Moodle-Based Sole (Self Organized Learning Environments) Model Implementation in Energy Transformation Material, Natural Science Subject for Fourth Grade Students

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Abstrak

Penelitian ini merupakan penelitian yang membahas mengenai penerapan Model SOLE (Self Organized Learning Environments) berbasis Moodle. Tujuan dari penelitian ini yaitu untuk memberikan inovasi penerapan pembelajaran di era pandemi pada pembelajaran IPA perubahan energi. Penerapan Model SOLE berbasis moodle ini diterapkan dalam suatu kelas dengan kegiatan belajar mengajar sesuai isi materi yang berada di website. Hasil dari penerapan ini yaitu model SOLE berbasis moodle pada pembelajaran IPA perubahan energi untuk siswa kelas IV. Penelitian ini mencakup hasil proses pembelajaran dari penerapan model SOLE berbasis moodle yang di uji cobakan kepada siswa kelas IV dengan jumlah 29 responden dengan pengumpulan data melalui angket. Dari hasil penelitian diperoleh data melalui proses responden angket penerapan model SOLE kepada siswa kelas IV. Data hasil penelitian di analisis dengan skala likert menggunakan pendekatan kuantitatif. Data penilaian hasil responden angket siswa kelas IV dengan total yaitu 71%. Berdasarkan hasil perolehan data menunjukan bahwa penerapan model SOLE berbasis moodle pada pembelajaran IPA perubahan energi memenuhi kriteria setuju diterapkan pada siswa kelas IV.
Kata Kunci: *Model SOLE, Moodle, Sekolah dasar*

Abstract

This research mainly discusses about Moodle-based SOLE (Self Organized Learning Environments) model in natural science material about energy transformation. This research is conducted to give some suggestions regarding innovation alternatives that can be used during class activity, especially during this pandemic era. SOLE model itself was implemented after its contents had been matched with the website's contents. From there, Moodle-based SOLE model was made and later, it was used in energy transformation material for fourth graders. This research includes results of this model's testing that was conducted to fourth graders, precisely 29 of them. I obtained the data by using questionnaires. Then, all the data was analyzed with Likert Scale, quantitative approach. Later, we know that the overall feasibility value is 71%, so this model is feasible. In other words, the data we obtained shows that this model fulfills all the requirements to be considered feasible for in-class implementation.

Foreword

Class activity is basically a process to keep and share information among people. This process includes all the activities among the students as knowledge receiver and teachers as knowledge provider. All those process can only be considered as class activity if they go through this steps: planning, executing, evaluation, and meeting that is supported by required tools, medium, and materials. A teacher's role and purpose is to control and guide the students to know their competency, be it academic or not. The thing is, all these times the students actively contribute to fulfill all the purpose of learning by doing what their teacher tell them to. This will be seen from achievement indicators for each student (Syarifudin, 2020).

During Covid-19 pandemic era, learning system has been changed to online. We know that as remote learning (Kamil, 2020). Remote learning system basically forces all teachers to learn and control computer-based learning media and their supplementaries. The teachers also have to learn about innovative learning methods. There are IT-based and IT-supported learning media, such as Google Classroom, WhatsApp, Sismart. At the same time there are 6 methods to achieve innovative learning for remote class, such as Explore Learn, Flip Class, PjBL, Blended Learning, Game Based and UNIQUE (Adit, 2020).

To come across the students' comprehension regarding this subject, even though remote system can be improved, other alternatives have to be found. Innovative learning improves their cognitions regarding the materials, especially with adopting self-organizing learning environment (SOLE) model. By implementing this model, the students can receive better cognitions during class. Cognition is learning results, for example the students can explain what they have read or heard with their own words, and give other examples than their teacher had stated before (Sudjana, 1995:2).

In this case, to complement SOLE model implementation, several supplementary things are needed. One of them is information and communication technology. The easy and cheap technologies will eliminate spatial and temporal problems that has put some limits in education all this time. Of course, several logical consequences can happen. They are: (1) all the students can easily carry the materials they need without having to worry about time and space limit; (2) they can easily learn and communicate with experts in desired fields; (3) learning materials can even be carried all over the world, no matter where the students learn. These various opportunities still face some challenges, be it from cost they need, IT infrastructure supplies, people in certain regions, and online class supporting regulations. One of information technology development forms that can be used as learning media is e-learning. Furthermore, one of e-learning website development application is Object-Oriented Dynamic Learning Environment or Moodle for short. This is a learning platform that is designed to give teachers, administrators, and

students web-based learning environment. It also implements learning principles such as method, social guidance with pedagogic approach. This application was made by Martin Dougiamas. Over time, this has been made as free application, meaning it is free to distribute and modify under General Public License conditions (Coal 2018b: 4). Moodle is a program that helps teacher to manage the courses in website form, also helps students to access class resources. By using Moodle, teachers can send informations, give some assignments, send e-journals and other learning sources. These learning activities are later known as e-learning (Fitria Fauziah Hasanah, 2020). SDN Jatisampurna III is a school that barely uses Moodle-based SOLE model. Since Phase II and full limited face-to-face learning are established by the government due to

Covid-19 pandemic, learning methods implemented by the teachers there aren't very effective for expanding the students' comprehension.

Based on those problems, those teachers have to make more effort to make give both remote and face-to-face learning new color, therefore they can be more effective. This can be done by implementing Moodle-based SOLE model, because it has enough utilities to support fun learning activities for the students. Because of that, I am interested to conduct some research with the title "Moodle-based SOLE *(Self Organized Learning Environments)* Model Implementation in Energy Transformation Material, Natural Science Subject for Fourth Grade Students."

Method

This research uses descriptive method with quantitative approach. It uses total sampling to obtain samples, with 29 fourth graders as the samples. Furthermore, to obtain the data, it uses response questionnaires with Likert scale that include positive and negative statements. The questionnaires also have alternative choice such as strongly agree, agree, disagree, and strongly disagree. The amount of item obtained is 21, all of them are related to

how the students perceive this learning method. Later, the data obtained from this research were analyzed with statistic percentage formula.

Table 1. *Percentage Calculation Formula*

$$p = \frac{f}{N} \text{ X } 100\%$$

Annotations :
p : answer percentage
f : answer frequency
N : amount of respondents

After that, each of all feasibility criteria needs to be rated. The following table includes feasibility rating based on *rating scale*.

Table 2. *Feasibility Criteria Table*

Feasibility Percentage	Qualifications	Annotations
76% - 100%	Strongly agree	Strongly feasible
51% - 75%	Agree	Feasible
26% - 50%	Disagree	Not feasible
0% - 25%	Strongly disagree	Strongly unfeasible

Results and Explenations

Through observation and interview process, this research provides a learning method implementation response in the form of Moodle-based SOLE model learning. It is implemented in energy transformation material, natural science subject for fourth graders in elementary school. All the data consist of SOLE model validation result data and questionnaires' response data regarding Moodle-based SOLE model. Later, this model is declared as feasible based on those aspects:

a. SOLE model questionnaire validation result

Table 3. *Questionnaire Validation Result*

Aspects	Percentage	Category
Construction	80%	Strongly agree
Contents	88,75%	Strongly agree
Wording	80%	Strongly agree
Average	84,67%	Strongly agree

This validation process' purpose is to measure the feasibility of questionnaire. This process involves two experts, all of them are lecturers. The questionnaire's assessment is conducted through three aspects and all those aspects' average. It can be concluded that this questionnaire is feasible to be distributed to the students.

 b. Students' Response

Table 4. Students' Response

Aspects	Percentage	Category
Questions	86%	Strongly
Investigation	68%	Agree
Review	60%	Agree
		Agree
Average	71%	Agree

This test was conducted to 29 fourth graders, while its purpose is to know SOLE model feasibility. Its implementation rating is viewed through three aspects and their average value. Therefore, this model is considered as feasible to support learning activities.

Explanation

Based on analysis results during research, SOLE model is feasible to be used as learning resource, with its feasibility value being 71%. It is reviewed from question aspect, mainly about Moodle-based SOLE implementation response from the fourth graders being asked. The responses themselves include energy transformation material learning, SOLE model implementation, Moodle-based learning, responses regarding implementation result, and suggestions about further implementation to the teachers. This research is considered feasible due to the students' interests and successes in understanding the materials. Not only those, they can also help their teachers to conduct effective learning, because Moodle-based learning can be done by the students

anywhere, anytime, with full assistance from the teachers despite being remote. This conclusion is the same as Gunawan's, his being conducted in 2021. His research explained that Moodle-based SOLE model is more effective and efficient, be it for the teachers' learning or the students' comprehension. Also, Moodle-based scoring has some advantages in measuring the students' comprehension. This statement is supported by Kristina Sara's research in 2020. Hers stated that in Moodle-based e-learning there is menu for attaching and discussing the materials, giving assignments and quizzes, also menu for the teachers to set time for accessing all of them. Other than that, all activities can be accessed by the students, and they can see their scores so that the scoring becomes objective.

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