The needs of a metacognitive-based learning model in elementary schools

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ABSTRACT

Purpose: This research aims to analyze the need for developing metacognitive-based learning models in elementary schools.

Design/Methodology/Approach: This research uses mixed methods. The mixed-methods research design used in this research is concurrent embedded mixed methods. The population of this study was 2,416 elementary schools. Sample selection: 476 elementary school teachers were involved in the development needs analysis survey. Methods of data collection include observation, interviews, surveys and questionnaires. The data collection instrument uses a questionnaire sheet. The data analysis technique uses qualitative and quantitative descriptive analysis.

Findings: The research results show that 28.8% of respondents stated that they had implemented the independent curriculum, 65.1% combined the independent curriculum and the 2013 curriculum and 6.1% still used the 2013 curriculum. The survey results on learning support facilities showed that adequate facilities supported learning. 93.7% of teachers said that they always use innovative learning models. The remaining 6.3% still rarely implement innovative models. The survey results showed that 69.54% of teachers reported understanding metacognition sufficiently. However, 97.47% of teachers rarely or never integrate the concept of metacognition into their teaching methods.

Conclusion: It is essential that elementary schools adopt metacognitive-based learning approaches in order to equip students with the critical and creative thinking skills necessary to become lifelong learners. This skill is useful for overcoming obstacles in daily life as well as in the field of education.

Keywords: *Elementary school, Innovative learning, Learning model, Metacognitive, Need analysis, Thinking skills.*

1. INTRODUCTION

Pancasila student profiles represent Indonesian students as lifelong learners. The purpose of the Pancasila student profile is to prepare students to compete in international competition and to adopt behavior consistent with Pancasila's ideals. The profile of Pancasila students in education is divided into six dimensions as follows: (1) faith and devotion to God Almighty and having noble morals. (2) independent (3) cooperative (4) global diversity (5) critical reasoning and (6) creativity (Irawati, Iqbal, Hasanah, & Arifin, 2022; Rachmawati, Marini, Nafiah, & Nurasiah, 2022; Sulastri, Syahril, Adi, & Ermita, 2022). The Pancasila student profile can be used as a guide for all stakeholders especially teachers and students in carrying out the learning process (Aisyah & Nawawi, 2023; Rusnaini, Raharjo, Suryaningsih, & Noventari, 2021; Susilawati, Sarifudin, & Muslim, 2021). The competencies that Indonesian students need to possess are described in the Pancasila student profile based on this description (Kahfi, 2022; Mery, Martono, Halidjah, & Hartoyo, 2022). Therefore, it is necessary to make a number of efforts in order to obtain the Pancasila student profile. Innovative learning implementation is one attempt that can be performed (Istiningsih & Dharma, 2021; Kurniawaty, Faiz, & Purwati, 2022). The foundation for developing innovative learning should be the basic education level with activities designed to advance students' skills being the basis for implementation.

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The formation of fundamental information and abilities that will prepare students for challenges in the future is facilitated by primary education (Indriayu, 2019; Pramestika, Wulandari, & Sujana, 2020; Sumardi, Rohman, & Wahyudiati, 2020). Education should foster students' critical thinking and metacognitive skills in addition to imparting knowledge in age of quickly advancing technology and continuous global change. The first phase of formal education is elementary school and there is a growing need to create relevant and useful learning models that can help students understand how other students think and learn (Kawuryan, Sayuti, Aman, & Aman, 2022; Sandang, Wagiran, & Latiana, 2022; Sidiq et al., 2021). One approach that has received widespread attention in education is metacognitive learning. Metacognition is the ability to understand, control and regulate one's own thinking and learning processes (Fitri, Mawardi, & Kurniawan, 2017; Ikhsan, Munzir, & Fitria, 2017; Suprianta & Alawiyah, 2019). This includes self-awareness of learning strategies, monitoring understanding and organizing the actions necessary to achieve learning goals. Metacognitive-based learning models can be designed to strengthen students' metacognitive abilities which can ultimately improve the quality of their learning (Ikhsan et al., 2017; Santi, 2019).

Studies on creating learning models have been conducted in an attempt to improve the standard of teaching. Developing and enhancing 4C abilities and student learning outcomes are the goals of the research that contributes to creating the 4C model which is one aspect of this study (Supena, Darmuki, & Hariyadi, 2021). Other research has developed a project-based learning model integrated with Science, Technology, Engineering and Mathematics (PjBL-STEM) to improve students' creative thinking skills (Mamahit, Aloysius, & Suwono, 2020; Ridlo & Zaini, 2020; Sumardiana, Hidayat, & Parno, 2019). It has also been necessary to construct learning models for metacognitive learning a notion of learning that holds that students possess the ability to plan and direct their own learning for better results. Research conducted over the last 5 years reveals that metacognitive learning is effective in improving students' problem solving abilities (Febrina & Mukhidin, 2019; Widyantari, Suardana, & Devi, 2019), increase students' understanding of concepts (De Backer, Van Keer, & Valcke, 2022; Hendi, Caswita, & Haenilah, 2020), improve students' creative thinking abilities (Sudirtha, Widiana, & Adijaya, 2022; Susantini, Puspitawati, Raharjo, & Suaidah, 2021) and improve students' critical thinking skills (Abendroth & Richter, 2021; Zheng, Li, Zhang, & Sun, 2019). However, the development of a metacognitive-based learning model has never been carried out to increase the achievement of the Pancasila student profile. In the context of basic education in Indonesia, the development of metacognitive-based learning models is relevant because basic education is a critical stage in the formation of basic lifelong learning skills. The education pattern at the basic education level also provides a strong foundation for forming students' attitudes, values and ethics.

This research aims to analyze the need for developing metacognitive-based learning models in elementary schools as an effort to increase the achievement of the Pancasila student profile. This research begins by examining the concept of metacognition and its relevance in the context of basic education. Next, an exploration process is carried out regarding the opportunities that exist for implementing learning in elementary schools as well as concrete strategies for integrating the model that will be developed into the curriculum that applies in elementary schools. The findings of this research can be used as a basis for developing cognitive learning models that suit the needs of elementary schools by examining in-depth insights into the needs and potential for developing cognitive learning models.

2. RESEARCH METHOD

This research used mixed-methods that combine qualitative and quantitative elements (Sugiyono, 2014). The mixed-methods research design used in this research is concurrent embedded mixed-methods; qualitative and quantitative data are collected simultaneously but analyzed separately and then combined to provide a more comprehensive study. In this case, the quantitative and qualitative data used are not in balanced proportions (Mustaqim, 2016). Quantitative data in this research has a greater proportion than qualitative data. Qualitative data is used to verify and strengthen quantitative data.

The population of this study was 2,416 elementary schools in Bali Province, Indonesia. The focus of this research is on the development and use of metacognitive-based learning models. The sample selection was carried out in several elementary schools representing diverse pedagogical environments. The sample consisted of several teachers and students from these schools. Sample selection was carried out purposefully to ensure a good representation of various educational contexts. A total of 476 elementary school teachers were involved in the

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development needs analysis survey. A total of 116 elementary schools classified into three groups, namely urban, suburban and rural schools were also the samples observed in this study.

The data collection process in this research was carried out quantitatively and qualitatively. Quantitative data was collected through a survey method with an instrument in the form of a questionnaire. The questionnaire was distributed online through the Google Forms platform. The questionnaire contains statements and questions related to the learning process carried out understanding and use of metacognition in learning and achievement of the Pancasila student profile. The questionnaire grid used in this research survey is presented in Table 1.

Table 1. Survey questionnaire grid.

Aspect/Dimensions	Sub-aspect/Sub-dimensions
Learning process	Curriculum
	Learning support facilities
	Use of learning models
	Abilities developed in learning
Understanding and using metacognition	Understanding metacognition
	Use of metacognition in learning
	Benefits of metacognition in learning
Achievements of the Pancasila student profile	Have faith, be devoted to God almighty and have noble character
	Independent
	Critical reasoning
	Global diversity
	Worked together
	Creative

Qualitative data collection was carried out using the observation method with an instrument in the form of an observation guide. Observations were carried out by observing the learning process carried out by teachers in elementary schools. Observations also aim to monitor how metacognition is integrated into the learning process. The aspects observed in the observation activities are presented in detail in Table 2.

Table 2. Observation guidelines.

Dimensions	Sub dimension
Learning process ımplemented by teachers	Learning context
	Learning objectives
	Learning structure
	Teacher-student interaction
	Use of learning models
	Use of learning media
Use of metacognition in learning	Introduction to the concept of metacognition in learning
	Metacognitive strategy
	Monitoring and self-evaluation
	Reflection and improvement

The data analysis process in this research was also carried out quantitatively and qualitatively. Quantitative analysis is used to analyze survey results and quantitative analysis is used to analyze observation results. The survey data was analyzed with the help of statistical analysis software which includes descriptive analysis to describe survey results. The observation data was analyzed using thematic analysis to identify patterns and themes in the data. The results of the analysis will be used to gain a deep understanding of how metacognition is applied in the learning context and how learning is in accordance with applicable curriculum demands. The results of the qualitative and quantitative analysis will then be integrated to provide a more comprehensive understanding of the need for developing metacognitive-based learning models as an effort to increase the profile of Pancasila students in elementary schools.

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3. ANALYSIS OF THE RESULTS

3.1. Results

Research data is mostly presented in the form of tables and graphs to explain the distribution of survey answers that have been collected. The survey data has been analyzed using descriptive statistical analysis techniques. The complete results of the research findings are presented as follows:

3.1.1. Learning Process in Elementary School

Aspects of the learning process in elementary schools consist of several sub-aspects namely curriculum, learning support facilities, use of learning models and abilities developed in learning. The survey results regarding curriculum aspects in Figure 1 show that 28.8% of respondents stated that they had implemented the independent curriculum, 65.1% combined the independent curriculum and the 2013 curriculum and 6.1% still used the 2013 curriculum.

Survey results on aspects of learning support facilities show that 83.74% of learning is supported by adequate facilities. Schools in urban, suburban and rural areas do not experience significant gaps in aspects of learning support facilities. The only facility problem experienced in learning is a lack of speed in using internet access to support learning especially in schools in rural areas.

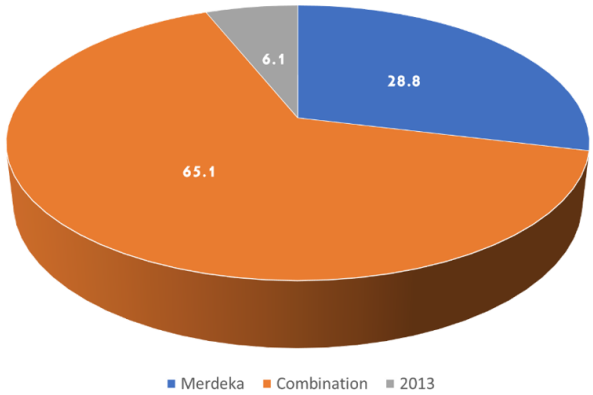

Figure 1. Curriculum aspect survey results.

Furthermore, the results of the findings regarding the aspect of using learning models in detail are presented in Table 3. 93.7% of teachers stated that they always use innovative learning models in learning. The remaining 6.3% still rarely apply innovative models due to student characteristics, material characteristics and limited learning media. Further investigation results show that the learning models that are often used in learning are problem-based learning and cooperative models.

Table 3. Survey results on aspects of using learning models.

Learning model	f	Percentage
Problem-based learning	147	30.88%
Cooperative	129	27.10%
Project-based learning	108	22.69%
Discovery learning	50	10.50%
Inquiry learning	21	4.41%
Role playing	7	1.47%
Other	14	2.94%
Total	476	100%

Table 4 presents the survey findings describing teachers' perceptions of the types of skills developed in primary schools and the extent to which the current learning models may support the development of these skills.

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Table 4. Survey results on aspects of capabilities developed in learning.

Ability type	Contribution of the learning model used				
	Very contributed	Contribute	Enough contribute	Less contributing	Not contributing
Critical thinking	32.14%	27.73%	23.32%	11.76%	5.04%
Creative thinking	26.47%	30.67%	25.84%	8.82%	8.19%
Communication	30.88%	26.26%	23.53%	15.97%	3.36%
Cooperation and collaboration	37.39%	22.48%	25.21%	11.97%	2.94%
Solution to the problem	25.84%	30.67%	26.47%	8.19%	8.82%
Metacognitive	7.56%	15.55%	15.97%	30.67%	30.25%

The survey results in Table 4 provide an overview of teachers' perceptions regarding the extent to which the learning process that has been implemented in elementary schools contributes to the development of various student abilities. The findings indicate that the learning model implemented has been effective in developing critical thinking, creativity, communication, cooperation and teamwork abilities in addition to providing better problem-solving skills. However, the models used are still not able to contribute optimally to the process of developing students' metacognitive abilities.

3.1.2. Understanding and Using Metacognition in Learning

The results of this survey provide an overview of teachers' understanding and use of metacognition in elementary school learning. These results are presented in Figure 2.

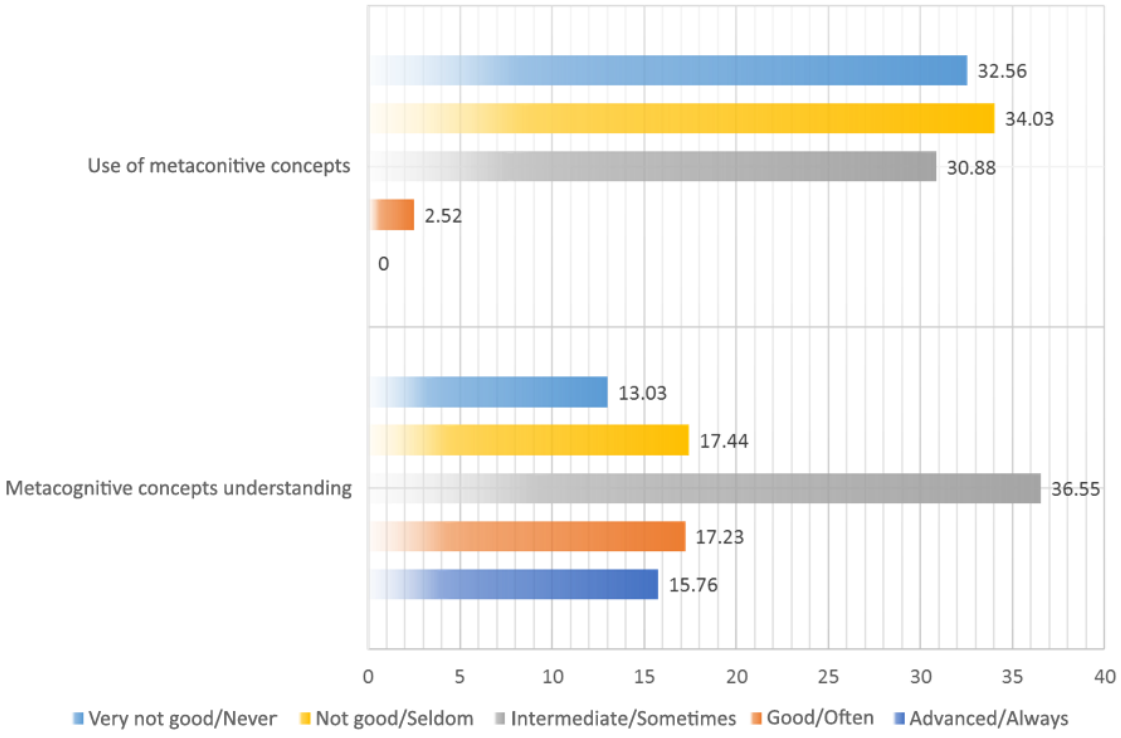

Figure 2. Survey results on understanding and using metacognition in learning.

According to the survey results, 69.54% of teachers stated they understood the concept of metacognition sufficient (see Figure 2). This indicates that the majority of teachers in elementary schools have adequate basic knowledge about metacognition. However, 97.47% of teachers reported that they rarely or never integrated the

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concept of metacognition into their teaching methods. This shows that most teachers have not actively tried to apply metacognition to learning in their classes.

3.1.3. Achievement of the Pancasila Student Profile

The results of this survey provide an overview of students' achievements in aspects of the Pancasila student profile. The survey results are presented in Table 5.

Table 5. Survey results on aspects of achievement of Pancasila student profiles.

Aspects of the Pancasila student profile	Percentage	Category
Have faith, be devoted to God almighty and have noble character.	91.90%	Very good
Independent	78.30%	Good
Critical reasoning	65.80%	Enough
Global diversity	79.70%	Good
Worked together	87.46%	Very good
Creative	62.30%	Enough

The results in Table 5 show that the learning that has been carried out has developed aspects of faith, devotion to God Almighty, noble character and aspects of working together very well as well as aspects of independence. However, Table 5 shows that the critical and creative reasoning aspects are still being developed in the sufficient category.

4. DISCUSSION

Education at the elementary school level is an important foundation for forming students' understanding, skills and attitudes that will guide their development as educated individuals. Therefore, it is important to identify the need to develop effective learning models especially those related to metacognition to improve the quality of education (Dewantoro & Sartono, 2019; Kanji & Nursalam, 2020; Pertiwi & Dibia, 2018; Usman & Anwar, 2021). The learning process in elementary school is a central element in the development of metacognition. Clear learning objectives, positive teacher-student interactions, the use of relevant learning materials, support for active learning and formative assessment are important factors in establishing an effective learning process (Sari, Kusuma, & Made, 2022; Syafrijal & Desyandri, 2019; Uge, Neolaka, & Yasin, 2019). Elementary school teachers must be able to create an environment that is conducive to students' cognitive development where the concept of metacognition can play an important role (Febrina & Mukhidin, 2019; Huri & Marwanto, 2019; Wakid, Usman, & Sulistyo, 2020).

Understanding metacognition by teachers is a key aspect of implementing metacognitive-based learning models. Teachers who understand this concept can be more effective in integrating it into their teaching methods. Metacognitive integration involves students' understanding of how they learn and how they can monitor their own understanding (Ikhsan et al., 2017; Mohiddin, 2018; Suprianta & Alawiyah, 2019). Teachers who encourage students to think about their learning process, use self-monitoring strategies and reflect on their learning assist students in developing the metacognitive skills necessary to become independent and effective learners (Aimah, Ifadah, & Linggar Bharati, 2017; Mohiddin, 2018).

Teachers' implementation of metacognitive strategies is critical to helping students develop their metacognitive knowledge in addition to their understanding. Strategies such as the use of reflective questions, reflection journals or discussions of effective learning strategies can assist students in recognizing their thought processes and increase their understanding of how they learn (Luo & Wang, 2023; Zhang et al., 2022). By combining these two main aspects, the effective learning process in elementary school can be improved (Kjällander, Mannila, Åkerfeldt, & Heintz, 2021; Muhtar & Dallyono, 2020; Suwandayani, Ekowati, Sony, & Haryono, 2021). Teachers who understand and use metacognition in their teaching can help students become more independent and effective learners. Thus, the development of metacognitive-based learning models in elementary school is important to advance education at this level and help students understand how they learn and how they can become better learners.

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The metacognitive-based learning model creates a structured framework for introducing, training and practicing metacognitive abilities in learning. Students can better comprehend their thought processes, information processing techniques and comprehension management skills through the use of metacognition. This ability becomes the foundation for critical and creative thinking abilities (Ikhsan et al., 2017; Mohiddin, 2018; Suprianta & Alawiyah, 2019). Critical thinking skills are the ability to analyze, evaluate and formulate thoughts carefully (Hasanah, Astra, & Sumantri, 2023; Sarwanto, Laksmi, & Chumdari, 2021). This is a very important skill for solving problems, making good decisions and developing a critical perspective on information (Azizah, 2018; Fitria, Hasanah, & Gistituati, 2018). Students can monitor their comprehension, identify the underlying assumptions guiding their ideas and gain a greater understanding of the subjects they study by using metacognition. On the other hand, creative thinking abilities include the capacity to make associations between unconnected ideas, develop innovative ideas and approach issues from multiple perspectives(Al-Idrus & Rahmawati, 2021; Haka, Ellyandhani, Anggoro, & Hamid, 2020; Wahyuni & Kurniawan, 2018). Students can reflect on their own innovative thinking processes, identify strategies that are effective for them and learn how to further develop their creativity with the use of metacognitive-based learning models.

5. CONCLUSION AND RECOMMENDATIONS

It is essential that elementary schools implement metacognitive-based methods of instruction in order to equip students with the critical and creative thinking skills necessary to become lifelong learners. This skill is useful not only in the field of education but also in overcoming obstacles in daily life. Therefore, developing a metacognitive-based learning model in elementary school is a significant step in facing complex and dynamic future demands. The importance of developing metacognitive-based learning models in elementary school is not just about academic achievement. Its focus is on providing students with the necessary resources to succeed in their studies and preparing them to take on more difficult challenges. Metacognition is a skill inherent in every aspect of life and developing it early in elementary school is an investment in a student's future. Therefore, developing a metacognitive-based learning model in elementary school is an urgent and meaningful step in forming a generation of competent and critically thinking learners.

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INSTITUTIONAL REVIEW BOARD STATEMENT

The Ethical Committee of the Universitas Pendidikan Ganesha, Indonesia has granted approval for this study on 19 June 2023 (Ref. No. 1516/UN48.16/LT/2023).

TRANSPARENCY

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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REFERENCES

Abendroth, J., & Richter, T. (2021). How to understand what you don't believe: Metacognitive training prevents belief-biases in multiple text comprehension. *Learning and Instruction*, *71*, 101394. https://doi.org/10.1016/j.learninstruc.2020.101394

Aimah, S., Ifadah, M., & Linggar Bharati, D. A. (2017). Building teacher's pedagogical competence and teaching improvement through lesson study. *Arab World English Journal*, *8*(1), 66-78. https://doi.org/10.31235/osf.io/6b45h

Aisyah, N. F., & Nawawi, E. (2023). Analysis of the implementation of the Pancasila student profile at SMA Negeri 2 Palembang. *Journal on Education*, *5*(2), 3340-3344.

Al-Idrus, S. W., & Rahmawati, R. (2021). Developing students' creative thinking abilities through project based learning in environmental chemistry subjects during the covid 19 pandemic. *AS-SABIQUN*, *3*(1), 14-25. https://doi.org/10.36088/ASSABIQUN.V3I1.1117

Azizah, N. (2018). Analysis of critical thinking skills of elementary school students in learning mathematics curriculum 2013. *Ethical Lingua: Journal of Language Teaching and Literature*, *5*(1), 61-71.

De Backer, L., Van Keer, H., & Valcke, M. (2022). The functions of shared metacognitive regulation and their differential relation with collaborative learners' understanding of the learning content. *Learning and Instruction*, *77*, 101527. https://doi.org/10.1016/j.learninstruc.2021.101527

Dewantoro, A., & Sartono, K. E. (2019). The influence of value clarification technique (VCT) learning model on homeland attitude at elementary school. *ScienceRise: Pedagogical Education*, *32*(5), 1-9. https://doi.org/10.15587/2519-4984.2019.177106

Febrina, E., & Mukhidin, M. (2019). Metacognition as a higher order thinking skill in 21st century learning. *Edusentris*, *6*(1), 25-32.

Fitri, N., Mawardi, M., & Kurniawan, R. A. (2017). Correlation between metacognitive skills and activities and student learning outcomes in chemistry subject class X Mia SMA Negeri 7 Pontianak. *Ar-Razi Jurnal Ilmiah*, *5*(1), 1-12. https://doi.org/10.29406/arz.v5i1.655

Fitria, Y., Hasanah, F. N., & Gistituati, N. (2018). Critical thinking skills of prospective elementary school teachers in integrated science-mathematics lectures. *Journal of Education and Learning (EduLearn)*, *12*(4), 597-603. https://doi.org/10.11591/edulearn.v12i4.9633

Haka, N. B., Ellyandhani, L. A., Anggoro, B. S., & Hamid, A. (2020). The effect of blended learning assisted by Google classroom on students' creative thinking skills and learning independence. *Edu Sains: Jurnal Pendidikan Sains dan Matematika*, *8*(1), 1-12.

Hasanah, U., Astra, I. M., & Sumantri, M. S. (2023). Exploring the need for using science learning multimedia to improve critical thinking elementary school students: Teacher perception. *International Journal of Instruction*, *16*(1), 417–440. https://doi.org/10.29333/iji.2023.16123a

Hendi, A., Caswita, C., & Haenilah, E. Y. (2020). Development of interactive learning media based on metacognitive strategies to improve students' critical thinking abilities. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *4*(2), 823-834. https://doi.org/10.31004/cendekia.v4i2.310

Huri, A., & Marwanto, M. (2019). Implementation of model strengthening religious character education and nationalists at Muhammadiyah Plus Elementary School City of Salatiga academic year 2017/2018. *MUDARRISA: Jurnal Kajian Pendidikan Islam*, *11*(2), 101-113. https://doi.org/10.18326/mdr.v11i2.101-113

Ikhsan, M., Munzir, S., & Fitria, L. (2017). Students' critical thinking and metacognition skills in solving mathematical problems through a problem solving approach. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *6*(2), 234-245. https://doi.org/10.24127/ajpm.v6i2.991

Indriayu, M. (2019). Effectiveness of experiential learning-based teaching material in mathematics. *International Journal of Evaluation and Research in Education*, *8*(1), 57-63. https://doi.org/10.11591/ijere.v8i1.15903

Irawati, D., Iqbal, A. M., Hasanah, A., & Arifin, B. S. (2022). Profile of Pancasila students as an effort to realize national character. *Edumaspul: Jurnal Pendidikan*, *6*(1), 1224-1238. https://doi.org/10.33487/edumaspul.v6i1.3622

Istiningsih, G., & Dharma, D. S. A. (2021). Integration of Diponegoro character values in learning to form the profile of Pancasila students in elementary schools. *Jurnal Kebudayaan*, *16*(1), 25-42. https://doi.org/10.24832/jk.v16i1.447

Kahfi, A. (2022). Implementation of the Pancasila student profile and its implications for student character at school. *DIRASAH: Jurnal Pemikiran Dan Pendidikan Dasar Islam*, *5*(2), 138-151.

Kanji, H., & Nursalam, N. N., Muhammad Suardi, Suardi. (2020). Integration of social care characters and moral integratif on social science lessons in elementary school. *Al-ishlah: Jurnal Pendidikan*, *12*(2), 413-427.

Kawuryan, S., Sayuti, P., Aman, S. A., & Aman. (2022). Critical thinking among fourth grade elementary students: A gender perspective. *Jurnal Cakrawala Pendidikan*, *41*(1), 211-224.

Kjällander, S., Mannila, L., Åkerfeldt, A., & Heintz, F. (2021). Elementary students' first approach to computational thinking and programming. *Education Sciences*, *11*(2), 1-15. https://doi.org/10.3390/educsci11020080

Kurniawaty, I., Faiz, A., & Purwati, P. (2022). Strategy for strengthening the profile of Pancasila students in elementary schools. *Edukatif: Jurnal Ilmu Pendidikan*, *4*(4), 5170-5175. https://doi.org/10.31004/edukatif.v4i4.3139

Luo, B., & Wang, M. (2023). Effects of start times on academic performance: Will metacognitive learning strategy or flipped classroom approaches help sleepy young university students? *The International Journal of Management Education*, *21*(2), 100806. https://doi.org/10.1016/j.ijme.2023.100806

Mamahit, J. A., Aloysius, D. C., & Suwono, H. (2020). The effectiveness of the STEM integrated project-based learning model (PjBL-STEM) on the creative thinking skills of class X students. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *5*(9), 1284-1289. https://doi.org/10.17977/jptpp.v5i9.14034

Mery, M., Martono, M., Halidjah, S., & Hartoyo, A. (2022). Student synergy in the project to strengthen the profile of Pancasila students. *Jurnal Basicedu*, *6*(5), 7840-7849. https://doi.org/10.31004/basicedu.v6i5.3617

Mohiddin, D. P. (2018). The influence of the metacognitive approach on the mathematical problem solving ability of agricultural machinery and equipment students at the gorontalo polytechnic. *Jurnal Teknologi Informasi Indonesia 3*(1), 12-12. https://doi.org/10.30869/jtii.v3i1.181

Muhtar, T., & Dallyono, R. (2020). Character education from the perspectives of elementary school physical education teachers. *Jurnal Cakrawala Pendidikan*, *39*(2), 395-408. https://doi.org/10.21831/cp.v39i2.30647

Mustaqim, M. (2016). Combined quantitative qualitative research methods / mixed methods an alternative approach. *Intelegensia: Jurnal Pendidikan Islam*, *4*(1), 1-9.

Pertiwi, N. L. S. A., & Dibia, I. K. (2018). Application of the problem based learning model assisted by interactive media to improve student mathematics learning outcomes. *Journal of Education Action Research*, *2*(4), 331-339. https://doi.org/10.23887/jippg.v1i1.14262

Pramestika, N. P. D., Wulandari, I. G. A. A., & Sujana, I. W. (2020). Enhancement of mathematics critical thinking skills through problem based learning assisted with concrete media. *Journal of Education Technology*, *4*(3), 254-263. https://doi.org/10.23887/jet.v4i3.25552

Rachmawati, N., Marini, A., Nafiah, M., & Nurasiah, I. (2022). Project for strengthening the profile of pancasila students in implementing the prototype curriculum in elementary school level driving schools. *Jurnal Basicedu*, *6*(3), 3613–3625. https://doi.org/10.31004/basicedu.v6i3.2714

Ridlo, S., & Zaini, O. (2020). Critical thinking skills reviewed from communication skills of the primary school students in STEM-based project-based learning model. *Journal of Primary Education*, *9*(3), 311-320. https://doi.org/10.15294/jpe.v9i3.27573

Rusnaini, R., Raharjo, R., Suryaningsih, A., & Noventari, W. (2021). Intensification of the Pancasila student profile and its implications for students' personal resilience. *Jurnal Ketahanan Nasional*, *27*(2), 230-249. https://doi.org/10.22146/jkn.67613

Sandang, G., Wagiran, & Latiana, L. (2022). Development of interactive learning multimedia "Mejabando" for improving critical and creative thinking skills in Indonesian language learning class V elementary school. *International Journal of Research and Review*, *9*(2), 402–410. https://doi.org/10.52403/ijrr.20220251

Santi, D. P. (2019). The influence of the problem-based learning model on achievement motivation and metacognition skills in middle school students. *Wahana Matematika Dan Sains: Jurnal Matematika, Sains, Dan Pembelajarannya*, *13*(2), 62-75.

Sari, P., Kusuma, N. K. S. W., & Made, N. M. (2022). Multimedia-assisted genrative learning model towards Ipa learning satisfaction in students of grade Iv elementary school achievement school year 2020/2021. *Adi Widya: Jurnal Pendidikan Dasar*, *7*(1), 38–45. https://doi.org/10.25078/aw.v7iI.777

Sarwanto, Laksmi, E. W. F., & Chumdari. (2021). Open-ended questions to assess critical-thinking skills in Indonesian elementary school. *International Journal of Instruction*, *14*(1), 615-630. https://doi.org/10.29333/iji.2021.14137a

Sidiq, Y., Ishartono, N., Desstya, A., Prayitno, H., Anif, S., & Hidayat, M. (2021). Improving elementary school students' critical thinking skill in science through hots-based science questions: A quasi-experimental study. *Jurnal Pendidikan IPA Indonesia*, *10*(3), 378-386. https://doi.org/10.15294/jpii.v10i3.30891

Sudirtha, I. G., Widiana, I. W., & Adijaya, M. A. (2022). The effectiveness of using revised bloom's taxonomy-oriented learning activities to improve students' metacognitive abilities. *Journal of Education and e-Learning Research*, *9*(2), 55-62. https://doi.org/10.20448/jeelr.v9i2.3804

Sugiyono. (2014). *Combination research methods (Mix Methods)*. Bandung: Alfabeta.

Sulastri, S., Syahril, S., Adi, N., & Ermita, E. (2022). Strengthening character education through Pancasila student profiles for teachers in elementary schools. *Jurnal Riset Tindakan Indonesia*, *7*(3), 413-420. https://doi.org/10.29210/30032075000

Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, *13*(3), 357–370. https://doi.org/10.29333/iji.2020.13325a

Sumardiana, S., Hidayat, A., & Parno, P. (2019). Critical thinking ability in the project based learning model accompanied by STEM for high school students on temperature and heat. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *4*(7), 874. https://doi.org/10.17977/jptpp.v4i7.12618

Supena, I., Darmuki, A., & Hariyadi, A. (2021). The influence of 4C (Constructive, Critical, Creativity, Collaborative) learning model on students' learning outcomes. *International Journal of Instruction*, *14*(3), 873–892. https://doi.org/10.29333/iji.2021.14351a

Suprianta, E., & Alawiyah, T. (2019). Study of metacognition skills in high school students (SMAN) 1 Margaasih, Bandung Regency. *Irsyad: Jurnal Bimbingan, Penyuluhan, Konseling, dan Psikoterapi Islam*, *7*(4), 471-480. https://doi.org/10.15575/irsyad.v7i4.1772

Susantini, E., Puspitawati, R. P., Raharjo, & Suaidah, H. L. (2021). E-book of metacognitive learning strategies: Design and implementation to activate student's self-regulation. *Research and Practice in Technology Enhanced Learning*, *16*(1), 13. https://doi.org/10.1186/s41039-021-00161-z

Susilawati, E., Sarifudin, S., & Muslim, S. (2021). Internalizing Pancasila values in learning through implementing the panca sila student profile with the assistance of the Merdeka Mengajar platform. *Jurnal Teknodik*, *25*(2), 1-14. https://doi.org/10.32550/teknodik.v25i2.897

Suwandayani, B. I., Ekowati, D. W., Sony, D., & Haryono, A. D. (2021). Analysis of planning, implementation, assessment of learning from home strategies during the covid-19 pandemic in private elementary schools universitas Muhammadiyah. *Al-Bidayah: Jurnal Pendidikan Dasar Islam*, *13*(1), 107-124.

Syafrijal, & Desyandri. (2019). Deveopment of integrated thematic teaching materials with project based learning models in class IV of primary school. *International Journal of Educational Dynamics*, *1*(2), 87–92.

Uge, S., Neolaka, A., & Yasin, M. (2019). Development of social studies learning model based on local wisdom in improving students' knowledge and social attitude. *International Journal of Instruction*, *12*(3), 375–388. https://doi.org/10.29333/iji.2019.12323a

Usman, H., & Anwar, M. (2021). Integrated language skill approach: Model of teaching materials for elementary school teacher education programs in Indonesia. *Studies in English Language and Education*, *8*(2), 656–669. https://doi.org/10.24815/siele.v8i2.19031

Wahyuni, A., & Kurniawan, P. (2018). The relationship between creative thinking abilities and student learning outcomes. *Matematika*, *17*(2), 1–8. https://doi.org/10.29313/jmtm.v17i2.4114

Wakid, M., Usman, T., & Sulistyo, B. (2020). *Project based learning model to increase the competency of automotive engineering teachers candidates*. In Journal of Physics: Conference Series (Vol. 1700, No. 1, p. 012063). IOP Publishing.

Widyantari, N. K. S., Suardana, I. N., & Devi, N. L. P. L. (2019). The influence of cognitive, metacognitive and social affective learning strategies on science learning outcomes. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia*, *2*(2), 151-160. https://doi.org/10.23887/jppsi.v2i2.19384

Zhang, Y., Paquette, L., Bosch, N., Ocumpaugh, J., Biswas, G., Hutt, S., & Baker, R. S. (2022). The evolution of metacognitive strategy use in an open-ended learning environment: Do prior domain knowledge and motivation play a role? *Contemporary Educational Psychology*, *69*, 102064. https://doi.org/10.1016/j.cedpsych.2022.102064

Zheng, L., Li, X., Zhang, X., & Sun, W. (2019). The effects of group metacognitive scaffolding on group metacognitive behaviors, group performance, and cognitive load in computer-supported collaborative learning. *The Internet and Higher Education*, *42*, 13-24. https://doi.org/10.1016/j.iheduc.2019.03.002

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