui Media Ipring pada Mata PPKn di SMK Palembang. *Jurnal Bhinneka Tunggal Ika,* vol 3, no 1, Mei 2016.

[2]. Borich, Gary D. 1994. *Observation Skills for Effective Teaching*. The University of Texas: USA

[3]. Clark, R. C., & Mayer, R. E. 2011. *E-Learning and the Science of Instruction*. Amerika: Pfeiffer.

[4]. Kemendikbud. 2017. *Kompetensi Inti dan Kompetensi Dasar Sekolah Menengah Pertama/Madrasah Tsanawiyah*. Jakarta.

[5]. Permendikbud No. 67 Tahun 2013 Tentang Kerangka Dasar dan Struktur Kurikulum Sekolah Dasar/Madrasah Ibtidaiyah. Jakarta

[6]. Ratumanan, G.T. & Laurens, T. 2011. *Evaluasi Hasil Belajar pada Tingkat Satuan Pendidikan*. Surabaya: UNESA University Press.

[7]. Riduwan. 2012. *Metode & Teknik Menyusun Proposal Penelitian*. Bandung: Alfabeta

[8]. Sahlan, Asmaun & Angga Teguh Prastyo. 2012. *Desain Pembelajaran Berbasis Pendidikan Karakter*. Jogjakarta : Ar-Ruzz Media