



# The Effect of Live Student' Worksheet to Increase Students' Scientific Literacy in Science Subjects: A Review

Karima Paspania<sup>1\*</sup>, Susilawati<sup>1</sup>

<sup>1</sup> Master of Science Education, Postgraduate, University of Mataram, West Nusa Tenggara, Indonesia.

Received: September 12, 2023

Revised: February 16, 2024

Accepted: March 25, 2024

Published: March 30, 2024

Corresponding Author:

Karima Paspania

[karimapaspania@gmail.com](mailto:karimapaspania@gmail.com)

© 2024 The Authors. This open access article is distributed under a (CC-BY License)



**Abstract:** This literature study aims to examine the effect of live students' worksheet interactive on students' ability to increase scientific literacy in science lessons. Search for literature study articles obtained to meet the inclusion criteria and be relevant for review. This research uses secondary data obtained from not direct observation. The data collection method used is the documentation method by searching for data from literature related to the research. Students' worksheet interactive assisted by live worksheets can increase students' scientific literacy, in addition it can also increase students' creativity, critical thinking and scientific studies of science lessons.

**Keywords:** Live Worksheet; Science; Science Literacy; Students Worksheet Interactive.

## Introduction

In Indonesian schools, learning is usually still centered on the teacher and students are only listeners. Students' thinking skills (as well as critical, creative and other thinking) are not tested, and students' diverse skills make application difficult (Syehma, 2019). Current learning styles place more emphasis on memorization, so students become confused and confused when teachers ask problem-based questions. In addition, very low media use reduces students' enthusiasm for being involved in learning (Pramana, et al., 2022).

21st century education has an important role in the development and progress of the nation. Through education we can improve the quality of human resources (HR), both in terms of knowledge, skills and attitudes, as well as provide competency provisions to Indonesian students as the next generation who determine the development and progress of the nation. There are several benchmarks that can be used to see the progress of a nation, one of which is by looking at the progress of science and technology (IPTEK) (Fidiantara et al., 2020).

The differences in skills that emerge in educational requirements have implications for the development of learning materials that are tailored to the desired skills. The implementation of the 2013 curriculum meets the requirements, one of which is supported by the purchase of learning aids or resources to be used as a learning environment in the learning process (Vasmin et al., 2020).

The implementation of improving the quality of education is carried out by the government, one of which is through the development of teaching materials. Regulation No.13 of 2015 article 1 ayan 33 explains that textbooks are the main learning source in achieving basic and core competencies. The availability of quality textbooks can support student learning success. Teaching materials are content dimensions compared to context dimensions as required by the Program for International Student Assessment (PISA).

One of the teaching materials that focuses on improving students' thinking skills is Student Worksheets. Mispa, et al., (2022) explained that in learning teachers must innovate to make it easier to provide teaching materials and assignments to students. In agreement with Saril, et al., (2022) the use of Student

### How to Cite:

Paspania, K., & Susilawati, S. (2024). The Effect of Live Student' Worksheet to Increase Students' Scientific Literacy in Science Subjects: A Review. *International Journal of Science Education and Science (IJSES)*, 1(1), 19–23. Retrieved from <https://journals.balaipublikasi.id/index.php/ijse/article/view/110>

Worksheets is one solution to the problems found in learning. Accelerated by technological developments, Student Worksheets can now be delivered in electronic format called e-Student Worksheets

The problem currently being faced is the lack of implementation of Student Worksheets that comply with standards, are systematically arranged, simple in form, practical in use and easy to understand so that they can be used optimally by students. Therefore, it is necessary to apply Student Worksheets which is electronic and practical and easy to use because it can be accessed using a computer or laptop or smartphone during the learning process. The Student Worksheets is an electronic form of Student Worksheets or what is called e-Student Worksheets. The preparation of interactive media given to students must be easy to create and practical to use. Apart from that, the Student Worksheets used in learning should be designed to be as attractive as possible and easy to access. Changing traditional printed Student Worksheets to electronic Student Worksheets or e-student Worksheets is one way to improve the appearance and quality of Student Worksheets learning and encourage student innovation and creativity (Putra & Agustina, 2021). e-Student Worksheets has the advantage of being a tool that can arouse students' interest in learning. It becomes easier for teachers to direct students to discover concepts through experiments or investigations with interactive e-Student Worksheets (Apriliyani & Mulyatna, 2021).

Interactive Student Worksheets based on Live worksheets have advantages compared to printed LKPD, namely: (a) accessed for free, (b) more practical because no printing is required, (c) can be accessed using a smartphone/laptop, (d) can be used as media and for assignments during online learning, and (e) does not take up storage space. From the presentation of reference theory and previous research, researchers feel it is necessary to carry out research development with the title *Developing Liveworksheet-Based e-Student Worksheets to Improve Students' Scientific Literacy in Science subjects*.

One website that can be used to design Student Worksheets to make them more attractive and easy to access is live worksheets. According to Navarre in Prastika & Masniladevi (2021), live worksheets are a platform in the form of a website that offers accommodation for teachers to be able to utilize the e-Student Worksheets that have been provided or compile their own interactive e-Student Worksheets online. Live worksheets is a unique platform that can be used like a website to create interactive worksheets online. Using live worksheets in creating Student Worksheets is also very profitable because the Student Worksheets prepared are interactive and easy for students to use. Students can work directly and receive completed assignments as a result. Live worksheets can be accessed by students using Google Chrome, so they do not need

to download or register first (Prastika & Masniladevi, 2021).

According to Latip and Faisal (2021) computer-based media used to increase scientific literacy consists of various forms, namely multimedia, interactive E-books, E-modules, virtual labs, animated videos, and Android-based media. The use of various forms of computer-based media has a positive impact on increasing students' scientific literacy in science learning. In general, the resulting increase in scientific literacy is in the medium category, so it is necessary to improve the quality of computer-based media in terms of content, media objects and media design so that the effectiveness of media use in learning can be more effective and maximized.

Indonesian students' scientific literacy in 2018 was ranked 70th out of 79 countries with a score of 396 (OECD, 2018). This score has decreased compared to 2015, Indonesia was ranked 62nd out of 70 countries with a score of 403 (OECD, 2015). Apart from PISA data, the Ministry of Education and Culture also revealed the low average science score of students based on the 2018 UNBK assessment (Kemendikbud, 2018). Low scientific literacy causes students to be less responsive to developments and problems in the environment, especially those related to natural phenomena, local regional advantages, and problems in the surrounding environment (Nofiana & Julianto, 2018).

Literacy skills are fundamental things that students must have in facing the global era to be able to meet life's needs in various situations. Scientific literacy is the ability to understand science, communicate science, and apply scientific abilities to solve problems. To improve scientific literacy skills, besides requiring student motivation, teachers also need to consider learning strategies that are appropriate to the conditions and potential of students, where the learning process focuses on providing direct experience and applying the essence of science (Yuliati, 2017).

## Method

This research is a literature review research that reviews and examines the findings contained in academic-oriented literature and formulates theoretical and methodological contributions on a particular topic (Pratiwa, et al., 2021). The data used in this research is secondary data obtained from not direct observation. The data collection method uses the documentation method by searching for literature related to the research

## Result and Discussion

This literature review was carried out to determine students' scientific literacy in science learning using Interactive Live Students Worksheet with existing literature collection techniques regarding scientific

literacy and Interactive Students Worksheet using Live Worksheet. There are 10 pieces of literature that discuss Interactive Live Students Worksheet and scientific literacy. All of these journals are national and international journals which can be searched on the Google Scholar portal by typing the keyword Interactive Students Worksheet to increase scientific literacy in science learning which is then analyzed from the core of the journal, The results of the study will reveal the

similarities and differences between these journals. The following is an analysis table of 10 article.

Based on Table 1, it was found that the validity of Interactive Students Worksheet using Live Worksheets can increase students' scientific literacy. the low category of students' science literacy is 34.6% and the highest category is 3.6%. The highest student response, namely 94, for the Students Worksheet Interactive was declared effective.

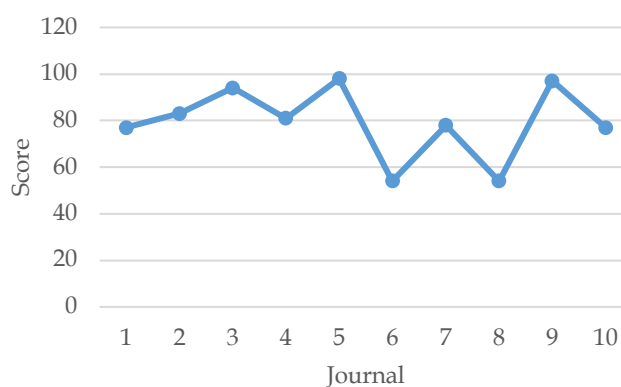
**Table 1.** Journal related to Interactive Live Worksheet Science Literacy.

Writer	Title	Score of Literacy Science
Mufida, & Julianto (2018).	Efforts to Increase Students' Scientific Literacy Through Local Excellence-Based Learning	77
Shinta, & Novita (2022)	Development of Guided Inquiry-Liveworksheet E-LKPD to Increase Scientific Literacy in Reaction Rate Factor Sub-material	83
Zahroh, & Yuliani (2021)	Development of e-Students Worksheet based on Science Literacy to train students' critical thinking skills on growth and development material.	94
Khasanah, & Setiawan (2022)	Application of the Socio-Scientific Issues Approach Assisted by e-Students Worksheet on Additive Substance Material to Improve Students' Scientific Literacy	81
Sari et al (2022)	Development of Interactive Student Worksheets Science Live Worksheets Based on Hots for Primary School Students	98
Choiroh, et al (2022)	The Effect of Using Interactive e-students Worksheet Assisted by Live Worksheets on High School Students' Physics HOTS Cognitive Thinking Abilities	54
Farman, et al (2021)	Development of e-students worksheet Using Live Worksheets for Online Mathematics Learning during Covid-19	78
Adib Rifqi Setiawan (2019)	Effectiveness of Biology Learning Oriented to Scientific Literacy	54
Mateja Ploj Vrtič (2022)	Teaching science & technology: components of scientific literacy and insight into the steps of research	9.7
Merta, et al (2020)	The Profile Of Science Literacy And Instruction Model Can Increase Science Literacy Capability	77

Understanding the material studied through e-Students Worksheet can achieve increased learning outcomes (cognitive domain and scientific literacy) of students. This achievement is important in the effectiveness of e-Students Worksheet by providing pretest-posttest. The pretest-posttest questions used were the same, namely 10 questions (cognitive domain) and 5 questions (scientific literacy domain). Measuring student learning outcomes begins by carrying out statistical analysis with SPSS (normality test and t test). At this stage, normality testing is carried out (knowing the normal distribution of data) and sample test (significant differences in pretest-posttest scores) (Cholifah and Dian, 2022).

Student Worksheet Interactive Live Worksheet to increase students' scientific literacy in science learning is a good teaching material to increase students' scientific literacy. The use of Interactive Live Worksheet LKPD on students' Higher Order Thinking Skills (HOTS) critical thinking and cognitive abilities has an effect on increasing students' scientific literacy (Choiroh et al., 2022). Increasing students' scientific literacy from

several research journal reviews above can be seen in Figure 1.



**Figure 1.** Increasing Scientific Literacy

In Figure 1, the scientific literacy level of students using interactive Student Worksheet can increase students' scientific literacy from low, medium to high levels of student literacy. in this case, by using interactive and learning-based Student Worksheet which can be accessed via the internet online using an

Android or computer, where students can access learning materials provided by educators freely, not only accessed or obtained during class learning.

In general, Android is widely used by the public, especially students. The use of smartphones is becoming popular in the world and Indonesia is not left behind. The existence of smartphones can have a huge impact on human life and provide a lot of convenience in using them. However, smartphone use is only used for social media use and only a small percentage use it to help with learning activities. (Muyaroah & Fajartia, 2017; Ramdani et al., 2020).

Utilizing social media which can be accessed using an Android or computer, educators provide e-Module teaching materials, e-Students Worksheet for students to access. The duties of parents and educators are very important in establishing online and online learning processes. The existence of mutual trust, mutual cooperation in guiding children, and communication between parents and educators will make children feel they have the freedom to be creative and develop their potential so that they can increase their creativity and achieve learning success (Fortuna and Fitria, 2021).

## Conclusion

Based on the description of the research results, the following conclusions can be drawn, namely that there is an increase in students' Higher Order Thinking Skills (HOTS) cognitive thinking abilities, so it can be concluded that interactive e-Students Worksheet assisted by Live Worksheets is effective for use in learning. The use of interactive e-Students Worksheet assisted by Live Worksheets has a significant influence on students' Higher Order Thinking Skills (HOTS) cognitive thinking abilities. Interactive e-Students Worksheet assisted by Live Worksheets can be used as an alternative and reference in using teaching materials to support higher quality learning. Interactive e-Students Worksheet assisted by Live Worksheets can be used as an alternative teaching material and reference in using teaching materials for more interesting physics learning and improving the quality of learning.

## Acknowledgements

The Research Team would like to thank all parties who have helped in writing this article until it is published, and also thank previous researchers who have provided many references for development.

## Author Contributions

This article was prepared by one people. The author carried out each stage cooperatively until this article was completed.

## Funding

This research received no external funding.

## Conflicts of Interest

The author declares no conflict of interest.

## References

- Afriana, J., Permanasari, A., & Fitriani, A. (2016). Penerapan Project Based Learning Terintegrasi STEM Untuk Meningkatkan Literasi Sains Siswa Ditinjau dari Gender. *Jurnal Inovasi Pendidikan IPA*, 2(2), 202-212. Doi: <http://dx.doi.org/10.21831/jipi.v2i2.8561>
- Andriyani, N., Hanafi, Y., Safitri, I. Y. B., & Hartini, S. (2020). Penerapan Model Problem Based Learning Berbantuan Lkpd Live Worksheet Untuk Meningkatkan Keaktifan Mental Siswa Pada Pembelajaran Tematik Kelas Va. *Prosiding Pendidikan Profesi Guru*, September, 122-130. [https://scholar.google.com/citations?view\\_op=view\\_citation&hl=id&user=ggt61sAAAAAJ&citation\\_for\\_view=ggt61sAAAAAJ:WF5omc3nYNoC](https://scholar.google.com/citations?view_op=view_citation&hl=id&user=ggt61sAAAAAJ&citation_for_view=ggt61sAAAAAJ:WF5omc3nYNoC)
- Apriliyani, S. W., & Mulyatna, F. (2021). Flipbook E-LKPD dengan pendekatan etnomatematika pada materi teorema pythagoras. *Seminar Nasional Sains*, 2(1), 491-500. <https://proceeding.unindra.ac.id/index.php/sinasis/article/view/5389>
- Cholifah, S. N., & Novita, D. (2022). Pengembangan E-LKPD Guided Inquiry-Liveworksheet untuk Meningkatkan Literasi Sains pada Submateri Faktor Laju Reaksi. *Chemistry Education Practice*, 5(1), 23-34. Doi: <https://doi.org/10.29303/cep.v5i1.3280>
- Farman, F., Hali, F., & Rawal, M. (2021). Development of e-lkpd using live worksheets for online mathematics learning during covid-19. *JME (Journal of Mathematics Education)*, 6(1), 36-42. Doi: <https://doi.org/10.31327/jme.v6i1.1626>
- Fidiantara, F., Kusmiyati, K., & Merta, I. W. (2020). Pengaruh Penggunaan Bahan Ajar IPA Materi Sistem Ekskresi Berbasis Inkuiri Terhadap Peningkatan Literasi Sains. *Jurnal Pijar Mipa*, 15(1), 88-92. Doi: <https://doi.org/10.29303/jpm.v14i3.1230>
- Fortuna, R. A., & Fitria, Y. (2021). Upaya meningkatkan literasi sains siswa sekolah dasar dalam pembelajaran daring akibat Covid-19. *Jurnal Basicedu*, 5(4), 2054-2061. Doi: [10.31004/basicedu.v5i4.1034](https://doi.org/10.31004/basicedu.v5i4.1034)
- Kemendikbud, P. P. (2018). Laporan Hasil Ujian Nasional. Available: [hasilun.puspendik.kemdikbud.go.id](https://hasilun.puspendik.kemdikbud.go.id).
- Khasanah, S. U., & Setiawan, B. (2022). Penerapan Pendekatan Socio-Scientific Issues Berbantuan E-Lkpd Pada Materi Zat Aditif Untuk Meningkatkan Literasi Sains. *PENSA: E-JURNAL PENDIDIKAN SAINS*, 10(2), 313-319. Doi: [10.31004/basicedu.v5i5.1339](https://doi.org/10.31004/basicedu.v5i5.1339)
- Latip, A., & Faisal, A. (2021). Upaya peningkatan literasi sains siswa melalui media pembelajaran IPA berbasis komputer. *Jurnal Pendidikan UNIGA*, 15(1),



- 444-452. Doi: <http://dx.doi.org/10.52434/jp.v15i1.1179>
- Merta, I. W., Artayasa, I. P., Kusmiyati, K., Lestari, N., & Setiadi, D. (2020). Profil literasi sains dan model pembelajaran dapat meningkatkan kemampuan literasi sains. *Jurnal Pijar MIPA*, 15(3), 223-228. Doi: <https://doi.org/10.29303/jpm.v15i3.1889>
- Nofiana, M., & Julianto, T. (2018). Upaya peningkatan literasi sains siswa melalui pembelajaran berbasis keunggulan lokal. *Biosfer: Jurnal Tadris Biologi*, 9(1), 24-35. Doi: <http://dx.doi.org/10.24042/biosf.v9i1.2876>
- OECD. (2015). PISA 2015 Result in Focus. Paris: OECD Publishing.
- OECD. (2018). PISA 2015 draft frameworks. PISA, Paris: OECD Publishing.
- Ploj Virtič, M. (2022). Teaching science & technology: components of scientific literacy and insight into the steps of research. *International Journal of Science Education*, 44(12), 1916-1931. Doi: <https://doi.org/10.1080/09500693.2022.2105414>
- Prastika, Y. & Masniladevi, M. (2021). Pengembangan E-LKPD interaktif segi banyak beraturan dan tidak beraturan berbasis *liveworksheets* terhadap hasil belajar peserta didik kelas IV sekolah dasar. *Journal of Basic Education Studies*, 4(1), 2656-6702. <https://mail.ejurnalunsam.id/index.php/jbes/article/view/3817/2551>
- Putra, D. Y. M. A. & Agustiana, I. G. A. T. (2021). E-LKPD materi pecahan dalam pembelajaran di sekolah dasar. *Mimbar PGSD Undiksha*, 9(2), 220-228. Doi: 10.23887/jjpsgd.v9i2.35813
- Sahril, S., Al Idrus, A., & Syukur, A. (2022). Pengembangan LKPD Pencemaran Lingkungan berbasis PBI (Problem Based Instruction) untuk Meningkatkan Literasi Sains dan Berpikir Kritis Siswa SMP/MTs di Kabupaten Lombok Tengah. *Jurnal Ilmiah Profesi Pendidikan*, 7(4b), 2379-2393. Doi: 10.29303/jipp.v7i4b.863
- Sari, N., Haifaturrahmah, H., Ratu, T., Widiartini, N. N., & Erfan, M. (2022). Pengembangan Lks Interaktif Science Live Worksheet Berbasis Hots Siswa Sekolah Dasar. *Paedagogia: Jurnal Kajian, Penelitian dan Pengembangan Kependidikan*, 13(2), 118-123. Doi: 10.31764/paedagogia.v13i2.9400
- Setiawan, A. R. (2019). Efektivitas pembelajaran biologi berorientasi literasi saintifik. *Thabiea: Journal of Natural Science Teaching*, 2(2), 83-94. Doi: <http://dx.doi.org/10.21043/thabiea.v2i2.5345>
- Suparya, I. K., Suastra, I. W., & Arnyana, I. B. P. (2022). Rendahnya Literasi Sains: Faktor Penyebab Dan Alternatif Solusinya. *Jurnal Ilmiah Pendidikan Citra Bakti*, 9(1), 153-166. Doi: <https://doi.org/10.38048/jipcb.v9i1.580>
- Syehma, B. R. 2019. Pengaruh Desain Pembelajaran Assure Terhadap Hasil Belajar Siswa Sekolah Dasar. *Jurnal Inovasi*. 18 (1).
- Yuliati, Y. (2017). Literasi sains dalam pembelajaran IPA. *Jurnal cakrawala pendas*, 3(2). Doi: <http://dx.doi.org/10.31949/jcp.v3i2.592>
- Zahroh, D. A., & Yuliani, Y. (2021). Pengembangan e-LKPD berbasis literasi sains untuk melatih keterampilan berpikir kritis peserta didik pada materi pertumbuhan dan perkembangan. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*, 10(3), 605-616. Doi: <https://doi.org/10.26740/bioedu.v10n3.p605-616>