E-Worksheet to Improve Critical Thinking and Scientific Argumentation Skills: A Systematic Literature Review

Sudirman[1], Ruth Rize Paas Megahati S[2], Risnawati Agustin[3], Ella Masita[4], Nuridin Widya Pranoto[5*]

[1] Department of Physics Education, Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Alauddin, Makassar, Indonesia.
[2] Medical Laboratory Engineering Study Program, Politeknik Kesehatan Kesuma Bangsa, Bandar Lampung, Indonesia.
[3] Radinka Jaya Utama Institute, Padang, Indonesia.
[4] Universitas Jambi, Jambi, Indonesia.
[5] Sports Science Study Program, Universitas Negeri Padang, Padang, Indonesia.

Abstract: Using e-worksheets will provide students with the opportunity to actively participate in the process of technological development in an increasingly rapid world, be able to think critically, and enable students to argue scientifically. E-worksheet is a form of E-worksheet that is done digitally and carried out systematically and continuously over a certain period. E-worksheets can improve critical thinking skills and scientific argumentation. E-worksheets can be created and designed according to needs in the learning process. The student activity sheet contains tasks that must be carried out by students. Where the research aims to examine E-worksheets to Improve Critical Thinking Abilities and Scientific Argumentation: A Systematic Literature review. The review was conducted based on state-of-the-art methods using the preferred reporting items for reviews and meta-analyses (PRISMA) guidelines. The results of this research explain that: The types of teaching materials in learning are printed teaching materials, audio teaching materials, audio-visual teaching materials, interactive multimedia teaching materials, and web-based teaching materials; Various forms of E-worksheets: E-worksheets that help students discover a concept, practice, integrate various concepts that have been discovered, study guides, practical instructions; Function of E-worksheet: functions as a medium, learning tool, Critical Thinking Skills and Scientific Argumentation.

Keywords: Digital; E-worksheet; Learning

Introduction

Education is important in responding to development and plays an important role in life. Apart from that, education can also increase nationalist values because education is a process of maturing humans through teaching and training efforts. To increase knowledge, free ignorance, and form a better and more useful personality in life. Developments that continue to advance in the future require education to always adapt and become the locomotive of the process of democratization and nation-building. Therefore, improving the quality in the field of education must be considered, because education is the most important part of human life and in the learning process, the presence of media is very necessary because it has a big role in influencing the achievement of learning goals (Dwivedi et al., 2023). The learning process cannot be separated from the learning media. Learning media is a tool in learning that contains certain learning materials as a learning resource (Ratnasari & Haryanto, 2019). Therefore, educators can choose appropriate learning media that can make things easier for students, where the use of learning media can support and develop various interactions and student skills. Using learning media is expected to help achieve learning goals

optimally. The process requires one of the recommended learning media worksheets. Student worksheets are learning media in the form of sheets used in learning activities, these sheets contain tasks that must be done by students (Doyan et al., 2021).

This is supported by the fact that in critical thinking skills, students are required to demonstrate the ability to analyze arguments. Wang et al. (2016), states the basis of thinking in critical thinking skills, namely analyzing arguments. According to Alldredge (2015), Arguing is part of making decisions, defending them, and influencing others. Arguing shows the ability to think critically (Indrawatiningsih et al., 2019). People who have ideal critical thinking skills are highly curious, have extensive experience, are full of self-confidence, are open-minded, flexible, persistent in searching for relevant information, and are reasonable in selecting criteria (Sellars et al., 2018). This is supported by the statement (Spector & Ma, 2019), that one of the four criteria for critical thinking is curiosity.

Curiosity is an attitude and action that always seeks to know more deeply and extends from something he learns, sees, and hears (Salmon & Barrera, 2021). The benefits of curiosity for students as expressed by (Przybylski et al., 2013), is that a sense of desire makes students find out something interesting and meaningful, and is intrinsically motivating. Curiosity becomes a bridge for students to gain knowledge. Curiosity influences a person to improve their way of thinking about various things (Jirout, 2020). Curiosity functions as a source of motivation to learn, explore, and develop a set of knowledge and skills (Singh & Manjaly, 2022).

Following the development of technology can provide a vehicle for the development of science, especially natural science, which can support daily activities in society. One type of cutting-edge learning media is multimedia-based, in the form of teaching aids, modules, student worksheets, and ICT-based media which are used to deliver learning materials interactively. According to Wahyuningsih et al. (2021), Learning media is an important part of the educational process in schools because it is a field that must be mastered by every professional teacher. E-LKPD is a form of LKPD that is done digitally and carried out systematically and continuously over a certain period (Mayasari et al., 2023). E-LKPD can be created and designed according to needs in the learning process (Hamidah et al., 2023). The student activity sheet contains tasks that must be carried out by students (Johan et al., 2019). The forms of questions that can be created with this application are very varied, such as multiple-choice questions, drop-down questions, matching answers, drag and drop, listening, voice answers, and answers.

Based on previous research by Fina et al. (2022), the development of electronic-worksheets (E-Worksheets) based on crosswords games with sub-materials of the excretory system to improve the motivation of high school students and research (Mitasari & Hidayah, 2022), development e-worksheet based on problem-based learning to improve student's metacognitive ability. It seems that there has been no research on E-worksheets to improve critical thinking and scientific argumentation abilities: a systematic literature review. The purpose of this research is to review several published studies that examine E-worksheets to improve critical thinking and scientific argumentation abilities: a systematic literature review.

Method

We conducted this study as a systematic review following PRISMA guidelines (Page et al., 2021). The PRISMA guidelines provide several things to consider in preparing a systematic review. In this study, we will mainly focus on several main items: Types of teaching materials in learning, Various forms of E-worksheets, and Functions of E-worksheets. This helps form the basis of our assessment. Initially, we collected the latest studies on E-worksheets to improve critical thinking and scientific argumentation skills: based on several selected keywords. Then, we apply eligibility criteria to the collection. We selected only literature published in 2013 or later to provide an overview of current trends. Apart from that, we limited the type of literature to only literature in the form of journals and proceedings.

Result and Discussion

Preferred Reporting Items for Systematic Reviews (PRISMA) was the reporting technique used in this study. The research was conducted methodically during the required research phases. The information provided is comprehensive and unbiased and aims to combine relevant research results. The steps of a systematic literature review include developing research questions, literature searches, screening and selecting relevant articles, screening and selecting the best research results, analysis, synthesis of qualitative results, and preparation of research reports. Writing the background and objectives of the research, collecting research questions, searching the literature, selecting articles, extracting articles, assessing the quality of basic studies, and summarizing the material are steps in the systematic literature review research process.

Complete articles published in international journals 2015-2023, indexed in databases, and with the theme E-worksheets to Improve Critical Thinking and

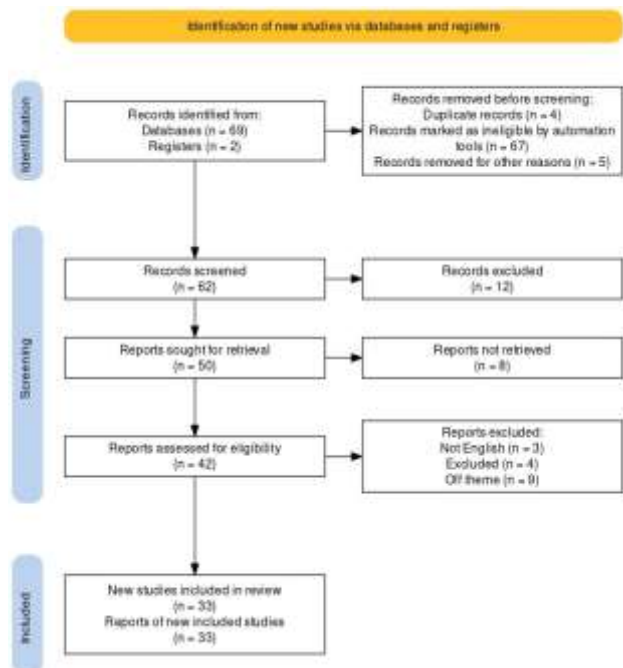Scientific Argumentation Skills: A Systematic Literature review.

Figure 1. Flow of the literature search process based on PRISMA guidelines

Based on the technology used, the Directorate of Senior High School Development groups teaching materials into four categories, Printed teaching materials, including handouts, books, modules, brochures, leaflets, wall charts, photos or drawings, fashions or mock-ups, and sheets. student activities or student worksheets; Listening (audio) teaching materials, including cassettes, radio, vinyl records, and audio compact disks; Audiovisual teaching materials such as video compact disks and films; Interactive multimedia teaching materials (interactive teaching materials) such as CAI (Computer Assisted Instruction), Compact Disk (CD) interactive learning multimedia; Web-based teaching materials (web-based learning materials).

Teaching materials have a very important role in achieving learning objectives. Teaching materials are used by teachers to increase students' enthusiasm for everything new in the teaching and learning process. Teaching materials help increase students' knowledge and insight and can enliven the learning process. Using teaching materials in the learning process can foster interest, increase motivation, and foster students' understanding of the subject matter.

Table 1. Types of Teaching Materials in Learning

Source	Types of teaching materials in learning
(Rofi'i & Susilo, 2023); (Utami & Saefudin, 2018); (Area-Moreira et al., 2023)	Printed teaching materials
(Intan et al., 2022); (Zaid et al., 2019); (Ampa, 2015)	Listening to teaching materials (audio)
(Kwegyiriba et al., 2022)	Teaching materials for sight-hearing (audio-visual)
(Festiyed et al., 2019); (Nurhafifah et al., 2021); (Festiyed et al., 2023)	Interactive multimedia teaching materials
(Isnawati, 2017); (Nafiis et al., 2023); (Asrizal et al., 2023)	Web-based teaching materials

With the transformation of E-worksheets from print to electronic or multimedia-based forms which contain text, images, animation, audio, and video, it is more effective and students do not feel bored. E-worksheets or multimedia-based are formed as learning tools or media that are designed in electronic form and contain systematic and interesting material to achieve learning objectives. E-worksheets can be in the form of guides for cognitive aspect development exercises or guides for

developing all aspects of learning in the form of experimental or demonstration guides. The following are various forms of E-worksheets as follows: E-worksheets that help students discover a concept. This type of e-worksheet contains what students (must) do, including observing and analyzing. It is necessary to formulate the steps that students must take to observe the phenomena resulting from their activities.

Table 2. Various Forms of E-Worksheets

Source	Various forms of E-worksheets
(Soenarko et al., 2022); (Petridou et al., 2022)	E-worksheet that helps students discover a concept
(Sari et al., 2023); (Rizal et al., 2022)	E-worksheets that help students apply and integrate various concepts that have been discovered
(Aprida & Mayarni, 2023); (Sujatmika et al., 2019)	
(Febriansyah et al., 2021); (Darling-Hammond et al., 2020)	E-worksheet that functions as a learning guide
(Arifianti & Dwiningsih, 2022); (Glaab & Taube, 2022)	E-worksheet which functions as an assignment, this form of E-worksheet is given

Next, we provide analytical questions that help students to link the phenomena they observe with the concepts they will build in their minds; E-worksheets

that help students apply and integrate various concepts that have been discovered. E-worksheet that helps students apply the concept of democracy in everyday

life. The way to do this is by giving them the task of practicing responsible freedom of expression. Training students to learn to respect other people's opinions and express their opinions responsibly has provided a way for the implementation of democratic values in students; An e-worksheet that functions as a study guide. This form of e-worksheet contains questions or entries whose answers are in the book. Students will work on the E-worksheet if they read the book.

Students will work on this E-worksheet to help students memorize and understand the learning material contained in the book. This e-worksheet is also suitable for remedial purposes; E-worksheets function as reinforcement. This form of E-worksheet is given after students have finished studying a certain topic. The learning material packaged in this E-worksheet is more directed at deepening and applying the learning material contained in the textbook. Apart from being a basic learning tool, E-worksheets are also suitable for enrichment; E-worksheets function as practical instructions. This form of E-worksheet practical instructions is one of the contents of the E-worksheet. The forms of E-worksheets consist of experimental and non-experimental E-worksheets. Experimental e-worksheets are worksheets that contain practical instructions for using tools and materials. Non-experimental e-worksheets are activity sheets containing text that requires students to carry out discussion activities on learning material.

In this era of increasingly rapid technological developments in education, it is necessary to be able to innovate learning resources. Using existing technology as a learning medium can enable learning to take place effectively. Learning media in technological developments in education demands that learning media innovations always be provided.

Table 3. Functions of E-Worksheets

Source	Functions of E-worksheets
(Maharani et al., 2022); (Tong et al., 2022); (Almahasees et al., 2021) (Kurniasi et al., 2022); (Puspita Sari et al., 2022)	E-worksheets function as a medium or learning tool in class and outside of class.
(Mahyuny et al., 2022); (Khotami et al., 2023); (Chutami & Suhartini, 2021)	E-worksheets also function as a training tool to improve critical thinking and scientific argumentation skills

Student worksheets (worksheets) are sheets containing tasks that must be done by students, usually in the form of instructions, and steps to complete a task given by the teacher to students. It is a form of teacher effort to guide students in a structured manner, through activities that can attract students to study chemistry so that the effectiveness of the teaching and learning process can be improved. The advantage of having student worksheets is that they make it easier for teachers to carry out learning and help students learn independently and understand how to carry out a written assignment.

Educators are required to be able to create creative and innovative learning media. The presentation of learning media with technological developments can now utilize digital media, not just print media. One of the learning media that can be transformed from printed teaching materials into electronic learning media is electronics. Functions of E-worksheets: E-worksheets function as a medium or learning tool in the classroom and outside the classroom; E-worksheets also function as a training tool to improve critical thinking and scientific argumentation skills; using Student Worksheets in learning activities.

Conclusion

From the explanation above, it can be concluded that there are many types of teaching materials. Using teaching materials in the teaching and learning process will make it easier for teachers to convey messages or information to students according to the conditions of time, place, and space, as well as efficiency and effectiveness. So that the lesson material can be conveyed and received by students well; Student Worksheets are learning media that contain material, summaries, and lesson instructions to increase the success of teaching and learning in the learning process. E-worksheets have many functions in the learning process, including E-worksheets function as a medium or learning resource for students to receive learning material both at school and outside school. E-worksheets are a tool that functions to optimize students' learning activities in a more advanced learning process. By using e-worksheets in learning, students can actively learn independently to improve their critical thinking and scientific argumentation skills.

Author Contributions
Conceptualization; S. S., R. R. P. M. S, R. A., E. M., N. W. P; methodology; S. S.; validation; R. R. P. M. S.; formal analysis.; R. A. investigation.; E. M.; resources; N. W. P., data curation: writing—original; S. S; draft preparation; R. A., writing—review and editing; R. R. P. M. S. Visualization; E. M. All

authors have read and agreed to the published version of the manuscript.

Funding
This research was independently funded by researchers.

Conflicts of Interest
The author declares that there is no conflict of interest in the research and publication of this research.

References

Alldredge, J. (2015). The "CSI Effect" and Its Potential Impact on Juror Decisions. *Themis: Research Journal of Justice Studies and Forensic Science*, *3*(1). https://doi.org/10.31979/THEMIS.2015.0306

Almahasees, Z., Mohsen, K., & Amin, M. O. (2021). Faculty's and Students' Perceptions of Online Learning During COVID-19. *Frontiers in Education*, *6*, 638470. https://doi.org/10.3389/feduc.2021.638470

Ampa, A. T. (2015). The Implementation of Interactive Multimedia Learning Materials in Teaching Listening Skills. *English Language Teaching*, *8*(12), 56. https://doi.org/10.5539/elt.v8n12p56

Aprida, H., & Mayarni, M. (2023). Efficiency of PjBL (Project Based Learning) Model Assisted By E-Worksheet on Student Learning Outcomes in Science Subjects. *Jurnal Penelitian Pendidikan IPA*, *9*(8), 6284–6291. https://doi.org/10.29303/jppipa.v9i8.4372

Area-Moreira, M., Rodríguez-Rodríguez, J., Peirats-Chacón, J., & Santana-Bonilla, P. (2023). The Digital Transformation of Instructional Materials. Views and Practices of Teachers, Families and Editors. *Technology, Knowledge and Learning*, *28*(4), 1661–1685. https://doi.org/10.1007/s10758-023-09664-8

Arifianti, D., & Dwiningsih, K. (2022). Inquiry-based electronic student worksheets assisted with live worksheets to enhance visual-spatial. *Jurnal Pijar Mipa*, *17*(2), 209–216. https://doi.org/10.29303/jpm.v17i2.3298

Asrizal, A., Rahmi, Y., Fadhilah, H., & Zulkarnain, I. (2023). Influence of Electronic Teaching Materials on Students' Mastery of Learning Mathematics and Science: Meta-Analysis. *Jurnal Penelitian Pendidikan IPA*, *9*(6), 120–126. https://doi.org/10.29303/jppipa.v9i6.2694

Chutami, F., & Suhartini, S. (2021). The Effectiveness of Using Student Worksheets in Science Learning on Student Learning Outcomes. *Jurnal Penelitian Pendidikan IPA*, *7*(4), 587–592. https://doi.org/10.29303/jppipa.v7i4.768

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, *24*(2), 97–140. https://doi.org/10.1080/10888691.2018.1537791

Doyan, A., Rahman, M. M., & Sutrio, S. (2021). Development of Student Worksheets Based on a Multi-Representation Approach to Improve Students' Mastery of Sound Wave Concepts. *Jurnal Penelitian Pendidikan IPA*, *7*(SpecialIssue), 175–179. https://doi.org/10.29303/jppipa.v7iSpecialIssue.1201

Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., Baabdullah, A. M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M. A., Al-Busaidi, A. S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D., … Wright, R. (2023). Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges, and implications of generative conversational AI for research, practice, and policy. *International Journal of Information Management*, *71*, 102642. https://doi.org/10.1016/j.ijinfomgt.2023.102642

Febriansyah, F., Herlina, K., Nyeneng, I. D. P., & Abdurrahman, A. (2021). Developing Electronic Student Worksheet (E-Worksheet) Based Project Using Fliphtml5 to Stimulate Science Process Skills During the Covid-19 Pandemic. *INSECTA: Integrative Science Education and Teaching Activity Journal*, *2*(1), 59–73. https://doi.org/10.21154/insecta.v2i1.2555

Festiyed, Daulay, H., & Ridhatullah, M. (2023). Influence of Interactive Multimedia Teaching Materials on Cognitive Learning Outcomes of Students in Science Lessons: A Meta-analysis. *Jurnal Penelitian Pendidikan IPA*, *9*(8), 387–396. https://doi.org/10.29303/jppipa.v9i8.2693

Festiyed, Djamas, D., & Ramli, R. (2019). Learning model based on discovery learning equipped with interactive multimedia teaching materials assisted by games to improve critical thinking skills of high school students. *Journal of Physics: Conference Series*, *1185*, 012054. https://doi.org/10.1088/1742-6596/1185/1/012054

Fina, I. D., Raharjo, R., & Purnama, E. R. (2022). The Development of Electronic-Worksheets (E-Worksheets) Based on Crosswords Games with Sub-Materials of The Excretory System to Improve The Motivation of High School Students. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*, *11*(3), 691–698. https://doi.org/10.26740/bioedu.v11n3.p691-698

Glaab, T., & Taube, C. (2022). Practical guide to cardiopulmonary exercise testing in adults. *Respiratory Research*, *23*(1), 9. https://doi.org/10.1186/s12931-021-01895-6

Hamidah, A., Ayunasari, D. S., & Sanjaya, E. (2023). Development of E-LKPD in Motion System Materials for High School Class Using PageFlip 3D Software. *Jurnal Penelitian Pendidikan IPA, 9*(3), 1233–1241. https://doi.org/10.29303/jppipa.v9i3.3396

Indrawatiningsih, N., Purwanto, As'ari, A. R., Sa'dijah, C., & Dwiyana. (2019). Students' mathematical argumentation ability in determining arguments or not arguments. *Journal of Physics: Conference Series, 1315*(1), 012053. https://doi.org/10.1088/1742-6596/1315/1/012053

Intan, S., Yusuf, S. B., & Sari, D. F. (2022). A review on the use of audiovisual media in improving listening skills among junior high school students. *English Education Journal, 13*(2), 303–316. https://doi.org/10.24815/eej.v13i2.25932

Isnawati, I. (2017). Students' Views On The Use Of Book And Web-Based Materials For Their Elt Classes: A Study On Ict-Based Education In Indonesian Context. *KnE Social Sciences, 1*(3), 112. https://doi.org/10.18502/kss.v1i3.730

Jirout, J. J. (2020). Supporting Early Scientific Thinking Through Curiosity. *Frontiers in Psychology, 11*, 1717. https://doi.org/10.3389/fpsyg.2020.01717

Johan, G. M., Nuryani, P., & Kasmini, L. (2019). The Practicality of Student Activity Sheet Integrated Scientific Approach to Stimulate Skills of Elementary School Students in Solving Problems Surrounding Natural Environment. *International Journal of Multicultural and Multireligious Understanding, 6*(2), 741. https://doi.org/10.18415/ijmmu.v6i2.765

Khotami, M. H., Marlina, L., & Wiyono, K. (2023). The Needs Analysis of the Electronic Student Worksheets (e-LKPD) Based on Discovery Learning for the Topic of Traveling Waves in High School. *Jurnal Pendidikan Fisika Dan Teknologi, 9*(1), 163–170. https://doi.org/10.29303/jpft.v9i1.5223

Kurniasi, E. R., Vebrian, R., & Arsisari, A. (2022). Development of Student Worksheets Based Computational Thinking for Derivatives of Algebra Function. *JTAM (Jurnal Teori Dan Aplikasi Matematika), 6*(1), 212. https://doi.org/10.31764/jtam.v6i1.6022

Kwegyiriba, A., Mensah, R. O., & Ewusi, E. (2022). The Use of Audio-Visual Materials in Teaching and Learning Process in Effia Junior High Schools. *Technium Social Sciences Journal, 31*, 106–114. https://doi.org/10.47577/tssj.v31i1.6399

Maharani, I., Fitri, R., Fadhilla, M., & Selaras, G. H. (2022). Preliminary Phase: High Order Thinking Skills-Oriented Student Worksheets in Biology Subjects for Tenth-Grade Students. *Thinking Skills and Creativity Journal, 5*(1), 1–6. https://doi.org/10.23887/tscj.v5i1.38501

Mahyuny, S. R., Nursamsu, N., Hasruddin, H., & Muslim, M. (2022). Development of Students Worksheet Learning Tools Made by Ethnoscience Based on Science Literacy. *Jurnal Penelitian Pendidikan IPA, 8*(4), 2294–2301. https://doi.org/10.29303/jppipa.v8i4.1949

Mayasari, M., Hamidah, A., & Subagyo, A. (2023). Development of Electronic Student Worksheets (E-LKPD) Assisted by Wizer.Me on Gastropods Sub Material. *Jurnal Penelitian Pendidikan IPA, 9*(4), 1578–1584. https://doi.org/10.29303/jppipa.v9i4.3453

Mitasari, R. A., & Hidayah, R. (2022). Development E-Worksheet Based on Problem-Based Learning to Improve Student's Metacognitive Ability. *Journal of Science Education Research, 6*(2), 66–74. https://doi.org/10.21831/jser.v6i2.53067

Nafiis, A., Nurcahyo, A., Rejeki, S., Ishartono, N., Setyono, I. D., & Sudibyo, N. A. (2023). Learning Management System (LMS) based teaching materials development on matrix to encourage student learning participation. In *AIP Conference Proceedings* (Vol. 2727, No. 1). AIP Publishing. https://doi.org/10.1063/5.0141609

Nurhafifah, Ratnawulan, & Fauzi, A. (2021). The practicality of the interactive multimedia development integrated science with an inquiry-based learning model of simple machine themes on human muscular and skeleton system integrated 21st-century learning. *Journal of Physics: Conference Series, 1876*(1), 012053. https://doi.org/10.1088/1742-6596/1876/1/012053

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Systematic Reviews, 10*(1), 89. https://doi.org/10.1186/s13643-021-01626-4

Petridou, E., Molohidis, A., & Hatzikraniotis, E. (2022). Assessing Students' Ability to Apply the Control of Variables Strategy When Engaged with Inquiry-Based Worksheets during the COVID Era. *Education Sciences, 12*(10), 668. https://doi.org/10.3390/educsci12100668

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and

behavioral correlates of fear of missing out. *Computers in Human Behavior*, *29*(4), 1841–1848. https://doi.org/10.1016/j.chb.2013.02.014

Puspita Sari, M. I., Widowati, A., Wilujeng, I., Az-Zahro, S. F., & Ramadhanti, D. (2022). Effectiveness of SETS-Based Electronic Student Worksheet (E-LKPD) to Improve Student Learning Outcomes. *Jurnal Pendidikan Sains (JPS)*, *10*(1), 9. https://doi.org/10.26714/jps.10.1.2022.9-14

Ratnasari, D., & Haryanto, H. (2019). Analysis of Utilization of Gadgets as Effective Learning Media in Innovation Education to Improve Student Learning Achievement. *KnE Social Sciences*. https://doi.org/10.18502/kss.v3i17.4671

Rizal, R., Igo, A., Sahidin, L., & Muhtar, A. J. N. (2022). Development of E-Worksheet Using Using Android Educapps Application for Economic Learning. *AL-ISHLAH: Jurnal Pendidikan*, *14*(4), 7017–7032. https://doi.org/10.35445/alishlah.v14i4.2707

Rofi'i, A., & Susilo, S. V. (2023). The Development of Teaching Materials Based on Mobile Learning in English Learning for Elementary Schools. *AL-ISHLAH: Jurnal Pendidikan*, *15*(2), 2062–2075. https://doi.org/10.35445/alishlah.v15i2.2475

Salmon, A. K., & Barrera, M. X. (2021). Intentional questioning promotes thinking and learning. *Thinking Skills and Creativity*, *40*, 100822. https://doi.org/10.1016/j.tsc.2021.100822

Sari, N., Prasetyawati, Y., Sukmaningthias, N., & Helen Simarmata, R. (2023). Development of E-Worksheet Based on Realistic Mathematics Education to Support Mathematical Literacy Skills of Junior High School Students. *E3S Web of Conferences*, *400*, 03006. https://doi.org/10.1051/e3sconf/202340003006

Sellars, M., Fakirmohammad, R., Bui, L., Fishetti, J., Niyozov, S., Reynolds, R., Thapliyal, N., Smith, Y., & Ali, N. (2018). Conversations on Critical Thinking: Can Critical Thinking Find Its Way Forward as the Skill Set and Mindset of the Century? *Education Sciences*, *8*(4), 205. https://doi.org/10.3390/educsci8040205

Singh, A., & Manjaly, J. A. (2022). Using Curiosity to Improve Learning Outcomes in Schools. *SAGE Open*, *12*(1), 215824402110693. https://doi.org/10.1177/21582440211069392

Soenarko, I. G. K., Purwoko, A. A., & Hadisaputra, S. (2022). Development of E-Worksheet Based on Discovery Learning to Improve Students' Decision-Making skills and Scientific Attitude. *Jurnal Penelitian Pendidikan IPA*, *8*(5), 2518–2524. https://doi.org/10.29303/jppipa.v8i5.1980

Spector, J. M., & Ma, S. (2019). Inquiry and critical thinking skills for the next generation: From artificial intelligence back to human intelligence. *Smart Learning Environments*, *6*(1). https://doi.org/10.1186/s40561-019-0088-z

Sujatmika, S., Irfan, M., Ernawati, T., Wijayanti, A., Widodo, S., Amalia, A., Nurdiyanto, H., & Rahim, R. (2019). Designing E-Worksheet Based On Problem-Based Learning To Improve Critical Thinking. In *Proceedings of the International Conference of Science and Technology for the Internet of Things*. https://doi.org/10.4108/eai.19-10-2018.2281282

Tong, D. H., Uyen, B. P., & Ngan, L. K. (2022). The effectiveness of blended learning on students' academic achievement, self-study skills, and learning attitudes: A quasi-experiment study in teaching the conventions for coordinates in the plane. *Heliyon*, *8*(12), e12657. https://doi.org/10.1016/j.heliyon.2022.e12657

Utami, N. W., & Saefudin, A. A. (2018). Comparative Study of Learning Using E-Learning and Printed Materials on Independent Learning and Creativity. *Journal of Physics: Conference Series*, *954*, 012004. https://doi.org/10.1088/1742-6596/954/1/012004

Wahyuningsih, D., Wahyono, S. B., & Nugroho, A. A. (2021). Teachers' Difficulties in Developing Learning Resources. *KnE Social Sciences*. https://doi.org/10.18502/kss.v6i2.10024

Wang, X., & Zheng, H. (2016). Reasoning Critical Thinking: Is It Born or Made? *Theory and Practice in Language Studies*, *6*(6), 1323. https://doi.org/10.17507/tpls.0606.25

Zaid, A., Rustamaji, R., & Wafi, H. (2019). Preparation of Learning Materials For Listening Skills. In *Proceedings of the Proceeding of the 2nd International Conference Education Culture and Technology, ICONECT 2019*. https://doi.org/10.4108/eai.20-8-2019.2288104