3D QR Code-Based Indonesian Cultural lind Map to Critical Thinking Ability

I Made Sukiana[1*], I Made Suarjana[2], I Made Tegeh[3] (iD)

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

A B S T R A K

Pembelajaran yang masih menggunakan metode teacher centered membuat rendahnya kemampuan berpikir kritis siswa. Penelitian ini bertujuan untuk mengembangkan media pembelajaran 3D peta buta budaya Indonesia berbasis qr code untuk meningkatkan kemampuan berpikir kritis siswa pada muatan IPAS kelas IV SD yang valid, praktis dan efektif. Jenis penelitian yaitu penelitian pengembangan model ADDIE. Objek penelitian ini adalah validitas, kepraktisan, dan efektivitas media pembelajaran 3D peta buta budaya Indonesia berbasis qr code. Subjek penelitian ini adalah ahli media, ahli ahli materi, praktisi dan siswa. Metode dari pengumpulan data menggunakan non tes dengan instrument kuisioner dan tes uraian. Teknik analisis data menggunakan statistik kualitatif dan kuantitatif. Hasil penelitian memperoleh validitas menurut ahli materi sebesar 4,66 dan ahli media sebesar 4,54 yang termasuk ke dalam validitas kategori sangat baik. Berdasarkan uji kepraktisan oler praktisi memperoleh persentase 96% dan respon siswa sebesar 92% dengan kategori sangat baik. Berdasarkan uji efektivitas dengan analisis Paired Sample T-Test sampel berkolerasi diperoleh nilai signifikansi pada kolom Sig.(2-tailed) sebesar 0,000 yang berarti bahwa terdapat perbedaan yang signifikan kemampuan berpikir kritis siswa sebelum dan sesudah penggunaan media. Disimpulkan bahwa media pembelajaran yang telah dikembangkan, dinyatakan valid, praktis, dan efektif dalam meningkatkan kemampuan berpikir kritis, sehingga layak digunakan secara berkelanjutan pada kegiatan pembelajaran.

A B S T R A C T

Learning that still uses the teacher centered method results in students' critical thinking abilities being low. This research aims to develop a 3D learning media for a QR code-based map of Indonesian cultural blindness to improve students' critical thinking skills in class IV elementary school science content that is valid, practical and effective. The type of research is ADDIE model development research. The object of this research is the validity, practicality and effectiveness of the QR code-based 3D learning media for Indonesian cultural blind maps. The subjects of this research are media experts, material experts, practitioners and students. The data collection method uses non-tests with questionnaire instruments and description tests. Data analysis techniques use qualitative and quantitative statistics. The research results obtained validity according to material experts of 4.66 and media experts of 4.54, which is included in the very good category of validity. Based on the practicality test, practitioners obtained a percentage of 96% and student responses were 92% in the very good category. Based on the effectiveness test using Paired Sample T-Test analysis of correlated samples, a significance value was obtained in the Sig column (2-tailed) of 0.000, which means that there is a significant difference in students' critical thinking abilities before and after using the media. It was concluded that the learning media that had been developed were declared valid, practical and effective in improving critical thinking skills, so they were suitable for continuous use in learning activities.

1. INTRODUCTION

The goal of learning social studies is that students have the basic ability to think logically, critically, have curiosity, inquiry, solve problems, and have skills in social life (Nurohmah et al., 2023; Wulandari et al., 2023; Armidi, 2020). In the learning process, critical thinking skills are very important to be mastered by elementary school students. Critical thinking skills are the ability to apply rational, high-level thinking

*Corresponding author
E-mail addresses: sukiana@undiksha.ac.id (I Made Sukiana)

activities that include analyzing, synthesizing, recognizing problems, and solving them (Anggraeni et al., 2022; Widiana, 2022; Zain et al., 2022). The indicators of thinking ability are interpretation, analysis, evaluation, and inference (Rosmalinda et al., 2021; Rani et al., 2015)

Critical thinking skills are essential for students (Mahmudah, 2020; Pujiani et al., 2019).Critical thinking skills are essential to face global challenges and various life problems that cannot be controlled (Yuliati & Susianna, 2023; Putra et al., 2021). This makes critical thinking skills very important to be considered and very important to be instilled in students since elementary school. In elementary school learning, critical thinking skills can be achieved through a learning process that involves the active role of students.

Students with good critical thinking skills are able to identify assumptions, question the information provided, evaluate arguments, and make informed decisions based on good, careful thinking (Qoriah, et al., 2023; Anggraeni et al., 2022; Komalasari et al., 2020). In social studies learning, critical thinking skills are very necessary and relevant to the material being studied. This is in line with the results of the study which stated that there is a significant positive relationship between critical thinking skills and social studies learning outcomes with a moderate level category.

However, in reality, learning Social Sciences (IPS) is often considered an uncomfortable learning experience. This is because the IPS learning process is trapped in the memorization process without being faced with problems to think and act more. This makes learning only touch on low-level cognitive development and has not developed critical skills. Facts during field observations show that learning activities at SD Negeri 1 Penarukan are dominated by teachers with low student involvement or activeness in learning. Teachers tend to still use conventional learning and deliver learning materials without innovative teaching aids and media, so that the learning carried out is still teacher-centered. This causes students to be unable to find the concepts being learned and affects students' ability to think critically.

The results of an interview with one of the homeroom teachers of grade IV of SD Negeri 1 Penarukan regarding the efforts made to develop students' critical thinking skills in the subject of IPS content, namely, the teacher optimizes learning by occasionally applying innovative learning models such as the PBL (Problem Based Learning) model. In addition, the teacher also occasionally invites students to study outside the classroom to find IPS concepts in the school environment. However, the implementation of efforts carried out by the teacher has not shown a significant increase in students' critical thinking skills. This is supported by the results of the initial test of the critical thinking skills of grade IV students of SD Negeri 1 Penarukan in IPS content with an average score of 48.53 which indicates that students' critical thinking skills are still low.

The homeroom teacher of grade IV of SD Gugus 8, Buleleng District, informed that teachers are more dominant in conventional learning which only uses teacher books and student books as learning resources. This can be proven by the results of distributing questionnaires to 5 grade IV teachers of SD Gugus 8, Buleleng District. As many as 80% of teachers stated that they always use teacher books during learning, 20% of teachers stated that they often use teacher books during learning, and as many as 100% of teachers stated that they always use student books as learning resources for students.

Although the material provided is contained in the textbook, the teacher is not innovative in giving problems according to the material to students. This cannot stimulate critical thinking skills. One class teacher stated that he sometimes uses learning media in class and one teacher stated that he never uses learning media in class. This shows that the application of learning media in SDN 1 Penarukan is still very rarely done by teachers, especially for social studies content to support learning that can develop students' critical thinking skills.

Based on this, a teacher's innovation is needed in compiling learning components that are able to bridge the characteristics of students who are at the concrete operational stage and are able to develop students' critical thinking skills. One thing that can be considered in the learning process by a teacher is the component of learning media that is able to transfer broad and abstract concepts of social studies material using an approach that is able to improve students' critical thinking skills. This is in line with previous research which states that the implementation of learning media has an influence on students' critical thinking skills in social studies learning (Syifa & Supriatna, 2022; Fatahullah, 2016). The use of appropriate learning media that suits the characteristics of elementary school children can also encourage increased student learning motivation (Jannah & Atmojo, 2022; Hae et al., 2021; Moto, 2019).

One of the media that can be developed is the 3D media of the Indonesian cultural map combined with Qr code technology. A blind map is a map that does not have complete information as a marker or identifier. This blind map is developed into a learning media that can provide Indonesian cultural education by delivering it using Qr code technology and integrated with Indonesian cultural issues. This causes each student to be motivated to think critically in facing various problems during the learning process (Latif, 2021; Karisma et al., 2020).

The development of this media is very relevant to do because there have been several related studies that show maximum results. Previous research has succeeded in developing Indonesian cultural map media in elementary school social studies subjects (Rani et al., 2015; Sari, 2015). The development of IPS learning based on Barcode Scanning was also carried out and obtained very good criteria (Firdaus et al., 2022; Nafisah & Ghofur, 2020). Based on several studies, it can be seen that learning media has proven to be very effective for use in the learning process, especially in social studies subjects.

This research aims toDeveloping 3D learning media for Indonesian cultural blind maps based on QR codes to improve students' critical thinking skills in the science content of grade IV elementary school. The novelty in this study is the use of QR Code. Because there has been no study that integrates QR Code technology into the Indonesian cultural blind map media. The material developed in the 3D Indonesian Cultural Blind Map learning media based on QR Code is the material on the diversity of Indonesian culture in the science subject for grade IV elementary school students. The development of this media is carried out in accordance with the characteristics of students at SD Negeri 1 Penarukan. This media is expected to improve students' critical thinking skills and create a deeper experience in technology integration, thus providing a meaningful experience for students

2. METHOD

This type of research is development research with the ADDIE model (analysis, design, development, implementation, evaluation). This model consists of five steps, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation (Wijayanti et al., 2023; Cahyadi, 2019). The research procedures carried out in this study were the first analysis stage which consisted of curriculum analysis, needs analysis, and student characteristics analysis.

The second is the design stage which is the stage of designing the product concept that will be developed according to the results of the previous analysis. At this stage, the preparation of media feasibility instruments, student response instruments, teacher responses and media effectiveness is also carried out. The third stage is development with the activity of realizing the product design into reality and ready to be implemented. The fourth stage is implementation which is carried out when the media that has been designed is declared feasible and practical to use in the learning process. The last stage is evaluation, carried out by reflecting on the development activities carried out.

The subjects in this study were two material experts, two media experts, two teacher practitioners of grade IV elementary school, and grade IV elementary school students. This learning media was tested by experts to determine the feasibility of the media that had been developed. Meanwhile, the practitioner test was conducted to determine the teacher's response to the 3D Indonesian Cultural Blind Map media that was developed. Student response drawing was also conducted on the 3D Indonesian Cultural Blind Map media that was developed. The trial was conducted using a one-group pretest-posttest design to see the effects of the treatment.

The data collection method in this study used questionnaire and test methods. The data collection instruments in this study were rating scales and essay tests. The rating scale used was in the form of scores, then interpreted into points in a series of category ranges. The answer scale was given a score so that quantitative analysis could be carried out such as (a) strongly agree (SS) given a score of 5; (b) agree (S) given a score of 4; (c) undecided (RG) given a score of 3; (d) disagree (TS) given a score of 2; and (e) strongly disagree. Meanwhile, the essay test was used as an instrument in testing the effectiveness of the 3D learning media for the Indonesian cultural blind map based on Qr code. The outline of this research instrument can be seen in Table 1, Table 2, Table 3, Table 4, and Table 5.

Table 1. The Material Expert Validation Sheet Grid

No.	Indicator	Sub Indicators
1.	Curriculum Suitability	Compliance material Which servedwith CP
		Compliancelearning materials with objectives
		Compliancelearning materials with Learning Objective Achievement Indicators
2.	Material Eligibility	Presentation of IPAS material
		Suitability of material to student characteristics
3.	Language Assessment	Use of sentence structure
		Use of language
4.	Evaluation	Compliancequestions and instructions for completing the questions

Source :Suarthama (2016) with modification

Tabel 2. Media Expert Validation Sheet Grid

No.	Indicator	Sub Indicators
1.	Media view	The attractiveness and completeness of the media
		The attractiveness of the image
		Map design and component layout
2.	Media eligibility	Compliancemedia with Learning Objectives (TP)
		Suitability of media to student characteristics
		Accuracy of material
		Compliancemedia with objectivedevelopment
. 3.	Ease of Use	Use of media
		Media resilience

Source :Suarthama (2016)with modification

Table 3. The Practitioner (Teacher) Response Sheet Grid

No.	Indicator	Sub Indicators
1.	Media Presentation	Compliancematerials with learning design
		Clarity, ease and completeness of the material
		Ease of media delivery
		Suitability of language use
2.	Media View	Suitability of graphic design selection
		Complianceshape selection Andsize
		Media attraction
		Media resilience
3.	Evaluation Questions	Adequacy and relevance of questions to the material

Table 4. The Student Response Sheet Grid

No.	Indicator	Sub Indicators
1.	Material	3D media map of Indonesian cultural blindness helps understand cultural diversity material
		3D media map of Indonesian cultural blindness increases activity in class
		Language of delivery
2.	Use of Media	Clarity of writing
		Student interest in using Media
		Clarity and attractiveness of the image
		Ease of use
		Media resilience
		Suitability of evaluation questions

Table 5. The Critical Thinking Ability Essay Test Instrument Grid

No	Thinking Ability Indicator Critical	IndicatorQuestion	Cognitive Domain	Question Number
1.	Interpretation	1.1. Analyzing attitudes towards respecting diversity culture in Indonesia	C4	8
		1.2. Diagnosing the causes of diversity culture in Indonesia	C4	3
2.	Analysis	2.1 Analyze the causes of cultural diversity problems in Indonesia in everyday life based on story texts	C4	4
		2.2 Collecting information on cultural diversity issues in everyday life	C6	5,6
3.	Evaluation	3.1 Giving reasons for efforts to preserve Indonesia's cultural diversity	C5	10
		3.2 Clarifying efforts to preserve diversity culture in Indonesia based on story text	C5	9
4.	Inference	4.1 Summarizing the forms of cultural diversity in Indonesia	C5	1.2

No	Thinking Ability Indicator Critical		IndicatorQuestion	Cognitive Domain	Question Number
		4.2	Designing solutions to problems of Indonesian cultural diversity based on story texts	C6	7

Source : Ziarati et al., (2022)with modification

The collected data were then analyzed. The data analysis method used in this study is qualitative descriptive statistical analysis. In addition, quantitative descriptive statistical analysis was also applied. This study also uses inferential statistical analysis. One of the inferential statistical analysis techniques used is the t-test. This method and analysis technique were chosen to obtain accurate results. All data are processed carefully to ensure the validity of the study

3. RESULT AND DISCUSSION

Result

The media is developed through several stages according to the ADDIE model. The first stage is the analysis stage which consists of analysis of needs, curriculum and student characteristics.Based on the findings of the needs analysis stage, it can be identified that: (1) teachers and students need innovative and interactive learning media, (2) the media developed is expected to be in accordance with student characteristics, and (3) the development of the 3D Indonesian Cultural Blind Map media based on QR Code is adjusted to the critical thinking indicators of elementary school students. Analysis of student characteristics is carried out by analyzing their learning capacity such as knowledge, attitudes, and skills in using the 3D Indonesian Cultural Blind Map media based on QR Code later, this is done so that this media has a clear direction and purpose.

This study only analyzes the knowledge and supporting tools owned by students in using the 3D media of the Indonesian Cultural Blind Map Based on QR Code. Based on the results of student characteristics, it was found that students like innovative learning that can stimulate students to learn. The curriculum analysis was carried out with the aim of determining learning outcomes (CP), learning objectives, learning objective flows, and social science materials in grade IV of elementary school. The material developed in the 3D media of the Indonesian Cultural Blind Map Based on QR Code is in chapter 6 of Indonesiaku Kaya Budaya with the material on the diversity of Indonesian culture.

The next stage of design consists of designing a map board of Indonesian cultural blindness, a media usage guidebook, learning materials on cultural diversity in each province, QR codes, and provincial business cards. At the development stage, an assessment is carried out with the aim of conducting an evaluation, so as to produce a valid research product or one that is suitable for use in research. Furthermore, a test of the effectiveness of the media on students' critical thinking skills is carried out at the implementation stage. The implementation of the media was carried out at SD N 1 Penarukan, Buleleng District, Buleleng Regency, Bali. The test subjects of this study were all students of class IV B of SD N 1 Penarukan and the test objects of this study were students' critical thinking skills in the science content.

The characteristics of the media produced from this development research are 3D blind maps of Indonesian Culture based on QR Code made from wooden battens and plywood measuring 120 cm x 60 cm. The board is made in a rectangular shape with a design resembling a suitcase that can be folded. The making of embossed maps uses used newspapers that are first made into pulp, then mixed with wood glue as an adhesive. The material contained in it is social studies material on Indonesian culture.

The material was created using the Canva application withpresentation size 50 cm x 28 cm. The design is made as attractive as possible to attract students' interest in seeking information. The material is presented in the form of facts containing cultural diversity in each province including crafts, traditional traditions, dances, traditional houses, traditional weapons, and food. The material is equipped with pictures as an explanation. At the end of the material, problems are presented that raise cultural diversity in each province as material for group discussion.

QR Code created using the help of the Me QR Code Generator web by uploading the components of the material and problems of each province into a barcode form. The barcode is printed, then attached to the Indonesian cultural blind map board with a barcode size of 2 cm x 2 cm. There is also a media usage guidebook created with the help of the canva application. The guidebook is made with A4 paper size (21 cm x 29.7 cm). The contents of the media usage guidebook consist of a cover, foreword, table of contents, media development orientation, learning outcomes, learning objectives, media components, media usage steps, LKPD attachments, and the final cover.

The developed product was then tested for validity, practicality, and media effectiveness on students' critical thinking skills. The results of the validity test according to material experts obtained an average score of 4.66 with a very good category. Validity according to learning media experts obtained an average score of 4.54 with a very good category. The media practicality tester from practitioner responses obtained an average percentage of results of 96% with a very good qualification. The media practicality test from student responses obtained an average percentage of results of 92% with a very good qualification. The results of the media effectiveness test consisting of normality, homogeneity, and hypothesis testing can be presented in Table 6, Table 7, and Table 8.

Table 6. The Results of Normality Test of Media Effectiveness Data Distribution

		Tests of Normality					
	Group	Kolmogorov-Smirnova			Shapiro Wilk		
		Statistics	Df	Sig.	Statistics	Df	Sig.
Ability Critical thinking	Pre-Test	0.110	28	0.200	0.979	28	0.814
	Post-Test	0.214	28	0.002	0.931	28	0.067

Table 7. The Results of the Homogeneity of Variance Test

Test of Homogeneity of Variance					
		Levene Statistics	df1	df2	Sig.
AbilityCritical thinking	Based on Mean	1.916	1	54	0.172
	Based on Median	2.199	1	54	0.144
	Based on Median and with adjusted df	2.199	1	51.328	0.144
	Based on trimmed mean	1.970	1	54	0.166

Table 8. T-test results

		Paired Samples Test							
		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pre Test - Post Test	-20.92857	11.98125	2.26424	-25.57441	-16.28273	-9.243	27	0.000

Discussion

This development study creates a learning media product, namely the 3D learning media of the Indonesian Cultural Blind Map Based on QR Code which has gone through a validation process, practicality test and effectiveness test. The test results show that the developed media is proven to be valid, practical, and effective for use in learning to improve students' critical thinking skills. The results of the media validity are determined according to the assessment carried out by the judges. Based on the results of expert assessments and trials on practitioners/teachers and students, it was found that the 3D media of the Indonesian Cultural Blind Map based on QR Code is valid.

In terms of learning media, the 3D media of the QR Code-based Map of the Indonesian Culturally Ignorant has very good qualifications, so it is worthy of being applied to learning activities. In terms of learning materials, the 3D media of the QR Code-based Map of the Indonesian Culturally Ignorant has very good qualifications, so it is worthy of being applied to learning activities. In terms of the practicality of practitioner/teacher responses and the practicality of student responses, the 3D media of the QR Code-based Map of the Indonesian Culturally Ignorant has very good qualifications, so it is worthy of being applied in the learning process.

This 3D learning media of Indonesian cultural map based on QR Code has an influence on students' critical thinking skills. The results of this study are in line with previous studies which state that students' critical thinking skills are a determining factor in the effectiveness of the media applied in the learning process (Alfaries & Nadiah, 2023; Wulandari et al., 2023). Critical thinking is very necessary for elementary school students. This is in line with previous research which states that critical thinking skills are very important for elementary school students (Susanto, 2021; Nur'Azizah et al., 2016). To find out the

improvement of students' critical thinking skills, the results of the students' pre-tests are used as a reference for comparison in finding the effectiveness of the media.

The results of the pretest of critical thinking skills of grade IV B students of SD Negeri 1 Penarukan are still relatively low. After being given learning treatment by implementing the 3D learning media of the QR Code-based Indonesian Cultural Ignorance Map, there was an increase in critical thinking skills as measured by administering a posttest. Therefore, it can be interpreted that the QR Code-based Indonesian Cultural Ignorance Map 3D learning media is effectively used in learning activities to improve the critical thinking skills of grade IV B students of SD Negeri 1 Penarukan. Therefore, the QR Code-based Indonesian Cultural Ignorance Map 3D learning media is effectively used in learning activities to improve the critical thinking skills of grade IV B students of SD Negeri 1 Penarukan.

Learning media is considered quality if it meets three criteria, namely valid, practical, and effective. This is in line with previous research which states that learning media is said to be quality if the media meets three criteria, namely valid, practical, and effective (Maulidta & Sukartiningsih, 2018; Tanjung & Nababan, 2018).Based on the presentation of the results of the validity, practicality and effectiveness of the media that was developed, it is known that the 3D learning media of the Indonesian Cultural Blind Map Based on QR Code is declared valid, practical and effective to be applied as a learning media, so that the media that was developed has met the criteria for quality learning media.

The media created has advantages and disadvantages. The advantage is that the media is developed in a concrete form, so it is easier for students to understand and attracts attention with an attractive appearance. This is in line with the results of previous studies which state that concrete media will help improve students' understanding of the material and increase students' learning motivation (Arsini & Kristiantari, 2022; Apriansyah, 2020).This media can be used in class together and has extensive material stored through barcodes available in each province. This media is also made to resemble a suitcase so that with a fairly large map media size it can be folded and easily carried. However, the material on this media can only be accessed with electronic assistance in the form of a cellphone and the internet.

This study has implications for sharpening students' critical thinking skills and can be used as a reference for learning activities that can facilitate students' critical thinking skills. The 3D Indonesian Cultural Blind Map learning media with the novelty of QR Code can also inspire teachers to create meaningful learning. The development of this media was carried out in accordance with the characteristics of students at SD Negeri 1 Penarukan, so this media is specifically dedicated to grade IV students of SD Negeri 1 Penarukan. The limitations in this study are the scope of material, levels, and subjects that are still limited. Further research can examine similar media, but in a wider scope of material, jenang, and subjects

4. CONCLUSION

The product developed is a learning media, a 3D learning media for the Indonesian Cultural Blind Map Based on QR Code with the ADDIE development model. Based on the results of the tests that have been carried out, it was obtained that the media developed is valid, practical, and effective to be used to improve students' critical thinking skills. The QR Code innovation in this media can be used as a reference for learning activities that can increase creativity and facilitate students' critical thinking skills. This media can also inspire teachers to create meaningful learning

5. REFERENCES

Alfaries, R., & Nadiah. (2023). Pengaruh Media Pembelajaran Terhadap Kemampuan Berpikir Kritis Siswa Smkn 71 Jakarta. *Al Amin: Jurnal Kajian Ilmu Dan Budaya Islam*, 6(1), 1–14. Retrieved from https://jurnal.stitalamin.ac.id/index.php/alamin/article/download/209/124.

Anggraeni, Nofi, Rustini, T., & Wahyuningsih, Y. (2022). Keterampilan Berpikir Kritis Siswa Sekolah Dasar Pada Mata Pelajaran IPS Di Kelas Tinggi. *Jurnal Kajian Pendidikan Dan Hasil Penelitian,* 8(1), 84–90. https://doi.org/10.26740/jrpd.v8n1.p84-90.

Apriansyah, M. R. (2020). Pengembangan Media Pembelajaran Video Berbasis Animasi Mata Kuliah Ilmu Bahan Bangunan Di Program Studi Pendidikan Teknik Bangunan Fakultas Teknik Universitas Negeri Jakarta. *Jurnal PenSil*, 9(1), 9–18. https://doi.org/10.21009/jpensil.v9i1.12905.

Armidi, N. L. . (2020). Penerapan Model Pembelajaran Kooperatif Tipe Teams Games Tournament untuk Meningkatkan Hasil Belajar IPS Siswa Kelas VI SD. *Journal of Education Action Research*, 9(1), 9–18. https://doi.org/10.23887/jear.v6i2.45825.

Arsini, K. R., & Kristiantari, M. G. R. (2022). Media Kartu Kata dan Kartu Gambar pada Materi Kosakata Bahasa Indonesia. Jurnal Ilmiah Pendidikan Profesi Guru, 5(1), 173–184. https://doi.org/10.23887/jippg.v5i1.46323.

Cahyadi, R. A. H. (2019). Addie Model-Based Teaching Material Development. *Halaqa: Islamic Education Journal*, 3(1), 35–42. https://doi.org/10.21070/halaqa.v3i1.2124.

Christina, L. V., & Kristin, F. (2016). Efektivitas model pembelajaran tipe group investigation (gi) dan cooperative integrated reading and composition (circ) dalam meningkatkan kreativitas berpikir kritis dan hasil belajar ips siswa kelas 4. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, 6(3), 217–230. https://doi.org/10.24246/j.scholaria.2016.v6.i3.p217-230.

Fatahullah, M. M. (2016). Pengaruh media pembelajaran dan kemampuan berpikir kritis terhadap hasil belajar IPS. *Jurnal Pendidikan Dasar UNJ*, 7(2), 237–252. Retrieved from https://journal.unj.ac.id/unj/index.php/jpd/article/view/2190.

Firdaus, F., Suherman, S., & Fadlullah, F. (2022). Pengembangan Aplikasi Pembelajaran Berbasis Android dalam Pembelajaran Kontekstual Materi Kegiatan Ekonomi di Sekolah Dasar. Edukatif: Jurnal Ilmu Pendidikan, 4(4), 5176–5185. https://doi.org/10.31004/edukatif.v4i4.3160.

Hae, Y., Tantu, Y. R. P., & Widiastuti, W. (2021). Penerapan Media Pembelajaran Visual Dalam Membangun Motivasi Belajar Siswa Sekolah Dasar. Edukatif : *Jurnal Ilmu Pendidikan*, 3(4), 1177–1184. Retrieved from https://edukatif.org/index.php/edukatif/article/view/522.

Huda, A. I. N., & Abduh, M. (2021). Peningkatan Keterampilan Berpikir Kritis Siswa Melalui Model Problem Based Learning pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 5(3), 1683–1688. https://doi.org/10.31004/basicedu.v5i3.973.

Jannah, D. R. N., & Atmojo, I. R. W. (2022). Media Digital dalam Memberdayakan Kemampuan Berpikir Kritis Abad 21 pada Pembelajaran IPA di Sekolah Dasar. *Jurnal Basicedu*, 6(1), 1064–1074. https://doi.org/10.31004/basicedu.v6i1.2124.

Karisma, D., Zainil, M., Padang, U. N., & Padang, K. (2020). Pengembangan Media Pembelajaran Penyajian Data Berbasis QR-Code Untuk Meningkatkan Hasil Belajar Siswa Kelas IV SD. *E-Jurnal Inovasi Pembelajaran Sekolah Dasar*, 8(2). https://doi.org/10.24036/e-jipsd.v10i1.10122.

Komalasari, I., Ridwan, I. R., & Alfarisa, F. (2020). Upaya Guru Dalam Mengembangkan Kemampuan Berpikir Kritis Siswa Sekolah Dasar Pada Pembelajaran IPS: Studi Literatur. Didaktika, 1(1), 26–35. Retrieved from https://ejournal.upi.edu/index.php/didaktika/article/view/32597.

Latif, N. S. (2021). Inovasi QR Code dalam Pembelajaran Matematika di SMP Negeri 9 Marusu. Baruga: Jurnal Ilmiah, 10(2), 11–21. Retrieved from https://baruga.kemenag.go.id/index.php/baruga/article/view/62.

Mahmudah, U. (2020). Meta analisis pengaruh model discovery learning dan problem based learning terhadap kemampuan berpikir kritis matematis peserta didik kelas V SD. *Thinking Skills and Creativity Journal*, 3(2), 69–78. https://doi.org/10.23887/tscj.v3i2.29721.

Maulidta, Hidayatul, & Sukartiningsih, W. (2018). Pengembangan Media Pembelajaran Interaktif Berbasis Adobe Flash untuk Pembelajaran Menulis Teks Eksposisi Siswa Kelas III Sekolah Dasar. State University of Surabaya. Retrieved from https://ejournal.unesa.ac.id/index.php/jurnal-penelitian-pgsd/article/view/23703.

Moto, M. M. (2019). Pengaruh Penggunaan Media Pembelajaran dalam Dunia Pendidikan. Indonesian Journal of Primary Education, 3(1), 20–28. https://doi.org/10.17509/ijpe.v3i1.16060.

Nafisah, D., & Abd Ghofur. (2020). Pengembangan Media Pembelajaran Scan Barcode Berbasis Android dalam Pembelajaran IPS. *EduTeach: Jurnal Edukasi Dan Teknologi Pembelajaran*, 1(2), 144–152. Retrieved from http://www.ejurnal.umri.ac.id/index.php/eduteach/article/view/1985.

Nur'Azizah, H., Jayadinata, A. K., & Gusrayani, D. (2016). Pengaruh model pembelajaran inkuiri terbimbing terhadap kemampuan berpikir kritis siswa pada materi energi bunyi. Jurnal Pena Ilmiah UPI, 1(1), 51–60. Retrieved from https://www.academia.edu/download/106019339/2931-5221-1-SM.pdf.

Nurohmah, A. N., Kartini, D., & Rustini, T. (2023). Relevansi Kebijakan Kurikulum Merdeka Dengan Pendidikan Abad 21 Pada Pembelajaran IPS di SD. *Jurnal Ilmiah Wahana Pendidikan*, 9(3), 24–35. https://doi.org/10.5281/zenodo.7594483.

Pujiani, N. . N., Sudarma, I. K., & Murda, I. N. (2019). Pengaruh Model Pembelajaran Bamboo DancingTerhadap Keterampilan Berpikir Kritis Pada Pembelajaran IPA. *Thinking Skills and Creativity Journal*, 2(1), 27–36. https://doi.org/10.23887/tscj.v2i1.18381.

Putra, I. P. S., Lasmawan, I. W., & Suarni, N. K. (2021). Pengembangan instrumen kemampuan berpikir kritis dan kemampuan literasi sains siswa kelas IV SD. *PENDASI Jurnal Pendidikan Dasar Indonesia*, 5(2), 203–213. https://doi.org/10.23887/jurnal_pendas.v5i2.290.

Qoriah, S., Tamyis, & Hasan, M. (2023). Efektivitas Model Pembelajaran Contextual Teaching and Learning (CTL) terhadap Peningkatan Kemampuan Berfikir Kritis Siswa pada Mata Pelajaran Fikih di Madrasah Aliyah Hidayatul Mubtadiin Jati Agung Lampung Selatan. *Journal on Education*, 5(4), 11454–11461. Retrieved from https://jonedu.org/index.php/joe/article/view/2086.

Rani, F. N., Napitupulu, E., & Siregar, H. (2015). Analisis Kemampuan Berpikir Kritis Matematis Siswa melalui Pendekatan Realistic Mathematics Education di SMP Negeri 3 Stabat. Paradikma, 11(1), 344943. https://doi.org/10.24114/paradikma.v11i1.22886.

Rosmalinda, N., Syahbana, A., & Nopriyanti, T. D. (2021). Analisis kemampuan berpikir kritis siswa SMP dalam menyelesaikan soal-soal tipe PISA. *Transformasi: Jurnal Pendidikan Matematika Dan Matematika*, 5(1), 483–496. https://doi.org/10.36526/tr.v5i1.1185.

Sari, A. D. R. (2015). Pengembangan Media Peta Budaya Indonesia Pada Mata Pelajaran IPS Bagi Siswa Kelas IV SDN Rejosari Gunungkidul. *E-Jurnal Skripsi Program Studi Teknologi Pendidikan*, 7. Retrieved from https://journal.student.uny.ac.id/index.php/fiptp/article/viewFile/753/719.

Suarthama, I. K. (2016). Evaluasi dan Kriteria Kualitas Multimedia Pembelajaran. Universitas Pendidikan Ganesha.

Susanto, T. A. (2021). Pengembangan E-Media Nearpod melalui Model Discovery untuk Meningkatkan Kemampuan Berpikir Kritis Siswa di Sekolah Dasar. *Jurnal Basicedu*, 5(5), 3498–3512. https://doi.org/10.31004/basicedu.v5i5.1399.

Syifa, M., & Supriatna, E. (2022). Pengaruh Penggunaan Media Crossword Puzzle (Teka Teki Silang) Terhadap Kemampuan Berpikir Kritis Siswa Pada Pembelajaran IPS Kelas VI di SDN Serang 7. Jurnal Perseda, V(1), 41–48. https://doi.org/10.37150/perseda.v5i1.1574.

Tanjung, H. S., & Nababan, S. A. (2018). Pengembangan perangkat pembelajaran matematika berorientasi model pembelajaran berbasis masalah (pbm) untuk meningkatkan kemampuan berpikir kritis siswa SMA Se-Kuala Nagan Raya Aceh. *Genta Mulia: Jurnal Ilmiah Pendidikan*, 9(2). Retrieved from http://download.garuda.kemdikbud.go.id/article.php?article=1276948&val=16952.

Upadani, N. M., & Agustiana, I. G. A. T. (2021). Meningkatkan Kemampuan Berpikir Kritis Siswa dalam Tema Berbagai Pekerjaan dengan Fun thinkers. Mimbar PGSD Undikhsa, 9(3), 450–458. https://doi.org/10.23887/jjpgsd.v9i3.37730.

Widi Andriani, M., & Anwar, K. (2023). Sosialisasi Pentingnya Mengembangkan Kemampuan Berpikir Kritis Siswa Sekolah Dasar. Jurnal Pengabdian Kepada Masyarakat (JP-Mas) STKIP PGRI Jombang, 70–76. https://doi.org/10.32682/jp-mas.v5i1.3025.

Widiana, I. W. (2022). Model Pembelajaran Value Clarification Technique dan Pengaruhnya Terhadap Kemampuan Berpikir Kritis Siswa Sekolah Dasar. Jurnal Pedagogi Dan Pembelajaran, 5(2), 179–188. https://doi.org/10.23887/jp2.v5i2.48841.

Wijayanti, A. M., Witono, A. H., & Oktaviyanti, I. (2023). Pengambangan Media Pembelajaran Monopoli Berbasis Kebudayaan NTB Untuk Pemahaman Diri Siswa Akan Keberagaman Budaya Pada Pelajaran IPS Kelas IV SD. *Journal of Classroom Action Research*, 5. Retrieved from http://jppipa.unram.ac.id/index.php/jcar/index.

Wulandari, A. P., Annisa, A., Rustini, T., & Wahyuningsih, Y. (2023). Penggunaan Media Pembelajaran terhadap Keterampilan Berpikir Kritis IPS Siswa Sekolah Dasar. *Journal on Education*, 5(2), 2848–2856. https://doi.org/10.31004/joe.v5i2.933.

Yanto, D. T. P. (2019). Praktikalitas Media Pembelajaran Interaktif Pada Proses Pembelajaran Rangkaian Listrik. *Jurnal Inovasi Vokasional Dan Teknologi*, 19(1). https://doi.org/10.24036/invotek.v19vi1.409.

Yuliati, C. L., & Susianna, N. (2023). Penerapan Model Pembelajaran Discovery Learning Dalam Meningkatkan Keterampilan Proses Sains, Berpikir Kritis, dan Percaya Diri Siswa. Scholaria: Jurnal Pendidikan Dan Kebudayaan, 13(1), 48–58. https://doi.org/10.24246/j.js.2023.v13.i1.p48-58.

Zain, U. N. I., Affandi, L. H., & Oktaviyanti, I. (2022). Pengaruh Model Pembelajaran Inkuiri Terhadap Kemampuan Berpikir Kritis Siswa Kelas V Pada Mata Pelajaran IPS. Journal Of Classroom Action Research, 4(2), 71–74. https://doi.org/10.29303/jcar.v4i1.1679.

Ziarati, I., Hayati, L., & Turmuzi, N. H. S. M. (2022). Deskripsi Kemampuan Berpikir Kritis Siswa Dalam Pemecahan Masalah Bentuk Aljabar Di Kelas VII Mts Al-Aziziyah Putra Tahun Ajaran 2021/2022. Griya Journal of Mathematics Education and Application, 2(4). https://doi.org/10.29303/griya.v2i4.246.