



The Use of Videoscribe Animation-Based Science E-Modules on Science Literacy of Junior High School Students

Sri Arwini Bahrn^{1*}, Khamsiah Mawar Fatmah¹, Insih Wilujeng¹, Suyanta¹, Sri Rejeki¹

Magister Pendidikan Sains, Universitas Negeri Yogyakarta, Indonesia.

Received: Desember 27, 2023

Revised: May 15, 2023

Accepted: June 25, 2023

Published: June 30, 2023

Corresponding Author:

Sri Arwini Bahrn

sriarwini.2021@student.uny.ac.id

DOI: [10.29303/jppipa.v9i6.2752](https://doi.org/10.29303/jppipa.v9i6.2752)

© 2023 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: Scientific literacy must be mastered by students because it relates to the environment. This study aims to determine the increase in students' scientific literacy abilities using videoscribe animation-based e-modules. The type of research used is descriptive quantitative conducted at SMPN 5 Depok, Yogyakarta. The subjects in this study were 32 class VII B students who were selected using cluster random sampling. The instrument used in this study was a test in the form of multiple-choice questions with data collection techniques in the form of pretest and posttest questions. Based on the differences in the pretest and posttest results obtained and the average N-gain obtained 0,62, it is in the medium category which indicates that the videoscribe animation-based science e-module used can improve students' scientific literacy skills.

Keywords: E-module; Science Literacy; Videoscribe Animation

Introduction

In this era of globalization, science learning should be able to form a basic attitude of science (scientific literacy) that has competence in scientific thinking as an effort to solve individual problems and issues in society so that it can play a role as a good human resource. Scientific literacy this time can be a guideline that must be possessed by every individual both in daily life and the world of work (Kelana & Pratama, 2019).

Scientific literacy is a must for everyone. Scientific literacy is very important for everyone because the progress of a nation is determined by the quality of someone who has scientific and technological literacy skills (Choirunnisak et al., 2018). Scientific literacy ability is the ability to engage with issues related to science, scientific ideas, and the ability to be a person who thinks reflectively, scientific literacy skills in learning provide direct experience to students through the use and development of process skills and scientific attitudes to solve problems in everyday life (Aulia et al., 2018).

The scientific literacy ability of students in Indonesia is still low when compared to other countries.

This is appropriate and supported by the results of research conducted by the Program for International Student Assessment (PISA) in 2018 which shows that Indonesia occupies 70th position out of 80 countries (OECD, 2018). Based on these data, it proves that the average score for Indonesian scientific literacy is still below the international average score (Rosidi, 2021).

This problem can occur because the understanding of students in receiving science learning materials is still low which is caused by the low use of interesting media and teaching materials in science learning and lack of linking them to the problems of everyday life, so students' scientific literacy is less honed (Pitriyani et al., 2021).

Efforts have been made to overcome these problems, one of which is to develop an electronic module based on videoscribe animation that is self-instruction, self-contained, stand-alone, adaptive, and user friendly. Electronic modules or e-modules are sources or study guides in electronic format (Diah Puspitasari, 2019; Puspitasari et al., 2020; Rokhmania & R Kustijono, 2017). In the learning process using e-modules, it will link the display of images, animations, texts, and videos whose use is easy to understand via a

How to Cite:

Bahrn, S.A., Fatmah, K.M., Wilujeng, I., Suyanta, S., & Rejeki, S. (2023). The Use of Videoscribe Animation-Based Science E-Modules on Science Literacy of Junior High School Students. *Jurnal Penelitian Pendidikan IPA*, 9(6), 4718–4722. <https://doi.org/10.29303/jppipa.v9i6.2752>

computer or smartphone (Gunawan, 2010). E-modules are made systematically using language that can adapt to the abilities of students, so as not to confuse students in understanding and can help students measure and control their abilities and learning intensity because the use of e-modules is not limited by place and time (Laili et al., 2019). E-modules can control the content that will be studied by students because they are designed by the teacher himself, so that they can adapt to the planned curriculum (Tsai et al., 2017). The existence of e-modules can make it easier to facilitate students who are slow to absorb learning, because it can provide an effective and interesting atmosphere (Hafsah et al., 2016; Imansari & Sunaryantiningsih, 2017).

Videoscribe is software that can create an animation in the form of a blackboard that can explain a certain concept consisting of a series of images, text and sound packaged into a complete video that can be adapted to learning needs (Munawar & Suryadi, 2019; Rahmatika & Ratnasari, 2018). Videos produced from videoscribe will attract students' interest because the material they are learning is visualized in a more interesting way and students follow learning with focus and in pleasant conditions. Thus, the material that has been delivered can be well received and can be recalled by students (Ledya et al., 2022; Rahayu & Masniladevi, 2020; Yusnia, 2019).

Based on this, it is expected that students can absorb science learning more fully and give meaning to the material they are learning. Thus learning is more interesting, effective, and efficient, and able to improve students' scientific literacy skills. This is relevant to what was conveyed by Ilvi Triyani, et al (2022) who explained that the development of sparkol videoscribe-based learning media can increase the scientific literacy of junior high school students. Rini Muzijah, et al (2020) also explained that e-module development can train students' scientific literacy skills.

The material taught in this study is changes in physics and chemistry which are materials related to the daily activities of students so that it is hoped that by using the e-module based on videoscribe animation students will have a more meaningful learning experience and can increase students' scientific literacy.

Method

This research is a type of quantitative descriptive research. This research was conducted in November 2022 at SMPN 5 Depok, Yogyakarta. The selection of samples using cluster random sampling was selected by students in class VII B with a total of 32 students. The instrument used is a scientific literacy test. Data collection techniques in the form of questions pretest

and posttest. The test instrument is in the form of multiple-choice questions. Data analysis technique using paired sample t-test. The increase in students' scientific literacy that occurs before and after learning is calculated by N-gain. The average normalized gain (N-gain) is expressed by equation 1. The interpretation of the N-gain level criteria can be seen in Table 1.

$$g = \frac{Sp_{post} - Sp_{pre}}{S_{max} - Sp_{pre}} \tag{1}$$

Information:

Sp_{post} : average posttest score

Sp_{pre}: average pretest score

S_{max} : maximum score

Table 1. Category Level N-gain

Range of Value	Category
$g > 0.70$	High
$0.30 \leq g \leq 0.70$	Medium
$g < 0.30$	Low

(Hake, 1998)

Results and Discussion

Assessment of students' scientific literacy is based on competence in explaining scientific phenomena, identifying scientific issues and using scientific evidence. Students' scientific literacy before learning can be seen from the scientific literacy pretest score, then after using the videoscribe animation-based e-module in learning seen from the posttest score.

The pretest and posttest values are used to calculate the N-gain value to find out that the use of videoscribe animation-based e-modules can increase students' scientific literacy. The results of the N-gain score are presented in table 2.

Table 2. N-gain Score Results

Class	Score		Average of N-gain	Category
	Pretest	Posttest		
X	2.71	4.75	0.62	Medium

Based on Table 2, it can be seen that the average N-gain score obtained is 0.62, which means $N\text{-gain} < 0.62 \leq 0.70$, so it is included in the medium category. This means that the science e-module based on videoscribe animation can be used to increase students' scientific literacy. E-modules as teaching materials to assist students in learning independently which have communicative language and are two-way so that it makes it easier for students to use them using electronics, in other words using e-modules to train scientific literacy (Aji et al., 2018). An increase in student N-gain shows that the learning process is called effective

if it is in accordance with the objectives and achieves the expected learning outcomes, the closer to the expected achievement, the more effective the assessment results (Ratumanan & Laurent, 2010).

The ability of students' scientific literacy is very important to develop so that students can have high competitiveness when facing the current era of information technology and in the future which has intense global competition (Jamaluddin et al., 2019). The factors that cause students' low scientific literacy are that students rarely work on scientific literacy questions, students are accustomed to memorizing material rather than understanding it, so students are less able to apply it to everyday life (Hasasiyah et al., 2020).

The science e-module based on videoscribe animation is used to increase students' scientific literacy to explain the physical and chemical properties and their changes and identify the physical and chemical changes of a substance in everyday life. The material presented in the e-module is presented in an animated video made on videoscribe. The following is a display of the e-module.

The videoscribe contained in the e-module is used to help students understand the concepts of physical and chemical properties and their changes because the animations in the e-module are explained systematically and briefly. Students can observe directly the events of physical and chemical changes displayed by the videoscribe animation in the e-module so that the learning experience of students becomes more real. This is in line with research conducted by Ledy et al. (2022) which states that the use of videoscribe helps learning more efficiently because it can explain complicated science material to be more interesting and simpler and make students get a more real learning experience.



Figure 1. Initial appearance of the E-module



Figure 2. Display of the contents of the E-module

Conclusion

Based on the results and discussion of this study, it can be concluded that the use of science e-modules based on videoscribe animation can improve students' scientific literacy skills. This is evidenced by the difference in the pretest and posttest results obtained and the average N-gain score obtained which is in the moderate category.

Author Contributions

The lead author, Sri Arwini Bahrin, contributed to designing and conducting the research and writing the article. The second author, Khamsiah Mawar Fatmah, contributed to assisting the research implementation process and designing research instruments. The third author, Insih Wilujeng, contributed to guiding the research and writing the article. The fourth and fifth authors, Suyanta and Sri Rejeki contributed in guiding the writing of the article to completion. All authors have approved the version of the manuscript to be published.

Funding

This research did not receive external funding.

Conflict of Interest

There is no conflict of interest in this research.

Reference

Aji, W. R., Dewa Gede Hendra Divayana, & Ketut Agustini. (2018). Pengaruh e-modul mata pelajaran video editing berbasis model pembelajaran project based learning terhadap hasil belajar peserta didik SMK. *Karmapati*, 7(2), 1-8. Retrieved from <https://doi.org/10.23887/karmapati.v7i2.15355>

- Aulia, E. v., Poedjiastoeti, S., & Agustini, R. (2018). The Effectiveness of Guided Inquiry-based Learning Material on Students' Science Literacy Skills. *Journal of Physics: Conference Series*, 947(1). <https://doi.org/10.1088/1742-6596/947/1/012049>
- Choirunnisak, Ibrahim, M., & Yuliani. (2018). The development of guided inquiry-based learning devices on photosynthesis and respiration matter to train science literacy skills. *IOP Conference Series: Materials Science and Engineering*, 296(1). <https://doi.org/10.1088/1757-899X/296/1/012002>
- Diah Puspitasari, A. (2019). Penerapan Media Pembelajaran Fisika Menggunakan Modul Cetak Dan Modul Elektronik Pada Siswa SMA. *Jurnal Pendidikan Fisika*, 7(1), 2355-5785. Retrieved from <https://journal3.uin-alauddin.ac.id/index.php/PendidikanFisika/article/view/7155>
- Gunawan, D. (2010). Modul Pembelajaran Interaktif Elektronika Dasar Untuk Program Keahlian Teknik Audio Video Smk Muhammadiyah 1 Sukoharjo Menggunakan Macromedia Flash 8. *KomuniTi*, 2(1). Retrieved from <http://hdl.handle.net/11617/1188>
- Hafsah, N. R., Rohendi, D., & Purnawan, P. (2016). Penerapan Media Pembelajaran Modul Elektronik Untuk Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran Teknologi Mekanik. *Journal of Mechanical Engineering Education*, 3(1), 106. <https://doi.org/10.17509/jmee.v3i1.3200>
- Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, 66(1), 64-74. <https://doi.org/10.1119/1.18809>
- Hasasiyah, S. H., Hutomo, B. A., Subali, B., & Marwoto, P. (2020). Analisis Kemampuan Literasi Sains Siswa SMP pada Materi Sirkulasi Darah. *Jurnal Penelitian Pendidikan IPA*, 6(1), 5-9. <https://doi.org/10.29303/jppipa.v6i1.193>
- Imansari, N., & Sunaryantiningsih, I. (2017). Pengaruh Penggunaan E-Modul Interaktif Terhadap Hasil Belajar Mahasiswa pada Materi Kesehatan dan Keselamatan Kerja. *Volt: Jurnal Ilmiah Pendidikan Teknik Elektro*, 2(1), 11. <https://doi.org/10.30870/volt.v2i1.1478>
- Jamaluddin, J., Jufri, A. W., Ramdani, A., & Azizah, A. (2019). Profil Literasi Sains Dan Keterampilan Berpikir Kritis Pendidik IPA SMP. *Jurnal Penelitian Pendidikan IPA*, 5(1). <https://doi.org/10.29303/jppipa.v5i1.185>
- Kelana, J. B., & Pratama, D. F. (2019). *Bahan Ajar IPA Berbasis Literasi Sains*. Lekkas.
- Laili, I., G., & U. (2019). Efektivitas Pengembangan E-Modul Project Based Learning pada Mata Pelajaran Instalasi Motor Listrik. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, 3(3), 306-315. <https://doi.org/10.23887/jipp.v3i3.21840>
- Ledy, K., Nulhakim, L., & Aprelia Resti, V. D. (2022). Pengembangan Videoscribe Tema Transportasi Si-Hijau Untuk Melatih Keterampilan Komunikasi Sains Siswa SMP Kelas VIII. *PENDIPA Journal of Science Education*, 6(2), 361-370. <https://doi.org/10.33369/pendipa.6.2.361-370>
- Munawar, A., & Suryadi, A. (2019). Pengembangan Media Pembelajaran Sejarah Indonesia Berbasis Videoscribe Materi Kerajaan Islam Di Jawa Kelas X Tahun Ajaran 2018/2019 Di SMA Negeri 3 Salatiga. *Indonesian Journal of History Education*, 7(2). <https://doi.org/10.15294/ijhe.v7i2.36436>
- OECD. (2018). *PISA 2018 Insights and Interpretations*. OECD Publishing.
- Pitriyani, P., Pamungkas, A. S., & Alamsyah, T. P. (2021). Developing Science Literacy Based Videoscribe Learning Videos at Elementary Schools. *Primary: Jurnal Pendidikan Guru Sekolah Dasar*, 10(4), 982. <https://doi.org/10.33578/jpkip.v10i4.8307>
- Puspitasari, R., Hamdani, D., & Risdianto, E. (2020). Pengembangan E-Modul Berbasis Hots Berbantuan Flipbook Marker Sebagai Bahan Ajar Alternatif Siswa SMA. *Jurnal Kumparan Fisika*, 3(3), 247-254. <https://doi.org/10.33369/jkf.3.3.247-254>
- Rahayu, M., & Masniladevi. (2020). Pengaruh Penggunaan Media Sparkol Videoscribe terhadap Komunikasi Matematis Materi Faktor Dan Kelipatan Bilangan Kelas IV SDN 04 Pasar Surantih. *Jurnal Pendidikan Tambusai*, 4(3), 2239-2249. Retrieved from <https://jptam.org/index.php/jptam/article/view/702>
- Rahmatika, D. F., & Ratnasari, N. (2018). Media Pembelajaran Matematika Bilingual Berbasis Sparkol Videoscribe. *Desimal: Jurnal Matematika*, 1(3), 385-393. <https://doi.org/10.24042/djm.v1i3.3061>
- Ratumanan, T. G., & T Laurent. (2010). *Penilaian hasil belajar berdasarkan tingkat satuan pendidikan*. Unesa Press.
- Rokhmania, F. T., & R Kustijono. (2017). Efektivitas penggunaan E-Modul berbasis flipped classroom untuk melatih keterampilan berpikir kritis. *Seminar Nasional Fisika (SNF)*, 1, 91-96. Retrieved from <https://fisika.fmipa.unesa.ac.id/proceedings/index.php/snf/article/view/46>
- Rosidi, I. (2021). Profil Literasi Sains Aspek Kompetensi Siswa Pondok Pesantren di Masa Pandemi Dengan Menggunakan Penilaian Berbasis Digital. *Natural Science Education Research*, 4(1), 1-9. <https://doi.org/10.21107/nser.v4i1.11467>

- Tsai, T. P., Lin, J., & Lin, L. C. (2017). A Flip Blended Learning Approach for ePUB3 eBook-based Course Design and Implementation. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(1). <https://doi.org/10.12973/ejmste/79629>
- Yusnia, Y. (2019). Penggunaan Media Video Scribe Dalam Pembelajaran Literasi Sains Untuk Mahasiswa PG Paud. *Cakrawala Dini: Jurnal Pendidikan Anak Usia Dini*, 10(1), 71-75. <https://doi.org/10.17509/cd.v10i1.17436>