

School Environment Exploration Activity to Enhance Science Process Skill

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Abstract—The scientific approach is an effort to develop learners' abilities in mastering scientific concepts more easily and systematically. In science-centered learning, learners are trained to perform scientific activities such as observing, collecting data, analyzing data, summarizing and then creating reports (communicating). Sometimes, these scientific activities are not well done, because the scientific learning conducted by teachers tends to be less dynamic. The use of scientific models by teachers is still cook-book, creativity in learning activities is relatively low and is still indoor (in the classroom), so that both teachers and learners experience boredom. The impact of this situation is that the learners' Science Process Skill (SPS) is not honed optimally. Therefore, the aim of this research is to provide solutions in improving SPS and student learning outcomes. This research was packaged in the form of experiment involving 5 teachers that conducting learning science in five schools in Jambi (3 elementary and 2 junior high) showed that science learning with SEEA showed that learners' SPS increased 80.66%. Based on these results, it could be understood that SEEA could be used as an alternative in science learning to improve learning activities and student SPS. At the end of this study it is recommended that science teachers could learn and implement learning with SEE activities, to improve the quality of future education.

Keywords—*SEE activity; science learning; scientific approach*

I. INTRODUCTION

This research discourses program viewpoints of learning science besides skill subjects hip science learning. Advising to the David science learning would allow learners to comprehend the dependent environment of the connections amid science [1]. Preceding the extra pointer, uncertainty not touched through carefulness, science besides technical requests might develop together an incomes then an finish hip themselves. Completely education includes morals, plus it is significant to be conscious of the standards which untruth behindhand specific methods [2]. It is significant aimed at all science teachers' instruction science toward progress in their learners' methodical reasonableness inside this wider setting [3].

Subsequently, the quarrel energies, it is significant toward explain these approaches in colleges, and specifically fashionable science [2].

The instruction of science process skill (SPS) is not, though, unquestionable [4]. This nearby association consumes remained long-established empirically consuming an amount of examinations of Piagetian improvement glassy as well as of SPS as well as this increases the opportunity of encouraging reasoning improvement complete instruction SPS [5-7]. The cooperative indication aimed at the additional open ended circumstances, in specific the SPS, complicated for hand-on workroom research, is motionless questionable [8]. In malice of this, classwork valuation arrangements incline toward shoulder that such hands-on abilities are generalizable besides Procedure Discipline [9], notwithstanding the understandable hazards of not measuring the abilities cutting-edge representativeness [10], might deliver certain reinforcement toward the transference contenders. This researcn deliberates the consequences of a learning intended at founding whether the SPS complicated through the accomplishment of workroom research are generalizable. Ability or skill is hands-on fashionable that it is worried through the authentic responsibility before consumption of somewhat by achievement [8].

The school environment remained well-defined by expending social-ecological concept as a controller. Social-ecological concept was designated fashionable its greatest general procedure by Bronfenbrenner then highlights the multifaceted ecological scheme wherever communities living too activate [10]. In spirit, social-ecological concept is a schemes attitude that prudently describes the multifaceted location in which separate movements happen [6]. Social-ecological concept is a valuable instrument aimed at the learning of colleges since of the multifaceted grading hip which colleges be existent [9]. Brown mentions that the outside environment takes huge possibilities for education [11].

Instruction of science through investigation of the normal atmosphere round the college thought accomplished in provided that sufficient possibility for rising pupil's SPS and mastery science concept [8]. In other words, science education by exploration actions of the nearby regular situation straight instruction by pupils is actual major in Scondary School. School location is the normal situation everywhere in the college contains the whole lot in the college nearby setting, e.g. the arena, gardens counting substances, floras then faunas that are fashionable it, besides natural procedures that happen in the setting [12]. Thus it can be thought that the school environment exploration activity (SEEA) is the activity of searching, finding objects, plants, animals and phenomena that occur in the natural environment around the school. These activities involve scientific activities namely, observing, classifying, recording data, analyzing data and making exploration reports.

Bronfenbrenner's social-ecological concept consumes remained practical towards the learning of educators in preceding investigation educations, exactly educations of singular instruction educators [10]. While Olitsky experiential that dissimilar kinds of interactional proceedings are incomes toward upsurge learner appointment then pupil knowledge [13]. To assistance advance learner results, it is meaningful toward classifying variables inside the college setting that might be beleaguered toward enhance learner educational attainment besides educator-rated communal abilities besides difficulties performances [14,15]. Supplementary environmentally friendly variables that might be beleaguered aimed at interference plus development in colleges comprise pure prospects for performance [16], education in a situation allowed since mistreatment [17,18].

Though, science instruction texts reconnoitering educator arrogances has inclined to emphasis its labors on explaining educators' arrogances in the direction of coaching science, the situation of science, then their epistemic locations [19,20]. The character that science educators' arrogances then principles around their socially varied pupils performance fashionable their coaching takes not been clearly investigated. Investigation happening science educators' opinions has engrossed in its residence on topics associated toward instructional accomplishes [21,22].

Attitudinal investigation shoulders that a robust association happens amid arrogances and performance [23]. Rendering to Zimbaro plus Leippe, arrogances are shaped finished together straight involvement and understood knowledge [24]. As a consequence, the constructions then alteration of educator arrogances are significant parts of investigation [25]. For instance, science educators' arrogances near learners significantly form the opportunities they grip for pupil learning [26]. Assumed that educators' arrogances show an energetic character in pupils' theoretical presentation, it is dangerous to inspect the politics besides arrogances science educators have connected to their socially varied pupils [27].

A main eye of fruitful instruction is that the educator impressions that pardon is trained are significant. Uncertainty it is not significant, before there appears to be slight opinion in instruction it. After pardon takes been supposed overhead, this article would scratch instruction science: Doubt they trust that

instruction besides knowledge around God's making is significant, they determination be pursue to validate a communicable eagerness aimed at it [28]. Jaus besides Kennedy, in lessons of instruction fashionable fundamental approaches progressions, studied the belongings of procedure abilities instruction [29,30]. Constructed on the decryption overhead, so the emphasis of this investigation is to understand then expound in what way for the SEEA as one of the systematic education methodologies can advance the students' SPS. Thus the movement of this investigation can be understood as exposed in Figure 1 under:

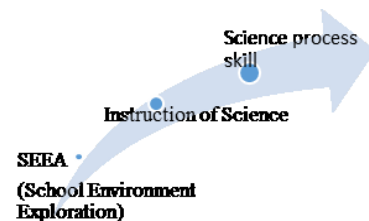


Fig. 1. Research flow.

II. RESEARCH METHOD

This study involved five sample schools selected at the event in the City of Jambi. Three schools are junior high and two schools are elementary school level. Each school is given the freedom to determine which class will be used as an experimental implementation of the SEEA model learning. Thus all teachers from the sample schools used SEEA model science learning, with the number of learners in each sample school seen as in Table 1 below:

TABLE I. SCHOOLS, NUMBER OF LEARNERS AND SCHOOL STATUS

No	Level of School	Schools	The Number of Sample	Status
1	SMP (Middle Schools)	1	35	Public
		2	28	Private
2	SD (Elementary Schools)	1	20	Public
		2	19	Public
		3	15	Private
	Total	6	117	

The learning time is adjusted to the topic chosen by the teacher concerned, so as not to interfere with the school's learning program. Before implementing the learning with the SEEA model, the teacher gives an explanation of the SEEA model learning and is trained to develop learning plans and trials (peer teaching) on a limited scale. The implementation of learning using the SEEA model is preceded by a preliminary test of student science process skills for all learners who take part in the program. This is intended to determine the initial state of learners' science process skills. The SPS that is tested is the Basic of SPS which includes the ability to observe measure, classify, record data, and make reports (communication). After the implementation of the learning for each student, the test was re-examined to see an increase in SPS during the program.

The instrument used to obtain data about student SPS is in the form of a multiple choice question package consisting of 20 items. This instrument was developed independently by researchers. Data analysis of learners' SPS increase was done by using N-gain values normalized by Hake formulas [31]. Determination of conclusions that have been reached is based on the N-gain category in Table 2 [31].

TABLE II. N-GAIN CATEGORIES

Category	The Average of N-gain
Low	$(\langle g \rangle) < 0,3$
Medium	$0,7 > (\langle g \rangle) > 0,3$
High	$(\langle g \rangle) > 0,7$

TABLE III. AVERAGE VALUES OF STUDENT SPS IN EACH SCHOOL

No	Level of School	School Code	The Number of Sample	Status	N-Gain (%)	The Average of N-Gain in school level (%)	Total Average of SPS (%)	Category	
1	SMP (Middle schools)	1	35	Public	81	82	80,66	High	
		2	28	Private	83				
2	SD (Elementary Schools)	1	20	Public	79	79,33		80,66	High
		2	19	Public	83				
		3	15	Private	76				
	Total	6	117		67	67			

Referring to Table 3 above, it shows that the implementation of the SEEA model in learning of science is able to improve science process skills, both at the junior and elementary school level. For the junior high school level the average of N-gain (SPS increase) reached 82%, while at the elementary level it reached 79.33. Based on the N-gain value the increase is included in the "high" category. This indicates that the SEEA model could be used as an alternative in science learning in order to increase student SPS.

As shown in Table 3, based on school status, there are those who have public and private school status. This is significant to explain given that the facilities (natural environment around) of these schools are different. Therefore, on the side to see whether there is a difference in the increase in student SPS between public and private schools. For public school junior high school level, the increase in student SPS reached 81%, while private schools increased to 83%. Thus there is a difference of about 1%. However, both schools are categorized as "high".

At the elementary level, the sample used was three schools, consisting of two public schools and one private school. As in the junior high school level, in elementary schools there is no distinction. In the three school samples that implemented the SEEA model learning, learners experienced an increase in SPS between 76% -83% with the "high" category. Based on these data, it could be understood that the SEEA model learning could be implemented in different schools (status).

From the point of view of the number of student participants, as table 3 above, the number of learners in each school implementing SEEA model learning varies. The highest number is at the junior high school level with 35 learners, while the number of learners is at least 15 learners at the elementary level. Compared to the student's average SPS

III. RESULT AND DISCUSSION

As explained above that, the aim of this research is to provide solutions in improving SPS and student learning outcomes. This research was packaged in the form of experiment involving 5 teachers that instruction science in five schools in Jambi (3 elementary and 2 junior high) showed that science learning with SEEA showed that learners' SPS increased 80,66%.

increase (based on the number of learners), schools with 35 learners rose to 81% ("high" category), while schools with 15 learners rose to 76 ("high" category). Therefore, it could be said that the number of learners does not influence the SPS of learners.

The increase of SPS learners through the implementation of the SEEA model learning with the main activity of learning is that exploration activities have provided good opportunities for learners to recognize and grow the SPS itself. As with exploration activities which consist of observing, measuring, classifying, recording and collecting data and making scientific reports. Thus the SEEA model learning activities lead learners to carry out these activities around the school environment. This is as explained by Sukarno [32]. Referring to the results of the research, it could be understood that the natural environment around schools is one of the most significant factors in supporting the implementation of SEEA model learning. Therefore, to optimize the implementation of the SEEA model learning as an effort to increase student SPS, teachers need to understand, learn and train themselves seriously in implementing the SEEA model learning [32]. The results of this study as could be seen in table 3 are in line with the opinion of Sukarno that science learning through exploration of the natural environment around the school directly by learners is very significant in science learning in schools [32]. In addition, also explained that student's learning activities will increase if they use the natural environment as a source of learning science.

Based on the description above it is clear that the SEEA model learning implemented by science teachers in five school samples was proven to increase student SPS at 80.66%. This indicates that the SEEA model learning could be used as an alternative in science learning as an effort to increase student SPS which is still relatively low. Besides, with its character

(providing opportunities for learners to carry out various kinds of scientific activities), the SEEA model learning could also be used as a means of implementing learning with a scientific approach as mandated in the 2013 curriculum in Indonesia today.

IV. CONCLUSION

Based on the data obtained and discussion as described above, the final result or conclusion is that SEEA model science learning could improve learners' science process skills. The increase in SPS learners as their data is 80.66% in the category of "high", therefore, convincingly that learning with the SEEA model could be used as an alternative in science learning to improve science process skills.

V. RECOMMENDATION

Considering that science process skills are very significant skills as a form of learning outcomes, so various efforts continue to be made to improve the SPS itself. One of the efforts made is to develop a learning approach. SEEA as one of the alternatives in learning science has been proven to be able to increase SPS learners with different school situation backgrounds, different numbers of learners and different teacher abilities, but shows similar results namely increasing SPS learners. Therefore, researchers recommend that SEEA model learning could be implemented in schools, especially schools with limited lab equipment. In order to implement the SEEA model learning in accordance with the goals and targets, it is necessary to conduct socialization and training for science teachers.

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