Phys. Comm. 8 (2) 2024 : 87 - 92

Physics Communication

http://journal.unnes.ac.id/nju/index.php/pc

Application of SAVI Learning Model to Improve Physics Learning Activities with Phet Simulations

Narita Ainun Nisa✉, Khumaedi, Fianti

Master of Physics Education - Universitas Negeri Semarang, Semarang, Indonesia

Article Info

Article history:
Submitted 21 May 2024
Revised 9 September 2024
Accepted 11 September 2024

Keywords:
Learning activities, Observations, SAVI learning model.

Abstract

The learning model that is used in the learning process had an impact on the ability of students to analyze problems. The aim of this study was to use the SAVI learning model to increase the analytical student activity in physics in the second grade of senior high school. This study's design was quasi-experimental. This study used this research is purposive sampling because both schools have the same competency level. The data was collected through observation, tests, and documentation. The research was conducted in Jepara with control and experimental groups respectively. The data's validity is evaluated using normality and homogeneity tests. The observation sheet for assessing learning activities has a validation score of 4.39, which is considered very good. The results were proved by observation sheets of student activities, which showed that this strategy was more effective. The experimental group's score increased from 81.94 to 87.92, while the control group's score increased from 79.43 to 81.83. The test scores for the experimental and control groups were 84.93 and 80.62, respectively, indicating that SAVI learning model in this study was found to be effective in improving students' learning activities.

Correspondence:
Master of Physics Education - Universitas Negeri Semarang
Sekaran Gunungpati Semarang Indonesia 50229
e-mail: ainun1585@students.unnes.ac.id

p-ISSN 2528-5971
e-ISSN 2528-598X

INTRODUCTION

The learning model refers to the full collection of teaching materials provided by educators, including all aspects of learning before and after, as well as any extra materials used directly or indirectly in the teaching and learning processes (Istarani, 2012). The learning model aids in the process of learning, and the use of creative and engaging media can motivate students to pay closer attention to the lessons and make learning easier by generating an interest in the subject matter (Kholil & Maimun, 2021; Kusumawati & Gunansyah, 2013). The learning material will be more comprehensible, so it can meet the learning objectives; the learning methods will be more varied, so that students do not get bored; the effectiveness of the teacher's staff will increase; students can do more learning activities such as observing, doing, demonstrating, and others (Ridwan et al., 2021). This process may improve the student's analytical skills and learning activities (Puspitasari et al., 2018).

A learning activity is any task assigned to students in a teaching-learning environment (Sumiati et al., 2019). Another approach that can support the learning activity of the student is by applying the SAVI approach. SAVI is an extension of Somatis (S), Auditory (A), Visual (V), and Intellectual (I) (Pratiwi et al., 2014; Rahayu et al., 2019). While the SAVI learning model is a learning model that allows students to perform physical activity, (Fitriyaningsih et al., 2014). The SAVI approach is a student learning process that combines physical movement with intellectual activity as well as the use of all senses (Mulyadi, 2021). The components of the SAVI approach can meet the essential processes that must be present in each learning activity demanded in the 2013 Curriculum (Febriyanti et al., 2021). According to Sahara et al. (2017) students can observe and gather information through visual, somatic, kinesthetic, and auditory means and associate them with thinking (intelectually). Learning activities are both physical and mental (Sari, 2020).

The student's involvement in learning events takes a range of forms, from physical action that is easy to detect to psychological activity that is harder to observe (Rahayu et al., 2019). In addition, the teacher's creativity in teaching and managing his grouproom must be enjoyable and arouse the students' interest in learning, as demonstrated by the diverse studies. Observable physical activities include reading, listening, writing, agitating, and measuring. Thus, student activity is a series of students' physical and psychological activities that are interconnected during the learning process, resulting in optimal learning (Perawansa et al., 2019).

Daharnis et al., 2019 mention that educators, trainers, and promoters of the accelerated learning concept. The SAVI approach means learning by using the senses of vision to perform physical activity; auditory; visualization, which means studying by using the vision senses to perform observing activities; and intellectually, learning by using the ability to think to solve problems (Prastika et al., 2021). According to Indah et al. (2018), physics learning prioritizes face-to-face experience exchange. As a result, in order to learn, a learning process must be developed that enhances students' knowledge, thinking capacity, and psychomotor skills through direct contact with curriculum-designed learning resources and RPP-based activity-based learning. (Kemendikbud, 2016; Mahulae et al., 2017; Prastika et al., 2021). Nurfitriyanti, 2018 arranged a list of student activities that may be divided into five categories: visual, oral, listening, writing, and mental. In this study, the sort of activity that will be studied according to the SAVI component is: Somatic (S) comprises motor activities; Auditory (A) includes spoken and listening activities; Visual (V) includes visual activities; and Intellectual (I) includes mental activities.

The aim of this study was to use the SAVI learning model to increase the analytical student activity in physics in the second grade of senior high school. Based on the results of the initial interviews, we found factors that cause less than maximum physical learning results. First, learners are less active in their participation during the learning process. Second, teachers dominate learning because there is less student response. Third, the learning models used vary less. Fourth, fewer learners gain practical experience through physical activity to discover concept. Therefore, the author will conduct a study about student problem solving analysis ability and learning activity in physics lessons. This study is entitled Analysis of SAVI Learning Models to Improve Student Problem Solving Analysis Ability and Learning Activity in Physics Lessons.

METHODS

This study subjects were conducted in senior high school SMA Negeri 1 Pecangaan and SMA Negeri 1 Mayong in 2021–2022. The sampling technique used purposive sampling are second grade of science groups: MIA 1, MIA 2 Negeri 1 Pecangaan, and MIA 3 Negeri 1 Mayong. The research subjects were conducted in senior high school SMA Negeri 1 Pecangaan and SMA Negeri 1 Mayong in 2021-2022. The sample in this study is the entire group of second graders in science group of MIA Negeri 1 Pecangaan were 60 students and

science group of MIA Negeri 1 Mayong were 59 students and used 4 observers.

This study included the validation of a student activity observation sheet with nine indicators. This study used normality tests, homogeneity tests, problem-solving ability analysis, and non-test analysis of observational data. Data analyzed using non-test data analysis techniques is data obtained from the observation sheet. This method is used to determine the learning activity performed by students at the time of treatment using the SAVI learning model. Non-testing data is processed using Microsoft Excel software. The results of the observation sheet with the Likert scale model, then the observation sheet of student learning activities was calculated using the formula (1) (Kusumawati & Gunansyah, 2013).

$$P\,\% = \frac{f}{n} \times 100\% \qquad (1)$$

P : Percentage of answer
f : Response frequency
n : Total score

Table 1. Criteria of Students Activity Observation

Percentage (%)	Criteria
$87.5 \leq P \leq 100$	Very Good
$62.5 \leq P < 87.5$	Good
$37.5 \leq P < 62.5$	Enough
$25 \leq P < 37.5$	Less

(Kusumawati & Gunansyah, 2013)

RESULTS AND DISCUSSION

This study focuses on the improvement skills of problem solving with the SAVI approach. The observer fills up the observation sheet throughout the learning process till it is complete. Student activity indicators include the student's readiness to conduct learning, the participant's observation of a learning video, seriousness in learning with group friends, the student's submission of opinions and answers, listening to the opinions of others, searching for learning information, solving problems, and the student presenting results. Completing the learner activity observation sheet in accordance with the observation portion of the student learning activity. The maximum score for each indication is 36 points. The goal of filling out the student activity observation sheet is to assess the improvement in student activity in both the experimental and control courses. The results of each indication will be added together from the first observation made at the second meeting and the second observation made at the fourth meeting. The observation sheet is then evaluated till it reaches its conclusion.

The mean activity level of the experimental group was 84.93, while the control group was 80.62. Table 2 contains the full results of the student activity observation. Student activity values vary due to the usage of different learning methods. The experimental group has a higher average level of student involvement than the more passive control group.

Table 2. The Result of Learning Activity Observation

Group	Observation 1	Observation 2	Mean
Experimental	81.94	87.92	84.93
Control	79.43	81.83	80.62

The percentage of student activity during learning determined by observations 1, before giving a treatment of SAVI approach and observation 2, after giving a treatment of SAVI approach. The result of this treatment shown that the average score of student activity of the experimental group was increase and higher than control group without treatment. Indicators for evaluating student activity in the indicator one study of learning readiness. Indicator two refers to the student's observation of the teacher's learning video. Table 3 and Table 4 show an increase in the number and quality of students that viewed the learning video. Previous study has shown that using SAVI techniques with video learning can result in improvements (Sarnoko et al., 2016). Indicator three refers to the seriousness with which the group studies. There was an improvement at one student's meeting who was able to focus on learning in a group setting. The fourth indicator is the student's willingness to express opinions during the learning process. Students had the opportunity to share their ideas at the first and second meetings. Indicator five, the learner is able to respond to questions that arise during the learning experience.

Indicator six is the student's willingness to listen to others' perspectives. Indicator seven: the student's ability to write discussion results. The eighth indicator is that the learner can retrieve knowledge about the content studied from diverse sources. Indicator nine indicates that the students is able to solve the problem. Finally, a comprehensive

assessment of the student's ability to exhibit or analyze the discussion results. Table 3 and Table 4 indicate the percentages attained by students of the entire experimental group.

Table 3. The Result of Learning Activity in Experimental Observation 1

	Indicators									
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**I7**	**I8**	**I9**	**I10**
Total	434	158	147	145	151	148	145	149	149	144
Mean	7.23	2.63	2.45	2.42	2.68	2.47	2.42	2.48	2.48	2.40
% Activity	80.37	87.78	81.67	80.5	83.89	82.2	80.56	85	82.78	80.00

Table 4. The Result of Learning Activity in Experimental Observation 2

	Indicators									
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**I7**	**I8**	**I9**	**I10**
Total	473	167	163	161	164	155	157	154	155	150
Mean	7,88	2,78	2,72	2,68	2,73	2,58	2,62	2,57	2,58	2,50
% Activity	87,59	92,78	90,56	89,44	91,11	86,11	87,22	85,56	86,11	83,33

Student involvement in the experimental and control groups had varied results. I1 was indicator 1 which is used for this observation; I2 was indicator 2; I3 was indicator 3; etc. The percentage attained on all metrics increased at the second meeting from the observation 1 to observation 2 in the experimental group, that are shown by the total score. Indicators of student learning activity have improved and entered the criteria extremely well, with a proportion of $87.5\% \leq P \leq 100$. The SAVI approach with PhET simulation has already given an impact to improve skills on learning activity in physics lesson.

Table 5. The Result of Learning Activity in Control Observation 1

	Indicators									
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**I7**	**I8**	**I9**	**I10**
Total	422	143	141	143	140	141	144	135	138	140
Mean	7.15	2.42	2.39	2.42	2.37	2.39	2.44	2.29	2.34	2.37
% Activity	79.40	80.79	79.66	80.79	79.10	79.66	81.36	76.27	77.97	79.10

Table 6. The Result of Learning Activity in Control Observation 2

	Indicators									
	I1	**I2**	**I3**	**I4**	**I5**	**I6**	**I7**	**I8**	**I9**	**I10**
Total	432	147	153	144	146	143	143	147	148	135
Mean	7.32	2.49	2.59	2.44	2.47	2.42	2.42	2.49	2.51	2.29
% Activity	81.30	83.05	86.44	81.36	82.49	80.79	80.79	83.05	83.62	76.27

The aim of this study was to use the SAVI learning model to increase the analytical student activity in physics in the second grade of senior high school. Based on the results of analysis and discussion of the impact of the SAVI learning model and learning video media, PhET simulation practices, and student's worksheet to improved student learning activities. The experimental group's score increased from 81.94 to 87.92, while the control group's result increased from 79.43 to 81.83. The mean observed value of the activity of the experimental group was 84.93, whereas that of the control group was 80.62, indicating that the experimental group received a higher score than the control group. It was discovered that by combining the SAVI learning model with aided video learning, simulation practice, and student's worksheet. Students can solve issues while learning, resulting in improved indications of learning activity and this methode is more effective.

CONCLUSION

The aim of this study was to use the SAVI learning model to increase the analytical student activity in physics in the second grade of senior high school. Based on the results of analysis and discussion of the impact of the SAVI learning model and learning video media, PhET simulation practices, and student's worksheet to improved student learning activities. The experimental group's score increased from 81.94 to 87.92, while the control group's result increased from 79.43 to 81.83. The mean observed value of the activity of the experimental group was 84.93, whereas that of the control group was 80.62, indicating that the experimental group received a higher score than the control group. It was discovered that by combining the SAVI learning model with aided video learning, simulation practice, and students worksheet. Students can solve issues while learning, resulting in improved indications of learning activity and this methode is more effective.

REFERENCES

Daharnis, Rahmi, W., & Fitria, Y. (2019). The Effect of Savi Model (Somatic, Auditory, Visualization, Intellectual) on Creative Thinking Skills Based on Student Learning in IV Class in Basic School. *International Journal of Science and Research (IJSR)*, *8*(1), 1764–1768. https://doi.org/10.21275/ART20194623

Febriyanti, R., Ambarita, A., & Rochmiyati, R. (2021). Development of SAVI-Based LKPD to Improve Critical Thinking of V Grade Students of SDIT Wahdatul Ummah. *Edunesia: Jurnal Ilmiah Pendidikan*, *2*(3), 650–662. https://doi.org/10.51276/edu.v2i3.185

Fitriyaningsih, Jamzuri, & Dwi, T. R. (2014). Penerapan Pendekatan Somatic, Auditory, Visual, Intellrctualy (Savi) untuk Meningkatkan Motivasi dan Hasil Belajar Fisika Siswa Kelas XI di Sma Negeri 3 Boyolali. *Jurnal Pendidikan Fisika*, *2*(2), 30–34. https://doi.org/10.51276/jpf.v2i2-221.

Indah, D. S., Sunarno, W., & Sarwanto, S. (2018). Pengembangan Modul Fisika Berbasis Savi (Somatic, Auditory, Visualization, Intellectually) Untuk Meningkatkan Motivasi Siswa Pada Pembelajaran Fisika Kelas X Smk Jurusan Multimedia Dengan Topik Impuls Dan Momentum. *INKUIRI: Jurnal Pendidikan IPA*, *7*(2), 273. https://doi.org/10.20961/inkuiri.v7i2.22988

Istarani. (2012). *58 Model Pembelajaran Innovatif*. Media Persada.

Kemendikbud. (2016). *Permendikbud No. 24 tentang Lampiran Kompetensi Inti dan Kompetens Dasar Pembelajaran pada Kurikulum 2013 pada Pendidikan Dasar dan Menengah*. Jakarta: Kementrian Pendidikan dan Kebudayaan.

Kholil, & Maimun, S. (2021). Analisis Model Pembelajaran SAVI (Somatis, Auditori, Visual, dan Intelektual) dalam Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Fikih. *Jurnal Pendidikan Dasar*, *5*(2), 197–209. https://doi.org/10.36088/fondatia.v5i2.1415

Kusumawati, S. W., & Gunansyah, G. (2013). Model pembelajaran SAVI untuk meningkatkan keterampilan pemecahan masalah di Sekolah Dasar. *Jpgsd*, *1*(2), 9-14. https://doi.org/10.36088/jpgsd.v12i3.1231

Mahulae, P. S., Sirait, M., & Sirait, M. (2017). The Effect of Inquiry Training Learning Model Using PhET Media and Scientific Attitude on Students' Science Process Skills. *IOSR Journal of Research & Method in Education*, *7*(5), 24–29. https://doi.org/10.9790/7388-0705012429

Mulyadi. (2021). Metode Somatic Auditory Visual Intelegency (SAVI) untuk Penyampaian Materi Globalisasi pada Siswa Sekolah Dasar. *Jurnal Pendidikan Tambusa*, *5*(1), 709–714.

Nurfitriyanti, M. (2018). Pengaruh Model Pembelajaran SAVI Terhadap Pemahaman Konsep Matematika Melalui Berpikir Kreatif. *Jurnal MathEducation Nusantara*, *1*(2), 1–11.

Perawansa, I. F., Minarni, A., & Surya, E. (2019). Developing Learning Devices Based on GeoGebra Assisted Discovery Learning with SAVI Approach to Improve Motivation and Mathematical Communication of Senior High School Students MTs Aisyiyah. *American Journal of Educational Research*, *7*(12), 893–900. https://doi.org/10.12691/education-7-12-1

Prastika, V. Y. A., Riyadi, R., & Siswanto, S. (2021). The Influence of Discovery and CORE (Connecting, Organizing, Reflecting, and Extending) Learning Model on Students' Creative Thinking Skill. *International Journal of Multicultural and Multireligious Understanding*, *8*(2), 1. https://doi.org/10.18415/ijmmu.v8i2.2251

Pratiwi, D., Suratno, & Pujiastuti. (2014). Pengembangan Bahan Ajar Biologi Berbasis

Pendekatan SAVI (Somatic, Auditory, Visual, Intellectual) Pada Pokok Bahasan Sistem Pernapasan Kelas XI SMA Dalam Meningkatkan Motivasi dan Hasil Belajar Siswa Development of Teaching Materials of Biology Base. *Jurnal Edukasi UNEJ*, *1*(2), 5–9. https://doi.org/10.19184/jukasi.v1i2.1392

Puspitasari, A., Purnanto, A. W., & Hermahayu, H. (2018). Pengaruh Model Pembelajaran Savi (Somatic, Auditory, Visualization, Intellectual) Dengan Media Hide Dan Seek Puzzle Terhadap Hasil Belajar Ipa. *Edukasi Journal*, *10*(2), 137–148. https://doi.org/10.31603/edukasi.v10i2.2545

Rahayu, A., Nuryani, P., & Riyadi, A. R. (2019). Penerapan Model Pembelajaran SAVI untuk Meningkatkan Aktivitas Belajar Siswa. *Jurnal Pendidikan Guru Sekolah Dasar*, *4*(2), 102–111. https://doi.org/10.17509/jpgsd.v4i2.20489

Ridwan, M. R., Retnawati, H., Hadi, S., & Jailani, J. (2021). The Effectiveness of Innovative Learning on Mathematical Problem-Solving Ability: A Meta-Analysis. *International Journal of Research in Education and Science*, *7*(3), 910–932. https://doi.org/10.46328/ijres.2287

Sahara, R., Mardiyana, & Dewi, R. S. (2017). Analysis student self efficacy in terms of using Discovery Learning model with SAVI approach. *AIP Conference Proceedings*, *1913*(December). https://doi.org/10.1063/1.5016660

Sari, F. (2020). Penggunaan Bahan Ajar IPA berbasis Pendekatan SAVI (Somatic, Auditory, Visual, Intellectual) untuk Meningkatkan Hasil Belajar Peserta Didik. *Journal of Classroom Action Research*, *2*(2), 12-18. https://doi.org/10.29303/jcar.v2i2.464

Sumiati, D., Bahar, A., & Handayani, D. (2019). Penerapan Model Pembelajaran Auditory, Intellectualy Dan Repetition (Air) Dengan Menggunakan Media Pembelajaran Kartu Arisan Untuk Meningkatkan Aktivitas Dan Hasil Belajar Siswa Kelas X Mia 1 Sman 8 Kota Bengkulu. *Jurnal pendidikan Dan Ilmu Kimia*, *3*(2), 114–122. https://doi.org/10.33369/atp.v3i2.9873