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Enhancing Critical Thinking: Teacher's Perspective on Problem-Based Learning Using Flipbook

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Abstract

The research aimed to analyze utilizing a problem-based learning flipbook of accounting in vocational high schools related to students' critical thinking abilities viewed from the teacher's perspective regarding the learning needs and find out obstacles factors to learning to account This research uses mixed research methods, namely qualitative and quantitative designs The research subjects were 12 accounting teachers at Tulungagung Regency Vocational Schools The sampling technique uses simple random sampling Quantitative data was collected from 12 accounting teachers Data analysis uses Miles and Huberman's interactive analysis method, consisting of data collection (observation, interviews, document analysis), condensation, data presentation (data display) and conclusions The research results show that accounting learning has many obstacles in schools, namely not empowering students' critical thinking abilities; learning strategies are less varied, and the use of open digital media/materials is not optimal, so teachers need an understanding of the importance of innovative teaching strategies and media learning, such as problem-based learning-flipbook in enhancing critical thinking for vocational high school students.

Keywords Critical Thinking; Problem-Based Learning; Flipbook

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1. INTRODUCTION

Developing and empowering critical thinking is a crucial component of contemporary education (Boleng, Lumowa, Palenewen, & Corebima, 2017; Wilson & A/l Narasuman, 2020). Teachers must implement effective teaching methods to increase students' critical thinking. Improving students' critical thinking skills is a relevant challenge for teachers. These are three components of critical thinking: knowledge (topic knowledge, technical knowledge, self-knowledge, and environmental knowledge), disposition (log of integrity, logistics of humanity, logistics of politeness, logistics of courage, logistics of perseverance, etc.); and skills or abilities (Hsu, 2021) Critical thinking requires problem-solving, understanding how many aspects interact to impact outcomes, and calculating several possibilities and situations to make the best option, so it is connected to cognitive abilities (Erikson & Erikson, 2019; Razak et al., 2022)

Various scholars from the American Philosophical Association have tried to produce context regarding the definition of critical thinking. Similarly described by Rahma Hidayati Darwis, Alimuddin,

& Andi Patimbangi (2024), the processes associated with critical thinking are interpretation (i.e., understanding and articulating meaning), analysis (i.e., identifying relationships between information, including arguments), evaluation (i.e., making judgments and judgments about the credibility of information, including assessing arguments), inference (i.e., identifying the information needed to make a decision, including generating a hypothesis), explanation (i.e., articulating and presenting one's position, the arguments, and the analysis used to determine that position), and self-regulation (i.e., analyzing oneself and checking one's conclusions and measuring when necessary; (Facione, 1990)

One of the goals of schools implementing a student-centered approach such as PBL is to increase students' competence in overcoming complex problems common in an ever-changing world (Gijbels et al, 2005) To this end, several goals and desired outcomes have been put forward for PBL The primary goal is to educate students to a level where they can comfortably use and retrieve information when needed and identify situations where specialized knowledge and strategic processes can be applied With these strategies and knowledge, students can develop plausible explanations of phenomena representing essential disciplinary understandings (Loyens et al, 2012; McNeill & Krajcik, 2011) Several studies have investigated the effectiveness of PBL in knowledge acquisition (eg, Chen & Yang, 2019; Strobel & Van Barneveld, 2009) Additionally, PBL consists of collaborative learning sessions that can foster effective interpersonal communication These skills can enable students to contribute to discussions clearly and precisely, help them reach conclusions and answers more efficiently, and identify inconsistencies and unresolved problems (Loyens et al, 2008, 2012)

Vocational high school has many options for developing human resources The primary objective of vocational high school is to provide pupils with the necessary information, skills, discipline, and attitudes The purpose of education is to provide pupils with the tools they need to overcome obstacles in the future Education is a way to generate knowledgeable and talented workers Learning activities may be used as one of the many approaches to improve the quality of education One element that helps to facilitate learning is the accessibility of learning resources The "learning resources" are a safety net to promote the efficiency and enhancement of learning goals and procedures (Rahmat, Muslim, Situmorang, Sukardjo, & Ferdina, 2023) Subject materials that focus on the research is accounting, which studies and discusses problem solving content The learning process requires habituation so that students can think critically can find the correct analysis results Teachers need to implement learning strategies that encourage students' critical thinking skills, one of which is problem-based learning.

According to Gesang Wahyudi (2019), developments in the digital also impact modifications to educational practices The digital age is defined by everything changing quickly, conveniently, effectively, and efficiently Education needs to adjust to technological developments and advances, where the potential of this technology can create new learning spaces needed to facilitate learning activities (Marta, 2019) Education 40 describes the structure and goals of learning in the future It aims to make the most significant use of digital technology, individualized data, open-source content, and networking (Mukul & Büyüközkan, 2023) The emergence of learning innovations such as the use of Technology, Information, and Communication in education, reformed the teaching and learning process (Ishaq*, Mat Zin, Rosdi, Abid, & Ijaz, 2020) Technology that is used in learning certainly has positive and negative impacts The results of Istiningsih (2022) regarding the impact of technology, information, and Communication regulations in Vocational High Schools show a helpful impact ICT positively impacts students' learning engagement and academic performance (Adelakun, 2023) Teachers are currently required to prepare media that will be used to support the delivery of teaching material, and through this learning media, teachers can direct the activities that will be carried out in the learning process (Budiyono, 2020; Hasanah Lubis, Febriani, Fitra Yana, Azhar, & Darajat, 2023)

One of the factors that determines learning success is learning media Learning media can increase interaction between teachers and students so that students will not get bored while learning Apart from that, students are also happy with their learning because media can optimize the quality of students Appropriate learning media in teaching and the learning process will produce satisfactory output,

including changes in student behavior (Akrim, 2018; Hasanah Lubis et al, 2023) Interactive media has different properties compared to traditional learning media This media contains interaction elements, such as simulations, visualizations, animations, and activities that involve students dynamically in the learning process Students can gain deeper cognition, increase motivation for learning, and build critical and creative skills (Sahronih, Purwanto, & Sumantri, 2019; Zhou, Huang, & Tian, 2013) Studies on the role of interactive learning media in influencing student engagement or active participation found that certain technologies can increase students' behavioral and cognitive engagement and provide flexible opportunities for social, collaborative, and emotional interactions (Sahronih et al, 2019)

Research by Pramika, Gunawan, and Yulaini (2023) Android-based accounting learning media can be an alternative for teaching accounting material Accounting requires students ' in-depth critical thinking skills, as is characteristic of accounting, which involves problems and problem-solving The reality is that teachers' use of digital learning media to increase understanding and facilitate students' critical thinking abilities is still not optimal In vocational school accounting learning in Tulungagung, the teaching materials used are still centered on printed books, of course, this challenges students to understand the material that should require detailed explanations, not just text Due to limited study hours at school and demands for mastering a lot of accounting material, learning media is needed that students can use for independent learning Besides the role of learning media, innovation is also needed in how teachers teach by implementing appropriate learning strategies to stimulate problem-solving abilities PBL can be an option to facilitate this because it can train students' thinking skills through problem-based learning steps Studies related to research on practical critical thinking suggest things that can be improved when learning is formulated through discussion and problem-solving Other research studies also discuss the learning process that takes place in student-centered learning environments such as PBL, stating that HOT and critical thinking processes are manifested in the form of decision-making, argumentation, weighing evidence, explanations, investigations (Rahma Hidayati Darwis et al, 2024)

Electronic modules commonly called e-modules present electronic-based conte nt that is easy for educators to use (Astalini, Darmaji, Kurniawan, & Chen, 2021; Rasmi, Hendri, & Azriyanti, 2023) E-modules in form flipbooks are editing software That can add hyperli nks, images, video sound, or other supporting material The features presented in this flipbook e-module can improve understanding of the material because there is interactive media that is interesting and not monotonous (Adawiyah, Susilawati, & Anwar, 2020; Situmorang, Yustina, & Syafii, 2020) Flipbook modules are more interesting than printed modules because flipbooks are engaging, interactive, and practical according to the character of the material and learning style (Andini, Budiyono, & Fitriana, 2018) The flipbook e-module as an interactive learning medium also needs to be supported by innovative learning models to provide maximum results for achieving students' critical thinking skills One learning model that supports critical thinking skills is problem-based learning (Arifin, 2021; Bernadetha Nadeak & Lamhot Naibaho, 2020; Hamzah, Hamzah, & Zulkifli, 2022) Problem-based learning requires finding a solution to a specific issue, and this process must be assembled in groups that encourage students to collaborate in identifying problems and suggesting alternative solutions (Palupi, Subiyantoro, Rukayah, & Triyanto, 2020) As the characteristics of accounting involve many issues, PBL is suitable for use in accounting learning.

Flipbook e-modules which fulfill the requirements of 21st-century learning engage effectively when integrated with PBL to help students enhance their critical thinking Integrated Approach: Well-designed PBL processes appear to enhance critical thinking PBL incorporates elements that foster critical thinking, such as analyzing information, evaluating evidence, and solving complex problems Evidence: Studies suggest that PBL encourages students to develop critical thinking abilities Video material and simulation within PBL can assist in this process (Conway & McMillan, 2018) Students can be trained in solving problems where they can also explore complete information in the flipbook Therefore, the research aim is to investigate in more depth the flipbook e-module as an interactive

learning medium with a problem-based learning model to empower vocational high school students critical thinking skills It is hoped that the results of this analysis can be a reference for researchers and educational practitioners to get a general overview of the flipbook e-module in an effort to improve student's critical thinking skills.

2. METHODS

This research method uses mixed methods of analyzing teachers' perspectives regarding learning needs, exploring factors that become obstacles in accounting learning, and exploring opportunities for using e-module flipbooks in vocational high schools. Simple random sampling was used to collect samples for this research. The two types of information are used to present this data. Structured interviews using a qualitative method provide qualitative data.

Qualitative data collection was carried out through document analysis (teaching materials/learning tools), observation, and interviews with 12 accounting subject teachers at vocational high schools in Tulungagung Regency, while qualitative data collection was completed by distribution of questionnaires to a sample of 12 accounting teachers The grid of instrument in Table 1

Table 1. Instruments of uses PBL-based flipbook e-module

Category	Indicators	No Item
Learning needs	Fulfillment of 21st-century competency needs from the media used by teachers	1
	Teacher knowledge in operating digital learning technology	2
Obstacles factors in	Type of media/teaching materials used	3
Learning accounting	Teaching strategies used	4
	The advantages of the media used	5
	Weaknesses of the media used	6
Opportunities for using	Learning media/teaching materials needed to enhance	7
Flipbooks e-module –	Critical thinking skills	
PBL	Use of PBL-based flipbook e-modules	8
	Application of HOTS-based questions on flipbooks	9

The data analysis technique used to measure Teacher's Perspective on Problem-Based Learning Using Flipbook The interpretation criteria of Likert scale scores in Table 2

Table 2. Criteria for Interpretation of Likert scale scores

Criteria	Level
00,00% - 19,99%	Strongly disagree
20,00% - 39,99%	Disagree
40,00% - 59,99%	Neutral
60,00% - 79,99%	Agree
80,00% - 100,00%	Strongly agree

(Nazir & Risman Sikmumbang, 2009)

The research location is the vocational high school Tulungagung Regency. Data collection techniques use interviews, observation, and document analysis. Interview techniques are used to determine teacher activities in implementing accounting learning for students, determine teacher needs for flipbook e-module media to support students' independent learning activities, and use learning to develop students' critical thinking skills with PBL. This observation wants to know how accounting learning media can be used in the "Kurikulum Merdeka," how teachers use it, the problems faced, and what is needed to maximize accounting learning.

Data was collected from various sources, including observation sheets, guided interviews, and document analysis sheets, validated by triangulation. According to Noble and Heale (2019), triangulation is a method based on a multiperspective phenomenological mindset used to make firm conclusions. This method requires more than one point of view. Using interactive analysis techniques, data analysis is used to make conclusions from data, such as observations and interviews, which includes data collection, data condensation, data display, and conclusions (Miles, Huberman, & Saldaña, 2020)

3. FINDINGS AND DISCUSSIONS

Data was collected, examined, and presented based on the observations and interviews with vocational high school accounting teachers. It is evident from the data analysis that there are variations in the learning resources that the teachers use in classrooms. The needs analysis's findings suggest that digital learning material is still not widely used. Based on questionnaire results, Table 3 shows the sample distribution according to gender and class for each teacher's sample responses.

Table 3. Teacher sample data according to class and gender

Class	Gender		Sum
	Man	Woman	
X	1	2	3
XI	2	2	4
XII	1	4	5
Sum			**12**

The teacher's response from the questionnaire shows that the teacher strongly agrees with digital media, with the highest percentage of 9833% out of a possible 100%. Based on the Likert scale interpretation table for data in the strongly agree category (80% - 100%), The percentage of teacher responses to the flipbook e-module opportunity needs analysis in accounting learning is depicted in a diagram as in Table 4, Table 5, Table 6 with design use Likert Scale adopted by Tanujaya (2023)

Table 4. The Statements to Create a "Learning Needs" Likert Scale

No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		(1)	(2)	(3)	(4)	(5)
1	Fulfillment of 21st-century competency needs from the media used by teachers.			1		11
2	Teacher knowledge in operating digital learning technology				1	11

The results of the Likert scale calculation in Table 4 regarding media needs were obtained from teacher responses based on interview questions in which all 12 teachers expressed positive responses.

Based on the answer to the first question "How to channel 21st century competency needs from the media used by teachers?" Researchers found teacher responses acknowledging that "teachers have not utilized innovative learning media much. However, teachers have the same perception that the need to achieve 21st-century competency involves the role of digital media in supporting learning in schools."

Based on the answer to the second question, "How is the teacher's knowledge of operating digital technology in learning?" Researchers found teacher responses whose explanations were the same or repeated: "Teachers' knowledge in operating digital technology is quite good." All teachers stated that skills in using digital learning media are essential as part of the professionalism of teachers teaching in the 21st century, namely mastering Science and Technology."

Table 5. The Statements to Create "Obstacles factors in Learning accounting" Likert Scale

No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		(1)	(2)	(3)	(4)	(5)
1	Type of media/teaching materials used			2	2	8
2	Teaching strategies used			1	3	8
3	The advantages of the media used				4	8
4	Weaknesses of the media used				5	7

The results of the Likert scale calculation in Table 5 regarding inhibiting factors in accounting learning were obtained from teacher responses based on interview questions to which teachers had varying answers, namely neutral, agree, and strongly agree, but in general, the teacher expressed positive responses.

Based on the answers to the third question, "What media/teaching materials do teachers use?" Researchers found teachers' responses stating they "generally use textbooks or modules that are lent to students every time a lesson takes place. As for other teaching materials, several teachers have utilized online learning resources through internet searches, power points, YouTube, and Google sites."

Based on the answer to the fourth question, "What method do teachers use to teach?" Researchers found teachers' responses that " teaching is done by lecturing and not implementing many varied teaching strategies."

Based on the answer to the fifth question, "What are the advantages of the media used by teachers during teaching?" Researchers found teacher responses: "The teacher stated that the reason for choosing textbook materials was because they were already available at school." The advantage of the textbook

media referred to here is that the modules are borrowed from the school library so that students only need to take the modules and can immediately study them by reading the existing content. This makes learning easy for students because it does not require electronic devices or an internet network. Furthermore, the teacher who provided the material using PowerPoint and Google site made the content delivery more exciting for student learning participation. So, this provides a pleasant learning experience for students.

Based on the answer to the sixth question, "What are the weaknesses of the media used by teachers during teaching?" Researchers found a teacher's response: "Textbooks in the form of modules borrowed from the school library can only be used during lessons and must be returned immediately because they take turns with other classes. So, students have limited time to study. In terms of content, the module includes all the required material and follows the curriculum. However, not all students are interested in studying with textbooks. Regarding online teaching materials teachers use, such as YouTube and Google Sites, there are problems if adequate student gadgets or electronic devices do not support them, for example, the unavailability of internet quota or a supporting network. The teacher also stated that he was worried that students misused search resources for things outside of the lesson."

Table 6. The Statements to Create "Opportunities for using Flipbooks e-module – PBL" Likert Scale

No	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		(1)	(2)	(3)	(4)	(5)
1	Learning media/teaching materials needed to empower critical thinking skills				1	11
2	Use of PBL-based flipbook e-modules				2	10
3	Application of HOTS-based questions on flipbooks					12

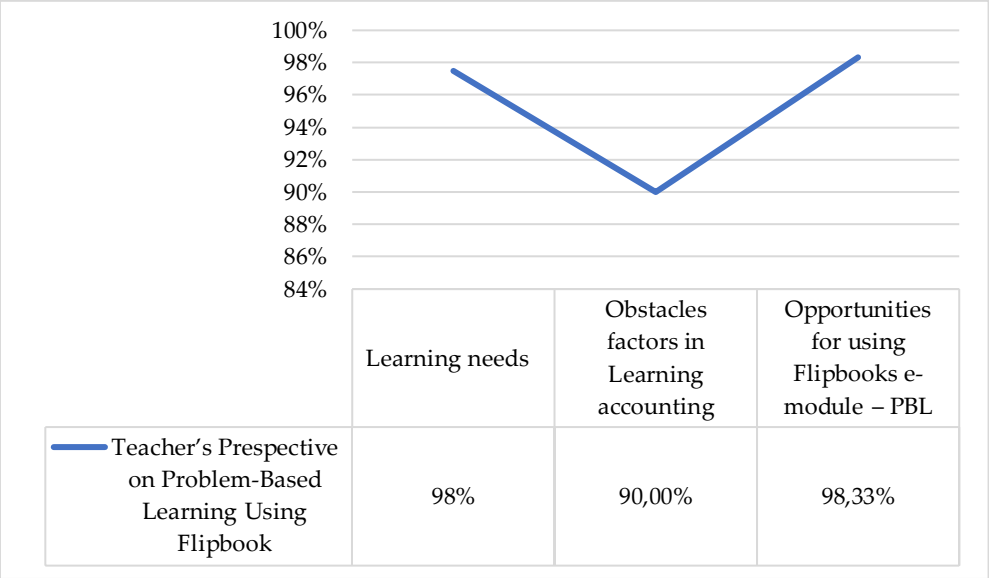
The results of the Likert scale calculation in Table 6 regarding opportunities for using flipbook e-modules based on problem-based learning were obtained from teacher responses based on interview questions where teachers had positive responses and answers.

Based on the answer to the seventh question, "What are the learning media/teaching materials needed to empower critical thinking skills?" Researchers found teacher responses stating, "The learning media needed to empower critical thinking skills is, of course, media that is designed innovatively and stimulates many thinking processes. "Students are active. In this case, the role of digital media is essential, combined with appropriate learning models or strategies. One learning strategy to stimulate students' active thinking is problem-based learning."

Based on the answer to the eighth question, "How do you use the PBL flipbook e-module?" Researchers found teacher responses where "most teachers have never used flipbooks. Teachers need digital learning media that suit students' learning styles today, namely integrated with technology. "After the teacher saw an example of the PBL flipbook e-module, the teacher felt interested in implementing it in learning because he felt it was easier to apply and could meet the needs of empowering students' critical thinking skills."

The answer to the ninth question, "How do High Order Thinking Skills (HOTS) based questions apply to the flipbook?" Researchers found teacher responses: "The teacher stated that he strongly agreed that improving students' critical thinking skills could be done by applying questions that had a high level of difficulty so that students would be trained to analyze & empower their critical thinking abilities."

The Likert scale results present teacher perspectives on learning needs, exploring factors that become obstacles in learning accounting and exploring opportunities for using e-module flipbooks in vocational high schools. An overview of the teacher's perspective on the flipbook e-module based on PBL in accounting learning at Tulungagung Vocational School is in Figure 1 as follows:



	Learning needs	Obstacles factors in Learning accounting	Opportunities for using Flipbooks e-module – PBL
Teacher's Prespective on Problem-Based Learning Using Flipbook	98%	90,00%	98,33%

Figure 1. Teacher's Perspective on Problem-Based Learning Using Flipbook

Interpretation of research results obtained from several aspects including; The need for accounting learning in the digital era is not only to prioritize high mastery of concepts and values but also how students can be trained to think critically, as is the demand for 21st-century skills which include information management, communication, collaboration, creativity, critical thinking, and problem-solving (González-Pérez & Ramírez-Montoya, 2022) The learning needs based on accounting teachers in vocational high schools received from questionnaires show 98% approval, including fulfilling competency needs for the media used by teachers and teacher knowledge in operating digital technology In the process, there are factors that become obstacles in learning accounting, the aspects studied are; the type of media used by teachers to teach, learning strategies in class, and the strengths and weaknesses of the media used by teachers From these aspects, 90% of the teachers received positive responses, meaning that the problem was recognized as something that needed to be resolved immediately This research is in line with Anggraeni, Prahani, Suprapto, Shofiyah, & Jatmiko (2023) which states that One strategy to encourage critical thinking skills in learning is to use a learning model that can educate these abilities.

From the problems and obstacles that have been discovered during the research, it is necessary help teachers in learning accounting Flipbook e-module is one of the easy-to-use digital learning media that has an excellent opportunity to support the success of accounting learning, namely by integrating problem-based learning strategies to improve student's skills for critical thinking, getting a positive response of 9833% The findings of study on flipbooks in terms of enhancing students' critical thinking abilities conducted by Sudiarti, Ashilah, & Nurjanah (2023) who found that effective implementation of flipbooks could increase students' critical thinking skills by 97% Other findings by Moh Danang Bahtiar, Irwan Adimas Ganda Saputra, Han Tantri Hardini, Suci Rohayati, & Ayun Multiana (2024) stated that according to product testing data, respondents' comprehension of e-module development received an average score of 9482%, which excellent standard Strengthened by research Wijaya & Vidianti (2020) which states that the application of Interactive electronic modules on educational innovation courses is practical for use.

4. CONCLUSION

Teachers have a good perspective on efforts to improve student's critical thinking skills by using flipbook e-modules based on problem-based learning. This research can provide recommendations to educators and stakeholders regarding learning needs, factors that become obstacles to learning, and finding appropriate digital media/teaching material opportunities. This research has limitations in data collection, which is still limited to a sample of several teachers in an area. Advise that additional research increases the sample's reach to produce new findings that are broader and can be used by all interested parties.

REFERENCES

Adawiyah, R, Susilawati, & Anwar, L (2020) Implementation of an Interactive E-Module to Improve Concept Understanding of Students *Proceedings of the 4th Sriwijaya University Learning and Education International Conference (SULE-IC 2020)* Paris, France: Atlantis Press https://doiorg/102991/assehrk201230086

Adelakun, N O (2023) Impact of Information and Communication Technology on Students' Academic Performance *SSRN Electronic Journal* https://doiorg/102139/ssrn4417299

Akrim, M (2018) Media Learning in Digital Era *Proceedings of the 5th International Conference on Community Development (AMCA 2018)* Paris, France: Atlantis Press https://doiorg/102991/amca-182018127

Andini, S, Budiyono, B, & Fitriana, L (2018) Developing Flipbook Multimedia: The Achievement of Informal Deductive Thinking Level *Journal on Mathematics Education*, *9*(2), 227–238 https://doiorg/1022342/jme925396227-238

Anggraeni, D M, Prahani, B K, Suprapto, N, Shofiyah, N, & Jatmiko, B. (2023) Systematic review of problem-based learning research in fostering critical thinking skills *Thinking Skills and Creativity*, *49*, 101334 https://doiorg/101016/jtsc2023101334

Arifin, E G (2021) Problem-Based Learning to Improve Critical Thinking *Social, Humanities, and Educational Studies (SHEs): Conference Series*, *3*(4), 98 https://doiorg/1020961/shesv3i453288

Astalini, A., Darmaji, D, Kurniawan, D A, & Chen, D (2021) Students' Perceptions of Mathematical Physics E-Module on Multiple Integral Material *Journal of Education Technology*, *5*(4), 531–538

Bernadetha Nadeak, & Lamhot Naibaho (2020) The Effectiveness of Problem-Based Learning on Stude nts' Critical Thinking *Jurnal Dinamika Pendidikan*, *13*(1), 1–7 https://doiorg/http://dxdoiorg/1033541/jdpv13i1

Boleng, D T, Lumowa, S V T, Palenewen, E, & Corebima, A D (2017) The Effect of Learning Models on Biology Critical Thinking Skills of Multiethnic Students at Senior High Schools in Indonesia *Problems of Education in the 21st Century*, *75*(2), 136–143 https://doiorg/1033225/pec/1775136

Budiyono, B (2020) Inovasi Pemanfaatan Teknologi Sebagai Media Pembelajaran di Era Revolusi 40 *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran*, *6*(2), 300 https://doiorg/1033394/jkv6i22475

Conway, J, & McMillan, M (2018) Critical Thinking and PBL: What, Why and How? *Journal of Problem-Based Learning*, *5*(1), 1–4 https://doiorg/1024313/jpbl2018511

Erikson, M G, & Erikson, M (2019) Learning outcomes and critical thinking – good intentions in conflict *Studies in Higher Education*, *44*(12), 2293–2303 https://doiorg/101080/0307507920181486813

Facione, P A (1990) *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction* (b) The Delphi Report: California Academic Press

Gesang Wahyudi, N (2019) Desain Pesan Pembelajaran di Era Digital *Evaluasi: Jurnal Manajemen Pendidikan Islam*, *3*(1), 104–135 https://doiorg/1032478/evaluasiv3i1224

González-Pérez, L I, & Ramírez-Montoya, M S (2022) Components of Education 40 in 21st Century Skills Frameworks: Systematic Review *Sustainability*, *14*(3), 1493 https://doiorg/103390/su14031493

Hamzah, H, Hamzah, M I, & Zulkifli, H (2022) Systematic Literature Review on the Elements of Metacognition-Based Higher Order Thinking Skills (HOTS) Teaching and Learning Modules *Sustainability*, *14*(2), 813 https://doiorg/103390/su14020813

Hasanah Lubis, L, Febriani, B, Fitra Yana, R, Azhar, A, & Darajat, M (2023) The Use of Learning Media and its Effect on Improving the Quality of Student Learning Outcomes *International Journal Of Education, Social Studies, And Management (IJESSM)*, *3*(2), 7–14 https://doiorg/1052121/ijessmv3i2148

Hsu, Y-C (2021) An Action Research in Critical Thinking Concept Designed Curriculum Based on Collaborative Learning for Engineering Ethics Course *Sustainability*, *13*(5), 2621 https://doiorg/103390/su13052621

Ishaq*, K, Mat Zin, N A, Rosdi, F, Abid, A, & Ijaz, M (2020) The Impact of ICT on Students' Academic Performance in Public Private Sector Universities of Pakistan *International Journal of Innovative Technology and Exploring Engineering*, *9*(3), 1117–1121 https://doiorg/1035940/ijiteeC8093019320

Istiningsih, I (2022) Impact of ICT integration on the development of vocational high school teacher TPACK in the digital age 40 *World Journal on Educational Technology: Current Issues*, *14*(1), 103–116 https://doiorg/1018844/wjetv14i16642

Marta, L C (2019) The Integration of Digital Devices into learning spaces according to the needs of primary and secondary teachers *TEM Journal*, *8*(4), 1351–1358

Miles, M B, Huberman, A M, & Saldaña (2020) *Qualitative data analysis: A methods sourcebook* Los Angeles, London, New Delhi, Singapore, Washington DC, Melbourn: SAGE

Moh Danang Bahtiar, Irwan Adimas Ganda Saputra, Han Tantri Hardini, Suci Rohayati, & Ayun Multiana (2024) Increasing Student Critical Thinking Through the Development of Public Sector Accounting Practicum Modules Based on Problem-Based Learning (PBL) *International Journal of Multicultural and Multireligious Understanding*, *11*(1) https://doiorg/http://dxdoiorg/1018415/ijmmuv11i15306

Mukul, E, & Büyüközkan, G (2023) Digital transformation in education: A systematic review of education 40 *Technological Forecasting and Social Change*, *194*, 122664 https://doiorg/101016/jtechfore2023122664

Nazir, M, & Risman Sikmumbang (2009) *Metode Penelitian* Bogor: Ghalia Indonesia

Noble, H, & Heale, R (2019) Triangulation in research, with examples *Evidence-Based Nursing*, *22*(3), 67–68 https://doiorg/101136/ebnurs-2019-103145

Palupi, B S, Subiyantoro, S, Rukayah, R, & Triyanto, T (2020) The Effectiveness of Guided Inquiry Learning (GIL) and Problem-Based Learning (PBL) for Explanatory Writing Skill *International Journal of Instruction*, *13*(1), 713–730 https://doiorg/1029333/iji202013146a

Pramika, D, Gunawan, H, & Yulaini, E (2023) Android-Based Accounting Learning Media for Independent Learning for Vocational High School Students *IJEBD (International Journal of Entrepreneurship and Business Development)*, *6*(1), 84–92 https://doiorg/1029138/ijebdv6i12088

Rahma Hidayati Darwis, Alimuddin, & Andi Patimbangi (2024) Higher Order Thinking and Critical Thinking Skills in Problem-Based Learning Environments: A Systematic Review *Journal of Learning and Development Studies*, *4*(2), 21–33 https://doiorg/1032996/jlds2024223

Rahmat, S T, Muslim, S, Situmorang, R, Sukardjo, M, & Ferdina (2023) *The Importance of Developing Learning Resource Centers to Improve the Quality of Learning in Remote, Disadvantaged, Leading Areas* https://doiorg/102991/978-2-38476-022-0_85

Rasmi, D P, Hendri, M, & Azriyanti, R (2023) Analysis of the Need for Development of Teaching Materials in the Form of STEM-Based Electronic Modules *Jurnal Penelitian Pendidikan IPA*, *9*(6), 4135–4141 https://doiorg/1029303/jppipav9i62683

Razak, A A, Ramdan, M R, Mahjom, N, Zabit, M N Md, Muhammad, F, Hussin, M Y M, & Abdullah, N L (2022) Improving Critical Thinking Skills in Teaching through Problem-Based Learning for Students: A Scoping Review *International Journal of Learning, Teaching and Educational Research*, *21*(2), 342–362 https://doiorg/1026803/ijlter21219

Sahronih, S, Purwanto, A, & Sumantri, M S (2019) The Effect of Interactive Learning Media on Students' Science Learning Outcomes *Proceedings of the 2019 7th International Conference on Information and Education Technology*, 20–24 New York, NY, USA: ACM https://doiorg/101145/33237713323797

Situmorang, M, Yustina, Y, & Syafii, W (2020) E-Module Development using Kvisoft Flipbook Maker through the Problem-Based Learning Model to Increase Learning Motivation *Journal of Educational Sciences*, *4*(4), 834 https://doiorg/1031258/jes44p834-848

Sudiarti, D, Ashilah, N M, & Nurjanah, U (2023) Implementation of flipped learning with flipbook media assistance on learning outcomes and critical thinking abilities *Jurnal Inovasi Teknologi Pendidikan*, *10*(4), 385–394 https://doiorg/1021831/jitpv10i458191

Tanujaya, B & P R & M Jeinne (2023) Likert Scale in Social Sciences Research: Problems and Difficulties *FWU Journal of Social Science*, 89–101 https://doiorg/1051709/19951272/Winter2022/7

Wijaya, J E, & Vidianti, A. (2020) The Effectiveness of Using Interactive Electronic Modules on Student Learning Outcomes in Education Innovation course *Proceedings of the International Conference on Progressive Education (ICOPE 2019)* Paris, France: Atlantis Press https://doiorg/102991/assehrk200323096

Wilson, D M, & A/l Narasuman, S (2020) Investigating Teachers' Implementation and Strategies on Higher Order Thinking Skills in School-Based Assessment Instruments *Asian Journal of University Education*, *16*(1), 70 https://doiorg/1024191/ajuev16i18991

Zhou, Q, Huang, Q, & Tian, H (2013) Developing Students' Critical Thinking Skills by Task-Based Learning in Chemistry Experiment Teaching *Creative Education*, *04*(12), 40–45 https://doiorg/104236/ce2013412A1006