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Learning with the Social Media Assisted Science, Technology and Society Approach to Improve Self-Learning Motivation

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Abstract. Physics learning needs change to follow this era and motivate students to learn. The use of a combination of daily physics phenomena and the internet in learning can be a better solution to follow the recent era and motivate students. The method used in this study is research and development (R & D). Product of the development is learning media with Social Media Assisted Science Technology and Society (STS) Approach. The subjects of this study were students of SMAN 1 Kalasan Sleman Yogyakarta. This paper uses an independent learning motivation questionnaire instrument to obtain data. Analysis shows that the use of motivational learning media increases in good categories. The results of this study are the use of media using the social media assisted STS approach can increase the motivation of independent learning.

Keywords: STS; Learning media; Social media; Self learning motivation.

1. Introduction

Daily phenomena sometimes do not show the real situation, physics will explain the actual situation (in the view of science) [1]. Basically physics aims to study and provide understanding both qualitatively and quantitatively about various natural phenomena or processes and their application [2]. Problem solving in physics must intersect daily phenomena so that students can better understand them [3]. Teachers as facilitators convey phenomena before starting learning to motivate students in learning [4]. The use of photo or picture media when motivating students in learning can be done, [5]. The use of media in learning will improve student learning outcomes [6-8]. So from some opinions above it can be understood that the use of media media with daily phenomena is important in physics learning.

Physical education currently demands to adapt to the progress of the times. One way to adapt is to develop with the addition of technology and the internet in learning [9]. The use of the internet to send assignments, search for references and display presentations is commonly used in learning [10-11]. The use of physical teaching aids in learning increases student learning motivation. [12]. Learning to use media that is adjusted to the surrounding circumstances adds to students' understanding [13-14]. From the above statements, it can be concluded that good learning is learning that utilizes a combination of internet and physical media

To use internet media in learning requires new ways of teaching and teacher readiness [12]. One way to be able to implement a combination of internet and physical media and prepare teachers is to make learning projects assisted by social media. Project learning can be facilitated with the STS



approach [15-16]. Hence, with this fact developed learning tools with the social media assisted approach to social media measure motivation of students' independent learning. The learning tools developed in the form of syllabi, lesson plans, handouts, and project worksheets with social media Whatsapp).

Recently, there is a work on the application of cooperative model type think pair share to increase student motivation and learning outcomes [17]. The research investigated the low learning outcomes caused by the low learning motivation of students. The research was conducted with classroom action research methods by applying cooperative models Think Pair Share (TPS). The study resulted that by adding an appropriate learning model can increase student learning motivation.

Motivated from [17], this work presents learning with the social media assisted science, technology and society approach to improve self-learning motivation.

The rest of this paper is organized as follow: Section 2 describes the proposed research method. Section 3 presents the obtained results and following by discussion. Finally Section 4 concludes this work.

2. Proposed Method

The research method used is research and development with ADDIE research and development procedure. The research was carried out completely, but with limited research subject conditions the implementation stage was not carried out perfectly.

2.1. Procedure

Following the ADDIE research and development procedure developed by Dick and Carey. [18]. The research was carried out beginning with the analysis phase carried out with preliminary studies into schools and literature studies of previous articles. The second stage of the design is carried out by following the requirements that have been analyzed previously. After the design is complete, continue with the development learning device with description lesson plan, handout, project worksheet with social media (Whatsapp). After being developed, the product is implemented in the XII MIPA class of SMAN 1 Kalasan. The evaluation phase is carried out by providing questionnaires of independent learning motivation to students and data processing (see Table 1).

Table 1. Research and development procedure

No	Step	Activity
1	<i>Analysis</i>	a. Field Study b. Literature Study
2	<i>Design</i>	a. Identify goals b. Develop learning device designs
3	<i>Develop</i>	a. Development of learning instruments b. Validation of development instruments by experts
4	<i>Implement</i>	Application of learning instruments to increase students' self-learning motivation
5	<i>Evaluate</i>	Analysis and evaluation of students' independent learning motivation abilities

2.2. Subject, Place, Time

This research was conducted at SMAN 1 Kalasan Sleman D.I Yogyakarta. Research subjects were students of class XII MIPA SMAN 1 Kalasan Sleman D.I. Yogyakarta. A preliminary study was carried out on April 15, 2018. The application of learning equipment developed from the class on May 26, 2018.

2.3. Data

using instruments of learning tools resulting from the development carried out research in the classroom. Data collection instruments in the form of independent learning motivation questionnaire. Data collection techniques by giving questionnaires to students to fill in the check and fill in comments and suggestions in the columns that have been provided. Questionnaire data instruments have been validated by experts with indicators that have been adapted to the research situation. Questionnaire data obtained is described in Table 2.

Table 2. Independent Learning Motivation questionnaire data

No	Statement	Average score
1	I am interested in physics learning	4.38
2	I studied physics through more than one source	4.04
3	I studied first at home before studying in class	3.25
4	I was excited when the physics lesson took place	4.04
5	I often have difficulty understanding physics materia	3.58
6	I like to study physics in groups	4.17
7	I like to use technology (mobile phones) while studying physics	3.83
8	I can operate social media (WhatsApp) properly	4.38
9	I can properly discuss groups using social media (WhatsApp)	4.04
10	I'm happy if physics learning is helped by social media integration (WhatsApp)	4.08
11	I am happy if physics learning displays pictures and videos	4.38
12	I understand better if the images and videos displayed and explained are my own	3.96
13	I am happy if physics learning uses project assignments	3.72
14	I am happy with learning to use online assignments (collecting assignments using social media)	3.75
15	I am motivated to learn with assignments using social media (adding to my curiosity and wanting to learn more)	4.00
Total average		3.97

2.4. Data Analysis

Data obtained at the implementation stage were analyzed using Alpha Cronbach reliability analysis. For the results of the level of motivation of students' independent learning is analyzed by scoring a scale of 5. The following Table 3 presents a 5-scale assessment [19].

Table 3. Results of Questionnaire Analysis of Independent Learning Motivation Modeling Classes

Average Score Interval	Category
$x > 4.26$	Very good
$3.42 < x \leq 4.26$	Good
$2.58 < x \leq 3.42$	Enough
$1.74 < x \leq 2.58$	Not good
$x \leq 1.74$	Very good

3. Results and Discussion

This section presents the results obtained and following by discussion.

3.1. Result

The following is the result of Alpha Cronbach's analysis of students' motivation questionnaires is shown in Table 4.

Table 4. Results of Questionnaire Reliability Motivation Modeling Classes

Cronbach's Alpha	N of Items
.738	15

Based on the results of Table 4, the Cronbach Alpha index is 0.738. According to the criteria, this value is greater than 0.60, so the results of the questionnaire have a good level of reliability or in other words questionnaire data can be obtained. So it can be concluded that the motivation questionnaire of students has been reliable. The results of students' level of independent learning motivation are analyzed by scoring 5. The data obtained from giving questionnaires to students will be counted in terms of statements and statements. Then matched with a 5-scale research table [19]. Learning motivation questionnaire analysis data is shown in Table 5.

Table 5. Results of Questionnaire Analysis of Independent Learning Motivation Modeling Classes

No	Average Score	Category
1	4.38	Very Good
2	4.04	Good
3	3.25	Enough
4	4.04	Good
5	3.58	Good
6	4.17	Good
7	3.83	Good
8	4.38	Very Good
9	4.04	Good
10	4.08	Good
11	4.38	Very Good
12	3.96	Good
13	3.72	Good
14	3.75	Good
15	4.00	Good
X	3.97	Good

Based on Table 5, the total average level of independent learning motivation of students after learning using the social media-assisted STS approach is 3.97 in the good category. This indicates that learning using the social media assisted STS approach affects the motivation of students in good categories. Qualitative data is also obtained from the comments and suggestions column provided in the questionnaire. In general, the obtained qualitative data summary is described in Table 6.

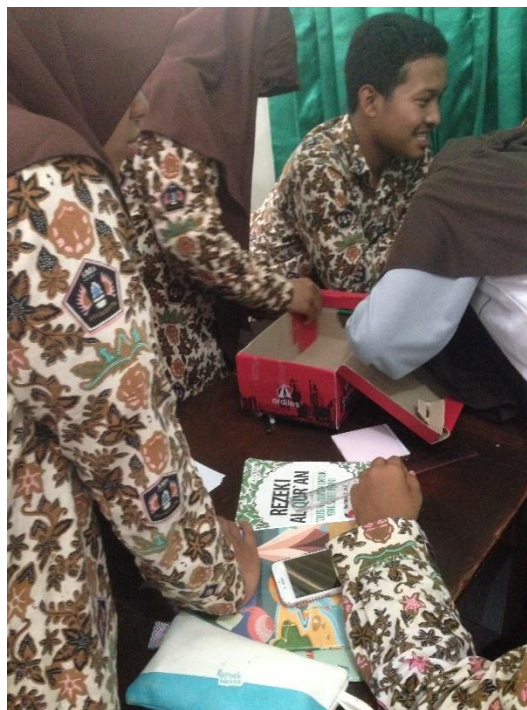
Table 6. Summary of questionnaire comments and suggestions column

No	Comment and Suggestion
1	Explanation of the material does not understand students before entering project learning, so they are confused when doing project activities
2	Classroom mastery and teacher writing are still not too good to be improved again
3	Fun learning

Learning using the social media-assisted STS approach is indeed centered on project activities to convey material in depth. The lack of clarity in the explanation of the material and the conduciveness of the class is due to the lack of agility of the model teachers in teaching. In general, learning is carried out according to the goal that physics project learning that involves students to contribute to society is achieved. With so many positive comments about project learning it can be seen that students are motivated by this learning.

3.2 Discussion

The statement of the use of physical teaching aids in learning to increase student motivation [12] was proven in this study. This study uses teaching aids made by students in the form of projects with the help of project worksheets. The data shows that students can understand well about learning by looking at the physical things they learn. Making media with tools that are easily available and easy to use media results make students motivated to learn physics more deeply as presented in Figure 1.

**Figure 1.** The process of working on media making projects by students

The statement that the use of the internet to send assignments, search for references and display presentations is commonly used in learning [10-11] partly proven in this study. Students in general are used to using the internet to look for learning references. When given the task to look for references to the problems given, students have been able to do reference searches on the internet properly. However, to send assignments via the internet is still not able to take place too well, the teacher still has to remind him several times so that the tasks are collected properly. To display the presentation cannot be detected because it was not done in this study. It is presented in Figure 2.



Figure 2. Students present the work of the project that they have made in front of the class

Project learning can be facilitated with STS approach [15-16] as evidenced in this study. Project assignments carried out directly in class can be packaged with the STS approach that is applied to the lesson plan used. STS learning that requires the use of tangible learning outcomes for the community is facilitated by the physical media results they make. The learning media they created were then brought home to be used and utilized in the community as presented in Figure 3.

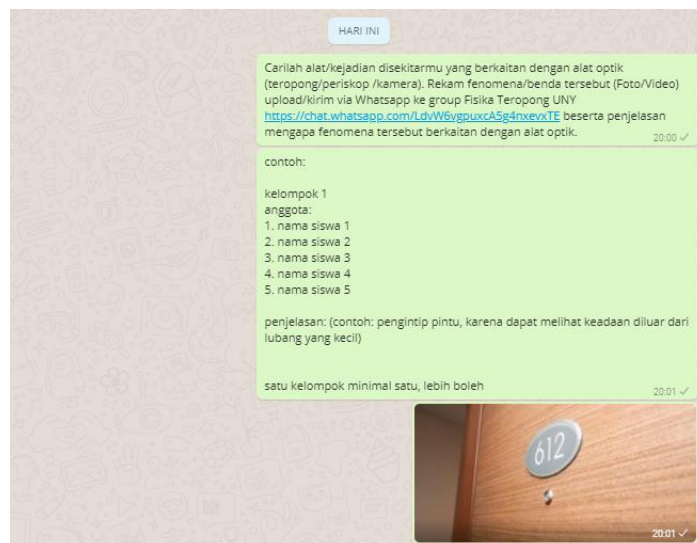


Figure 3. One display assignment through social media

The statement that the use of photo or picture media when motivating students in learning can be done, [5] was proven in this study. In practice class, students pay more attention when the teacher's explanation is assisted with photos or pictures. Likewise, with the teacher's statement as a facilitator conveying phenomena before starting learning to motivate students in learning [4]. In this research phenomenon search is assigned to students in order to get more motivating results, but not entirely successful. Students are not accustomed to searching for phenomena so there is still less variation in photo phenomena sent by students. From the above problems, it is still necessary to habituate to apply learning with assignments like this.

4. Conclusion

This work has presented learning with the social media assisted science, technology and society approach to improve self-learning motivation. Research conducted by developing lesson plan along with Project Handouts and Worksheets can increase students' independent learning motivation. The STS approach used in the learning tool is able to accommodate project activities to be carried out by students in the classroom. The use of social media assistance helps teachers in assigning tasks, supervising work, gathering tasks and efficiency in learning time. In subsequent studies it is expected to use a broader research subject for better results. Coordination to the parties related to the research to be done better. Research can be done with other dependent variables. Learning media used must be made better.

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