Needs Analysis: Development of Contextual Approach Learning Tools Based on Local Balinese Wisdom

I Made Citra Wibawa[1*], I Gede Margunayasa[2], Ni Wayan Eka Widiastini[3] (iD)

[1,2,3] Pendidikan Guru Sekolah Dasar, Universitas Pendidikan Ganesha, Singaraja, Indonesia

A B S T R A K

Perkuliahan bersifat tekstual dan mahasiswa belum aktif mengikuti kegiatan pembelajaran sehingga pembelajaran kurang bermakna. Tujuan penelitian ini yaitu menganalisis kebutuhan pengembangan Perangkat Pembelajaran Pendekatan Kontekstual Berbasis Kearifan Lokal Bali. Penelitian ini merupakan penelitian survey. Metode yang digunakan dalam mengumpulkan data yaitu kuesioner, wawancara, observasi, dan studi dokumen. Instrument yang digunakan untuk mengumpulkan data yaitu lembar kuesioner. Teknik yang digunakan untuk menganalisis data yaitu analisis deskriptif kualitatif. Hasil penelitian yaitu pertama, pendekatan yang selama ini diterapkan dalam mata kuliah pengembangan Keterampilan IPA belum efektif. Kedua, salah satu kesulitan yang saat ini dialami oleh dosen yaitu materi pembelajaran IPA tidak dihubungkan dengan konteks lokal atau kearifan local. Ketiga, dosen telah memiliki pemahaman mengenai konsep pembelajaran kontekstual, tetapi dalam pelaksanaan pembelajaran masih belum optimal. Salah satu hal yang menyebabkan kurang optimalnya kegiatan pembelajaran dengan konsep kontekstual yaitu belum diintegrasikan atau tidak dituangkannya dengan rencana perkuliahan semester. Keempat, pendekatan kontekstual akan memberikan dampak positif yang akan meningkatkan pengalaman belajar. Kelima, penggunaan pendekatan kontekstual dalam pembelajaran keterampilan IPA di SD membantu mahasiswa untuk tidak hanya memahami, tetapi mengaplikasikan ke dalam kehidupan mereka. Disimpulkan bahwa pengembangan perangkat pembelajaran dengan pendekatan kontekstual berbasis kearifan lokal sangat penting untuk dilakukan.

A B S T R A C T

Lectures are textual, and students have yet to actively participate in learning activities actively, making learning less meaningful. This research analyses the need for developing contextual approach learning tools based on local Balinese wisdom. This research is survey research. The methods used to collect data are questionnaires, interviews, observation and document study. The instrument used to collect data was a questionnaire sheet. The technique used to analyze data is qualitative descriptive analysis. The research results are, first, that the approach applied in science skills development courses has yet to be effective. Second, one of the difficulties currently experienced by lecturers is that science learning material needs to be connected to the local context or wisdom. Third, lecturers understand the concept of contextual learning, but learning implementation still needs improvement. One of the things that causes learning activities with contextual concepts to be less than optimal is that they need to be integrated or included in the semester lecture plan. Fourth, a contextual approach will have a positive impact that will improve the learning experience. Fifth, using a contextual approach in learning science skills in elementary school helps students understand and apply it to their lives. It was concluded that developing learning tools with a contextual approach based on local wisdom is very important.

1. INTRODUCTION

Education is the main development sector that determines the progress and development of a nation. Human resource development is a way to increase the nation's progress (Aminah et al., 2017; Metcalfe & Moulin-Stozek, 2020). Quality education will provide knowledge, understanding, and skills that make citizens competent and productive. This is of course very important to increase the nation's economic growth. Apart from that, education can also improve critical thinking, thereby helping develop solutions to complex problems and create new technologies (Nurjanah & Sofiawati, 2019; Priatna et al., 2020; Syauqi et al., 2020). Moreover, in the 21st century, students are required to have high-level knowledge and thinking abilities (Cik'ani, 2021; Widodo et al., 2019). In the 21st century, students are required to have communicative, creative, collaborative, critical, and cultural abilities (Mardhiyah et al., 2021; Prayogi & Estetika, 2019). This is what causes education to be carried out by the demands of life and work in the 21st century. The learning process must provide opportunities for students to develop the talents and potential of students as a whole (Garnjost & Brown, 2018; Hediansah & Surjono, 2019; Serevina et al., 2018). Learning activities must form students to have thinking abilities that are

following competency and are skill-based in the 21st century. Students must be able to develop thinking skills in a variety of sources and fields. To achieve optimal potential, the government needs to pay attention to good quality education (Ramkissoon et al., 2020; Rustam E. Simamora et al., 2019; Wengrowicz et al., 2018). One of the formal education that a person must take is elementary school.

Elementary school is formal education, which aims to provide students with the basic knowledge, skills and understanding needed (Cahyani & Jayanta, 2021; Kusumayuni & Agung, 2021). In the initial stage, students will be taught about reading, arithmetic and writing as basic knowledge. Apart from that, in elementary school children will also learn to interact with their peers and learn to obey applicable social rules (Fadhilah et al., 2022; Sulaksana et al., 2021). This activity will certainly train communication skills, cooperation and understanding differences. Elementary school is one of the most appropriate ways to introduce values and ethics to students so that students have good attitudes of honesty, tolerance and responsibility (Afandi et al., 2021; Farida et al., 2017). In learning, students will be taught to be able to develop critical thinking skills (Syawaludin et al., 2019; Ahmad Syawaludin et al., 2019). Learning activities are carried out by asking questions and observing which are the basis for developing critical thinking skills. This is what causes elementary school to become a very important main foundation. Elementary school also provides opportunities for students to explore talents and interests so that students can find what they like (Fitria et al., 2018; Hsu et al., 2022). This is why elementary schools must be given good attention.

To improve the quality of education, professional teachers are needed. Higher education is a type of formal higher education that provides opportunities for students as prospective professional teachers to carry out learning activities. The education that students receive at tertiary institutions is well directed so that they have skill competencies in accordance with their field of knowledge which can be transformed to students (Budiyono et al., 2023; Marjuni, 2022). Education-based universities must be able to produce competent professional teachers. Professional teachers must have an understanding of the subject being taught. Apart from that, teachers are also required to have teaching skills (Asmara & Herwin, 2023; Rustam & Kamara, 2023). Teachers must be able to design learning, communicate well, and create a positive learning environment. Apart from that, teachers must also be able to adapt to changes in technology and science, so that they can create learning activities that are adapted to current developments (Aryana et al., 2022; Putri & Imaniyati, 2017). Professional teachers must have a commitment to improving the quality of education. Therefore, education-based universities must produce professional teachers who have superior abilities and skills (Bautista & Oretga-Ruiz, 2017; Jafar et al., 2020).

One of the courses that can increase science knowledge in the Elementary School Teacher Education study program is the course developing elementary science skills. This course aims to provide students with experience in understanding elementary science concepts regarding chemistry, biology and physics. Based on the results of observations carried out at the Ganesha University of Education in the Basic Education Study Program, various obstacles were found. First, lectures are textual so they are not able to make students understand science concepts well. Second, students have not actively participated in learning activities so that learning is less meaningful. Third, learning activities have not been focused on efforts to equip students to have 21st century skills. Fourth, science learning activities have not implemented a local culture-based learning model. Fifth, the learning tools used by lecturers to support learning do not yet integrate local culture. This problem certainly has an impact on students' abilities being less than optimal, especially in science content. This certainly affects teachers who are less professional so they are less than optimal in transferring natural knowledge to students.

One way that can be done to increase students' understanding and knowledge of science is by developing learning tools with a contextual approach based on local wisdom. Learning tools are plans prepared to organize the learning process. Learning tools involve various elements, which include teaching strategies, learning objectives, learning materials, and evaluation methods (Asikin, 2017; Hapsari et al., 2018; Nisaa & Heynoek, 2021). The contextual approach is an approach that emphasizes learning context or real-world situations (Gitriani et al., 2018; Putra, 2021). This approach is based on the idea that students are better at understanding and applying knowledge by seeing the relevance and meaning of learning in everyday contexts or the problems they face. The contextual approach involves problem-based learning so that students are required to solve problems (Ariyani & Ganing, 2021; Octavyanti & Wulandari, 2021). Students are required to apply knowledge and skills in solving a problem. In this case, the main characteristic of the contextual approach is that it places learning activities in the real world (Buchori, 2019; Primayana et al., 2019). Lecturers will relate lessons to situations relevant to everyday life. In addition, the contextual approach invites collaboration and teamwork. Students are invited to identify problems, formulate solutions, and solve problems. This activity explains various problems in the real world that can be solved through cooperation.

Previous research findings state that appropriate learning tools can improve understanding well (Arnawa & Wirdaningsih, 2017; Mangelep, 2017). Previous research also states that a contextual approach can stimulate students to learn and solve problems related to the real world so that it can improve student learning outcomes (Hanik et al., 2018; Suryawati & Osman, 2018). The advantages of contextual approach learning tools are that they increase learning motivation so that students actively learn, help improve problem-solving abilities, improve

collaboration skills, and improve students' critical thinking abilities. Based on this, it can be concluded that contextual approach learning tools can be used in learning because they can increase students' understanding in science learning. There has been no study regarding the development of contextual approach learning tools based on local Balinese wisdom. Based on local Balinese wisdom, it is intended to introduce Balinese values, traditions, arts and local wisdom. Students are taught to appreciate and understand the richness of Balinese culture as part of their learning. Learning not only includes conventional subject matter, but also elements of Balinese culture. Based on this, the aim of this research is to analyze the need for developing contextual approach learning tools based on Balinese local wisdom.

2. METHOD

This research is survey research. The survey research began by formulating a theory based on scientific information regarding the needs of lecturers in elementary science skills development courses and factors that influence lecturers' abilities in developing contextual learning tools in elementary science skills development courses. This theory will be translated into a hypothesis to obtain research variables and their relationships through deduction and logic. The methods used to collect data are questionnaires, interviews, observation and document study. The interview method is used to collect information about learning activities in the classroom and the difficulties experienced by students while participating in learning activities. The interview method is used to interview lecturers regarding learning activities carried out in class. The observation method is used to determine the facilities and infrastructure that support learning activities. The documentation study method is used to determine the learning outcomes obtained by students who take coursesdevelop elementary science skills. The instrument used to collect data was a questionnaire sheet. The questionnaire sheet grid used is presented in Table 1.

Table 1. Questionnaire Sheet Grid

No	Indicator
1	Learning Experience in Elementary School Science Skills Subjects
2	Difficulty in Understanding the Material
3	Use of Contextual Based Learning Tools
4	Development of Contextual Learning Tools
5	Use of Local Context in Learning
6	Suggestions and Recommendations

The technique used to analyze data is qualitative descriptive analysis. Qualitative descriptive analysis techniques are techniques used to analyze conditions and situations from the data collected. Qualitative descriptive data analysis techniques are a combination of descriptive and qualitative data analysis techniques. In qualitative data analysis, data is obtained from various sources (Sugiyono, 2018). Data obtained through questionnaires, interviews, observations and document studies are analyzed to obtain information aboutthe need for developing a Contextual Approach Learning Model Based on Balinese Local Wisdom.

3. RESULT AND DISCUSSION

Result

Learning in the 21st century currently prioritizes aspects of technology and information skills so that learning activities are expected to be collaborated with technology and local wisdom. Learning activities can be combined with local Balinese wisdom and utilize technology to preserve culture and develop 21st century skills in the local context. Learning activities like this will help to maintain local Balinese wisdom and integrate learning activities with student life. In the learning process, lecturers must have consideration in facilitating effective learning. Lecturers must have a deep understanding of local wisdom which includes traditional values and traditional knowledge related to nature and natural sciences.

Apart from that, lecturers must also be able to integrate these aspects into science learning materials and convey local case studies or concrete examples that are relevant to local wisdom in Bali. This will help students to understand the relationship between natural science and Balinese culture. So integrating local wisdom in science learning within a contextual learning framework is a way to connect the world of science with the surrounding culture and environment. This can support more meaningful learning activities for students as well as strengthen and preserve the richness of Balinese culture. Based on the results of data analysis, several findings of this research are as follows.

Firstly, the results of interviews conducted with lecturers in charge of science skills development courses in the PGSD Study Program found that the approach that has been applied in science skills development courses in the PGSD Study Program is considered to be ineffective. The learning approach applied focuses more on the use of teaching modules without considering the local context and student experience. This certainly has an impact on inadequate learning outcomes, especially in mastering the concept of motivation and science skills. This is reflected in student interest which is still low, and students' ability to connect scientific concepts with the real world is still very minimal. Therefore, a more effective learning approach is needed that allows students to be fully involved in learning activities.

The second, the difficulties experienced in understanding the concept of measurement in science learning. One of the difficulties currently experienced by lecturers is that science learning material is not connected to the local context or local wisdom, for example the measuring units of alengkat, adepa and span which are included in non-standard units. If science material is not directly linked to daily life or local culture around it, it will have an impact on students who find it difficult to understand the relevance of these concepts in their lives. This certainly has an impact on their lack of motivation to learn.

The third, the results of interviews found that lecturers had an understanding of the concept of contextual learning, but the implementation of learning was still not optimal. One of the things that causes learning activities with contextual concepts to be less than optimal is that they have not been integrated or have not been included in the semester lecture plan. This is due to the lack of time allocated in designing or adapting existing lecture threats. Apart from that, the modules used in learning activities also do not include the information needed to implement a contextual approach.

The fourth, the potential of contextual approach-based learning tools in improving understanding and learning skills is very large and provides significant benefits for students. A contextual approach will have a positive impact that will improve the learning experience and prepare students to face real world challenges. Contextual-based learning will allow students to see stronger connections between learning material and everyday experiences. This will make the material taught more relevant and easy to understand. Students will certainly be more likely to be motivated when they understand that what they have learned can be applied in a real context. This will increase the level of student participation in class.

The fifth, the use of a contextual approach in learning science skills in elementary school helps students not only understand, but apply it to their lives. Students will understand concepts related to everyday life so that they can make teaching material more relevant for elementary school students. Linking science concepts to real situations will make learning activities practical.

Discussion

Overall, the development of contextual-based learning tools is very important in efforts to increase the effectiveness of science skills development learning in elementary schools. Apart from that, the development of contextual-based learning tools can also create a meaningful learning environment. A smart learning environment can increase learning motivation and prepare you to have relevant skills in real life (Suarjana et al., 2017; Warmi & Imami, 2018). The development of contextual-based learning tools can also enrich local wisdom and Balinese culture. Local culture and wisdom can also be integrated into learning activities (Budiwibowo, 2016; Darihastining et al., 2020; Daryanti et al., 2022). Student perceptions regarding difficulties in understanding learning activities lead to the need to vary learning approaches. Previous research findings also state that variations in learning activities are needed to achieve learning goals (Ariep Hidayat et al., 2020; Pujiasih, 2020). Using a contextual learning approach can reinforce material with meaningful experiences, so that students can also help understand science material more easily and relevantly.

Lecturers' efforts in developing learning tools must have the ability to collaborate with colleagues and other researchers so that they can help gather the information needed to integrate this approach into learning. Obstacles that may be faced in developing learning tools are limited resources, including time, budget, and access to technology or learning materials needed to develop contextual learning tools (Ariyanto et al., 2020; Muji, 2014). The development of effective contextual learning tools can become more possible so that students experience more meaningful and relevant learning. Integrating local wisdom allows students to experience meaningful learning. Previous research findings also reveal that meaningful learning will create an active and enjoyable learning atmosphere (Fadilah et al., 2022; Najib, 2016).

The importance of developing learning tools with a contextual approach based on local wisdom in carrying out the transformation of the education sector. This approach is an effort to create a more relevant learning experience. Previous research findings also reveal that an appropriate learning approach will create enjoyable learning activities for students (Mohiddin, 2018; Sari et al., 2019; Saryantono & Nurdiana, 2018). A contextual approach can also provide various significant benefits, especially in increasing learning understanding. Previous research also revealed that a contextual approach can make it easier to understand learning material so that it can be used in learning (Ariyani & Ganing, 2021; Octavyanti & Wulandari, 2021). This indicates that the most

important aspect of the approach is the relevance of learning to students' lives. By integrating local life and cultural context, students can see how science concepts relate to their real experiences. This will provide deeper learning motivation because students will build directly on human learning in everyday life. The integration of local wisdom in science learning will create a strong connection (Aditya et al., 2019; Miluningtias & Shofiyah, 2021).

The use of local wisdom is also a form of respect for local culture and values so that students' understanding of culture will increase. This is very important in the context of a multicultural society regarding cultural diversity. Development of contextually based learning tools. Local wisdom will help develop critical thinking and problem presentation skills. A contextual approach is able to improve the ability to think deeply about science concepts and provide sustainable solutions to environmental challenges. Moreover, learning based on local wisdom and culture can help protect the preservation of cultural heritage and knowledge. The implication of this research is that a contextual approach based on local wisdom can equip students to have practical skills in protecting their environment, culture and life. In achieving a meaningful learning experience, it is very important to develop learning tools with a contextual approach based on local wisdom.

4. CONCLUSION

The results of this research analysis are first, the approach that has been applied in the Science Skills development courses in the PGSD Study Program is considered not to be effective. Second, students have difficulty understanding the concept of measurement in science learning. Third, lecturers have an understanding of the concept of contextual learning but the implementation of learning activities is still not optimal. Fourth, the potential of contextual approach-based learning tools in improving understanding and learning skills of the material is very large and provides significant benefits for students. Fifth, the use of a contextual approach in learning science skills in elementary school helps students not only understand but apply changes to their lives. It was concluded that developing learning tools with a contextual approach based on local wisdom is very important to do. Developing learning tools with a contextual approach based on local wisdom can increase students' understanding of elementary science skills.

5. REFERENCES

Aditya, I. K. D., Sumantri, M., & Astawan, I. G. (2019). Pengaruh Model Pembelajaran Learning Cycle (5e) Berbasis Kearifan Lokal Terhadap Sikap Disiplin Belajar Dan Hasil Belajar Ipa Siswa Kelas Iv Sd Gugus V Kecamatan Sukasada. *Jurnal Pendidikan Multikultural Indonesia*, *2*(1). https://doi.org/10.23887/jpmu.v2i1.20792.

Afandi, M., Wahyuningsih, S., & Mayasari, L. I. (2021). Does Elementary School Teacher's Performance Matter? *Jurnal Cakrawala Pendidikan*, *40*(1), 242–252. https://doi.org/10.21831/cp.v40i1.35284.

Aminah, N., Dewi, I. L. K., & Santi, D. P. D. (2017). Ketrampilan Bertanya dan Self Confidence Mahasiswa Pendidikan Matematika Pada Mata Kuliah Pembelajaran Mikro. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *1*(1), 109–117. https://doi.org/10.33603/jnpm.v1i1.258.

Ariep Hidayat, Maemunah Sa'diyah, & Santi Lisnawati. (2020). Metode Pembelajaran Aktif dan Kreatif pada Madrasah Diniyah Takmiliyah di Kota Bogor. *Edukasi Islami: Jurnal Pendidikan Islam*, *9*(01), 73–74. https://doi.org/10.30868/ei.v9i01.639.

Ariyani, N. K. A., & Ganing, N. N. (2021). Media Power Point Berbasis Pendekatan Kontekstual pada Materi Siklus Air Muatan IPA Sekolah Dasar. *Jurnal Imiah Pendidikan dan Pembelajaran*, *5*(2), 263. https://doi.org/10.23887/jipp.v5i2.33684.

Ariyanto, L., Rahmawati, N. D., & Haris, A. (2020). Pengembangan Mobile Learning Game Berbasis Pendekatan Kontekstual Terhadap Pemahaman Konsep Matematis Siswa. *JIPMat*, *5*(1), 36–48. https://doi.org/10.26877/jipmat.v5i1.5478.

Arnawa, I. M., & Wirdaningsih, A. A. S. (2017). Pengembangan Perangkat Pembelajaran Matematika Dengan Pendekatan Contextual Teaching And Learning Untuk Meningkatkan Kemampuan Pemecahan Masalah Peserta Didik Kelas XI. *Jurna Nasional Pendidikan Matematika*, *1*(2). https://doi.org/10.33603/jnpm.v1i2.535.

Aryana, S., Subyantoro, & Rahayu, P. (2022). Tuntutan Kompetensi Guru Profesional Bahasa Indonesia Dalam Menghadapi Abad 21. *Semantik*, *11*(1), 71–86. https://doi.org/10.22460/semantik.v11i1.p71-86.

Asikin, M. dan R. dan A. W. K. (2017). Pengembangan Perangkat Pembelajaran Telaah Kurikulum Matematika 1 Mengintegrasikan Kreativitas dan Karakter Cerdas melalui Pembelajaran Kooperatif Berbasis Asesmen Proyek. *Kreano: Jurnal Matematika Kreatif-Inovatif*, *8*(1), 15–26. https://doi.org/10.15294/kreano.v8i1.4983.

Asmara, S. D., & Herwin, H. (2023). Profil Numerasi Calon Guru Sekolah Dasar. *Aksioma: Jurnal Program Studi Pendidikan Matematika*, *12*(2). https://doi.org/10.24127/ajpm.v12i2.7274.

Bautista, A., & Oretga-Ruiz, R. (2017). Teacher Professional Development: International Perspectives and Approaches. *Psychology, Society, & Education*, *7*(3). https://doi.org/10.25115/psye.v7i3.1020.

Buchori, A. (2019). Pengembangan multimedia interaktif dengan pendekatan kontekstual untuk meningkatkan pemecahan masalah kemampuan matematika. *Jurnal Inovasi Teknologi Pendidikan*, *6*(1), 104–115. https://doi.org/10.21831/jitp.v6i1.20094.

Budiwibowo, S. (2016). Membangun Pendidikan Karakter Generasi Muda Melalui Budaya Kearifan Lokal Di Era Global. *Premiere Educandum : Jurnal Pendidikan Dasar dan Pembelajaran*, *3*(01), 39–49. https://doi.org/10.25273/pe.v3i01.57.

Budiyono, B., Wiryanto, W., Suprayitno, S., & Primaniarta, G. (2023). Persepsi Mahasiswa Pendidikan Dasar terhadap Gamifikasi dalam Pendidikan STEAM. *Jurnal Obsesi*, *7*(3). https://doi.org/10.31004/obsesi.v7i3.4909.

Cahyani, N. L. aParamita, & Jayanta, I. N. L. (2021). Digital Literacy-Based Learning Video on the Topic of Natural Resources and Technology for Grade IV Elementary School. *Jurnal Ilmiah Sekolah Dasar*, *5*(3), 538. https://doi.org/10.23887/jisd.v5i3.37918.

Cik'ani. (2021). Meningkatkan Aktivitas Belajar Melalui Penerapan Model Problem Based Learning Dengan Berorientasi Pembelajaran High Order Thinking Skills Dan Keterampilan Abad 21 Siswa SMP. *JIRA: Jurnal Inovasi dan Riset Akademik*, *2*(5), 652–664. https://doi.org/10.47387/jira.v2i5.129.

Darihastining, S., Aini, S. N., Maisaroh, S., & Mayasari, D. (2020). Penggunaan Media Audio Visual Berbasis Kearifan Budaya Lokal pada Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *5*(2), 1594–1602. https://doi.org/10.31004/obsesi.v5i2.923.

Daryanti, E. W., Laila, A., & Saidah, K. (2022). Pengembangan Media Karikatur Berbasis Kearifan Lokal Kediri bagi Siswa Sekolah Dasar. *Efektor*, *9*(1), 11–22. https://doi.org/10.29407/e.v9i1.16433.

Fadhilah, Y., Mini, R., Salim, A., & Safitri, S. (2022). Teacher Efficacy and Teacher Social Perception in Creative Teaching for Elementary School Teachers. *Jurnal Ilmiah sekolah dasar*, *6*(2), 212–219. https://doi.org/10.23887/jisd.v6i2.44760.

Fadilah, E., Irianto, A., & Rusminati, S. H. (2022). Penggunaan Media Monopoly Education pada Pembelajaran Tematik di Sekolah Dasar. *Edukatif : Jurnal Ilmu Pendidikan*, *4*(4), 5827–5833. https://doi.org/10.31004/edukatif.v4i4.3319.

Farida, U., Agustini, F., & Wakhyudin, H. (2017). Efektivitas Model Pembelajaran Scramble Berbasis Kontekstual Terhadap Kemampuan Berpikir Kritis Ips Siswa Kelas Iii Sd Negeri Kebondalem 01 Batang. *Jurnal Ilmiah Sekolah Dasar*, *1*(3), 192. https://doi.org/10.23887/jisd.v1i3.11840.

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.

Garnjost, P., & Brown, S. M. (2018). Undergraduate business students' perceptions of learning outcomes in problem based and faculty centered courses. *International Journal of Management Education*, *16*(1), 121–130. https://doi.org/10.1016/j.ijme.2017.12.004.

Gitriani, R., Aisah, S., Hendriana, H., & Herdiman, I. (2018). Pengembangan Lembar Kerja Siswa Berbasis Pendekatan Kontekstual pada Materi Lingkaran Untuk Siswa SMP. *Jurnal Review Pembelajaran Matematika*, *3*(1), 40–48. https://doi.org/10.15642/jrpm.2018.3.1.40-48.

Hanik, N. R., Harsono, S., & Nugroho, A. A. (2018). Penerapan Pendekatan Contextual Teaching and Learning dengan Metode Observasi untuk Meningkatkan Hasil Belajar pada Matakuliah Ekologi Dasar. *Jurnal Pendidikan Matematika dan IPA*, *9*(2), 127–138. https://doi.org/10.26418/jpmipa.v9i2.26772.

Hapsari, T. R., Rambita, V. M. M., & Tindangen, M. (2018). Analisis Permasalahan Guru Terkait Perangkat Pembelajaran Berbasis Model Examples Non Examples dan Permasalahan Siswa Terkait Hasil Belajar Biologi di SMA. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *3*(2). https://doi.org/10.17977/jptpp.v3i2.10529.

Hediansah, D., & Surjono, H. D. (2019). Building Motivation and Improving Learning Outcomes with Android-based physics books: Education 4.0. *Anatolian Journal of Education*, *4*(2), 1–10. https://doi.org/10.29333/aje.2019.421a.

Hsu, F.-H., Lin, I.-H., Yeh, H.-C., & Chen, N.-S. (2022). Effect of Socratic Reflection Prompts via video-based learning system on elementary school students' critical thinking skills. *Computers & Education*, *183*. https://doi.org/10.1016/j.compedu.2022.104497.

Jafar, D. S. A., Saud, M. S., Hamid, M. Z. A., Suhairom, N., Hisham, M. H. M., & Zaid, Y. H. (2020). TVET teacher professional competency framework in industry 4.0 era. *Universal Journal of Educational Research*, *8*(5), 1969–1979. https://doi.org/10.13189/ujer.2020.080534.

Kusumayuni, P. N., & Agung, A. A. G. (2021). E-Book with A Scientific Approach on Natural Science Lesson For Fifth Grade Students of Elementary School. *Jurnal Ilmiah Sekolah Dasar*, *5*(1). https://doi.org/10.23887/jisd.v5i1.32048.

Mangelep, N. O. (2017). Pengembangan Perangkat Pembelajaran Matematika Pada Pokok Bahasan Lingkaran Menggunakan Pendekatan Pmri Dan Aplikasi Geogebra. *Mosharafa: Jurnal Pendidikan Matematika*, *6*(2), 193–200. https://doi.org/10.31980/mosharafa.v6i2.306.

Mardhiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). Pentingnya Keterampilan Belajar di Abad 21 sebagai Tuntutan dalam Pengembangan Sumber Daya Manusia. *Lectura: Jurnal Pendidikan*, *12*(1), 29–40. https://doi.org/10.31849/lectura.v12i1.5813.

Marjuni, M. (2022). The Transformation Of Islamic Education And The Global Future Challenges Of Islamic Higher Education In Indonesia. *Lentera Pendidikan: Jurnal Ilmu Tarbiyah dan Keguruan*, *25*(2). https://doi.org/10.24252/lp.2022v25n2i5.

Metcalfe, J., & Moulin-Stozek, D. (2020). Religious education teachers' perspectives on character education. *British Journal of Religious Education*. https://doi.org/10.1080/01416200.2020.1713049.

Miluningtias, S., & Shofiyah, N. (2021). Penerapan Game Edukasi Terintegrasi Kearifan Lokal Berbasis Android Terhadap Hasil Belajar Siswa Dalam Pembelajaran Daring. *Jurnal IPA Terpadu*, *4*(2), 74–84. https://doi.org/10.35580/ipaterpadu.v4i2.19065.

Mohiddin, D. P. (2018). Pengaruh Pendekatan Metakognisi Terhadap Kemampuan Pemecahan Masalah Matematika Mahasiswa Mesin Dan Peralatan Pertanian Politeknik Gorontalo. *Jurnal Teknologi Informasi Indonesia (JTII)*, *3*(1), 12. https://doi.org/10.30869/jtii.v3i1.181.

Muji. (2014). Pengembangan Perangkat Pembelajaran Keterampilan Membaca Model Pembelajaran Kontekstual. *Jurnal Pancaran*, *3*(4).

Najib, D. A. dan E. (2016). Pengaruh Penerapan Pembelajaran Bermakna (Meaningfull Learning) Pada Pembelajaran Tematik IPS Terpadu Terhadap Hasil Belajar Siswa Kelas III di MI Ahliyah IV Palembang. *Jurnal PGMI*, *2*(1), 19–28.

Nisaa, Y. T. A., & Heynoek, F. P. (2021). Pengembangan perangkat pembelajaran berbasis problem based learning materi gerak lokomotor di sekolah dasar Kabupaten Blitar. *Gelanggang Pendidikan Jasmani Indonesia*, *5*(1), 98–107. https://doi.org/10.17977/um040v5i1p98-107.

Nurjanah, E., & Sofiawati, E. T. (2019). Implementation of Education Quality Improvement in Primary Schools Judging From Teacher Competency Test in Sukabumi Regency. *International Journal for Educational and Vocational Studies*, *1*(7), 773–776. https://doi.org/10.29103/ijevs.v1i7.1785.

Octavyanti, N. P. L., & Wulandari, I. G. A. A. (2021). Pengembangan Video Pembelajaran Berbasis Pendekatan Kontekstual Pada Mata Pelajaran Matematika Kelas IV SD. *Jurnal Edutech Undiksha*, *9*(1), 66–74. https://doi.org/10.23887/jeu.v9i1.32223.

Prayogi, R. D., & Estetika, R. (2019). Kecakapan Abad 21: Kompetensi Digital Pendidik Masa Depan. *Jurnal Manajemen Pendidikan*, *14*(2), 144–151. https://doi.org/10.23917/jmp.v14i2.9486.

Priatna, T., Maylawati, D. S. adillah, Sugilar, H., & Ramdhani, M. A. (2020). Key success factors of e-learning implementation in higher education. *International Journal of Emerging Technologies in Learning*, *15*(17), 101–114. https://doi.org/10.3991/ijet.v15i17.14293.

Primayana, K. H., Lasmawan, W. I., & Adnyana, P. B. (2019). Pengaruh Model Pembelajaran Kontekstual Berbasis Lingkungan Terhadap Hasil Belajar IPA Ditinjau Dari Minat Outdoor Pada Siswa Kelas IV. *Jurnal Pendidikan Dan Pembelajaran IPA Indonesia*, *9*(2), 72–79.

Pujiasih, E. (2020). Membangun Generasi Emas Dengan Variasi Pembelajaran Online Di Masa Pandemi Covid-19. *Ideguru: Jurnal Karya Ilmiah Guru*, *5*(1), 42–48. https://doi.org/10.51169/ideguru.v5i1.136.

Putra, I. M. J. (2021). Pengembangan Multimedia Interaktif Berorientasi Pendekatan Kontekstual Materi Sumber Energi Pada Pembelajaran IPA Kelas IV SD. *Jurnal Edutech Undiksha*, *9*(1), 57–65. https://doi.org/10.23887/jeu.v9i1.32356.

Putri, A. D. K., & Imaniyati, N. (2017). Pengembangan Profesi Guru Dalam Meningkatkan Kinerja Guru. *Jurnal Pendidikan Manajemen Perkantoran*, *2*(2), 93–101. https://doi.org/10.17509/jpm.v2i2.8109.

Ramkissoon, P., Belle, L. J., & Bhurosy, T. (2020). Perceptions and experiences of students on the use of interactive online learning technologies in Mauritius. *International Journal of Evaluation and Research in Education*. https://doi.org/10.11591/ijere.v9i4.20692.

Sari, N. R., Anggo, M., & Kodirun, K. (2019). Desain Pembelajaran Bilangan Melalui Permainan Sut-Sut Menggunakan Pendekatan PMRI Di Kelas III Sekolah Dasar. *Jurnal Pendidikan Matematika*, *9*(1). https://doi.org/10.36709/jpm.v9i1.5758.

Saryantono, B., & Nurdiana, A. (2018). Pelatihan pendekatan saintifik dalam pembelajaran matematika bagi guru SMA Adiguna Bandar Lampung. *Adiguna: Jurnal Pengabdian dan Pemberdayaan Masyarakat*, *3*(1), 25–30. https://doi.org/10.1093/oseo/instance.00191269.

Serevina, V., Sunaryo, R., Astra, I. M., & Sari, I. J. (2018). Development of E-Module Based on Problem Based Learning (PBL) on Heat and Temperature to Improve Student's Science Process Skill. *TOJET: The Turkish Online Journal of Educational Technology –*, *17*(3), 26–36. https://doi.org/10.35445/alishlah.v12i2.263.

Simamora, Rustam E., Saragih, S., & Hasratuddin, H. (2019). Improving Students' Mathematical Problem Solving Ability and Self-Efficacy through Guided Discovery Learning in Local Culture Context. *International Electronic Journal of Mathematics Education*, *14*(1), 61–72. https://doi.org/10.12973/iejme/3966.

Simamora, Rustam Effendy, & Kamara, J. G. (2023). Memahami Profil Pendidik Guru Matematika yang menginspirasi Berdasarkan Pengalaman Belajar Calon Guru Matematika. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *7*(1). https://doi.org/10.33603/jnpm.v7i1.7689.

Suarjana, I. M., Nanci Riastini, N. P., & Yudha Pustika, I. G. N. (2017). Penerapan Pendekatan Kontekstual Berbantuan Media Konkret Untuk Meningkatkan Aktivitas Dan Hasil Belajar. *International Journal of Elementary Education*, *1*(2), 103. https://doi.org/10.23887/ijee.v1i2.11601.

Sugiyono. (2018). Metode penelitian kuatintatif , kualitatif dan R & D. In *Bandung: Alfabeta*.

Sulaksana, M. D., Yudiana, K., & Simamora, A. H. (2021). Learning Circumference and Area of Building with Video Media for Fourth Class Students of Elementary School. *Jurnal Ilmiah Sekolah Dasar*, *5*(4), 697. https://doi.org/10.23887/jisd.v5i4.40129.

Suryawati, E., & Osman, K. (2018). Contextual learning: Innovative approach towards the development of students' scientific attitude and natural science performance. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(1), 61–76. https://doi.org/10.12973/ejmste/79329.

Syauqi, K., Munadi, S., & Triyono, M. B. (2020). Students' perceptions toward vocational education on online learning during the COVID-19 pandemic. *International Journal of Evaluation and Research in Education (IJERE)*, *9*(4), 881. https://doi.org/10.11591/ijere.v9i4.20766.

Syawaludin, A., Gunarhadi, & Rintayati, P. (2019). Enhancing elementary school students' abstract reasoning in science learning through augmented reality-based interactive multimedia. *Jurnal Pendidikan IPA Indonesia*, *8*(2), 288–297. https://doi.org/10.15294/jpii.v8i2.19249.

Syawaludin, Ahmad, Gunarhadi, & Rintayati, P. (2019). Development of augmented reality-based interactive multimedia to improve critical thinking skills in science learning. *International Journal of Instruction*, *12*(4), 331–344. https://doi.org/10.29333/iji.2019.12421a.

Warmi, A., & Imami, A. I. (2018). Penerapan Pendekatan Kontekstual Terhadap Penguasaan Konsep Dasar Materi Volume Benda Putar. *JPPM (Jurnal Penelitian dan Pembelajaran Matematika)*, *11*(1). https://doi.org/10.30870/jppm.v11i1.3005.

Wengrowicz, N., Swart, W., Paul, R., Macleod, K., Dori, D., & Dori, Y. J. (2018). Students' Collaborative Learning Attitudes and Their Satisfaction with Online Collaborative Case-Based Courses. *American Journal of Distance Education*, *32*(4), 283–300. https://doi.org/10.1080/08923647.2018.1511509.

Widodo, A., Indraswati, D., & Sobri, M. (2019). Analisis Nilai-Nilai Kecakapan Abad 21 dalam Buku Siswa SD/MI Kelas V Sub Tema 1 Manusia dan Lingkungan. *Tarbiyah : Jurnal Ilmiah Kependidikan*, *8*(2). https://doi.org/10.18592/tarbiyah.v8i2.3231.