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Android-based Augmented Reality Media in Learning Pancasila and Citizenship Education

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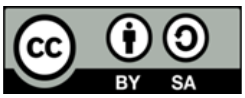

ABSTRAK

Minimnya variasi penggunaan media pembelajaran dalam proses pembelajaran PPKn menyebabkan proses pembelajaran tidak berjalan secara maksimal. Tujuan penelitian ini yaitu untuk menghasilkan produk berupa media pembelajaran augmented reality yang layak digunakan dalam proses pembelajaran PPKn. Jenis penelitian yang digunakan yaitu research and development dengan mengacu pada model pengembangan 4D yang terdiri dari tahap define, design, develop, dan disseminate. Subjek untuk uji coba skala kecil pada penelitian ini menggunakan 6 siswa dan untuk uji coba skala besar menggunakan 27 siswa. Uji validasi produk dilakukan oleh 1 ahli materi dan 1 ahli media serta 1 guru PPKn. Metode pengumpulan data menggunakan observasi, studi dokumen, wawancara, dan kuesioner. Instrumen pengumpulan data yaitu kuesioner. Hasil penelitian menunjukkan bahwa telah dihasilkan media pembelajaran augmented reality yang memperoleh penilaian kategori sangat layak dari validasi ahli materi dengan skor 88%, validasi ahli media 90%, penilaian guru PPKn 91% dan diperoleh kategori sangat menarik dari siswa dengan skor 89%. Dapat disimpulkan bahwa media pembelajaran augmented reality pada materi integrasi nasional dalam bingkai Bhinneka Tunggal Ika sangat layak dan direkomendasikan untuk digunakan dalam proses pembelajaran PPKn. Pengembangan media pembelajaran augmented reality memberikan keragaman pilihan kepada guru PPKn untuk mengunakan media pembelajaran yang dapat menciptakan suasana belajar PPKn lebih interaktif dan menyenangkan bagi siswa.

ABSTRACT

The lack of variation in the use of instructional media in the Citizenship Education learning process causes the learning process to not run optimally. The purpose of this research is to produce a product in the form of augmented reality learning media that is suitable for use in the Citizenship Education learning process. The type of research used is research and development concerning the 4D development model which consists of define, design, develop, and disseminate stages. Subjects for small-scale trials in this study used 6 students and for large-scale trials used 27 students. Product validation tests were carried out by 1 material expert and 1 media expert and 1 Pancasila and Citizenship Education teacher. Methods of data collection using observation, document study, interviews, and questionnaires. The data collection instrument is a questionnaire. The results showed that augmented reality learning media had been produced which obtained a very decent category rating from the validation of material experts with a score of 88%, media expert validation of 90%, Pancasila and Citizenship Education teachers' assessment of 91% and obtained a very interesting category from students with a score of 89%. It can be concluded that augmented reality learning media on national integration material within the framework of Bhinneka Tunggal Ika is very feasible and recommended for use in the Citizenship Education learning process. The development of augmented reality learning media provides a variety of choices for teachers to use instructional media that can create a more interactive and enjoyable Citizenship Education learning atmosphere for students.

1. INTRODUCTION

The progress of science and technology as a supporter of renewal initiated the occurrence of a revolutionary paradigm which always develops periodically (Cholily et al., 2020; Daryanes et al., 2023;

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Dinayusadewi et al., 2020; Kara et al., 2022). Currently, the world is right in the era of revolution 4.0 which greatly affects all areas of human life, one of which is in the field of education. The industrial revolution 4.0 encourages education to improve and develop learning that is varied with technology (Carolina, 2023; Daryanes et al., 2023; Nurhayati et al., 2021; Savitri, 2019a, 2019b; Schwab, 2019). Education is the main pillar of the industrial revolution 4.0, so education must be transformed in a better direction so that it can keep up with science and technology, becoming the era of Education 4.0(Cholily et al., 2020; Mulyani & Haliza, 2021; Savitri, 2019a). The necessary educational improvements must be able to create citizens who are creative, innovative, and competitive, in following the current developments in the current digital era. This can be achieved through the optimal use of technology in the world of education (Carolina, 2023; Harahap, 2019; Hasanah, 2021; Kara et al., 2022). Optimizing technology in the world of education in the 21st century is very relevant, because of the innovation, efficiency and effectiveness of learning Pancasila and Citizenship Education (PCE; Indonesia: Pendidikan Pancasila dan Kewarganegaraan, PPKn) in the education curriculum in Indonesia (Rachman, Nurgiansyah, et al., 2021; Savitri, 2019a).

Education 4.0 must be able to develop the capacity of young people who are literate in information, media and technology. These competencies are expected to equip young people (students) to adapt to the times and be able to compete globally (Feriansyah et al., 2019; Kara et al., 2022; Partnership for 21st Century Skills, 2008; Pujilestari & Susila, 2020; Savitri, 2019a). 21st-century learning also contributes to changes in the learning process, such as from teacher-centered to student-centered learning, to from informative learning to stimulating, interactive, creative and fun learning (Cik'ani, 2021; Nurhayati et al., 2021; Rose & Nicholl, 1997). Pancasila and Citizenship Education teachers are required to be able and continue to innovate to design creative, innovative, challenging and fun learning experiences for students amid their limitations (Akhwani & Rahayu, 2021; Aryana, Subyantoro, & Pristiwati, 2022; Permendikbudristek No. 16 Tahun 2022.; Rachman, Taufika, et al., 2021; Sekretariat Guru dan Tenaga Kependidikan, 2018). Utilization of information and communication technology as learning media and learning resources for Pancasila and Citizenship Education is a necessity (Mulyani & Haliza, 2021; Mustaqim & Kurniawan, 2017; Rachman, Nurgiansyah, et al., 2021; Savitri, 2019a; Zahwa & Syafi'i, 2022).

One of the technology-based learning media that can be used by Pancasila and Citizenship Education teachers in the 21st century is augmented reality (AR). Augmented reality is a technology that visualizes an object by integrating objects in two or three dimensions into the user's real-world environment quickly (Carolina, 2023; Ismayani, 2021; Mustaqim & Kurniawan, 2017; Stechert, 2023). Today, many studies have been conducted to develop augmented reality for learning. Silva, Bermúdez, & Caro research (2023) explores the effect of augmented reality on academic achievement, motivation, and students' technology acceptance in chemistry courses at the university level. The research concludes that students are more active and motivated in the learning process (Silva et al., 2023). A similar study was conducted by Carolina (Carolina, 2023) which aims to measure the impact of augmented reality on increasing the learning motivation of digital native students in geography subjects. Research conducted by Carolina (Carolina, 2023) shows that the use of augmented reality as a learning medium results in 65% of students having very high motivation, 23% of students having high motivation, and 3% of students having sufficient motivation. The results of these measurements confirm that augmented reality as a 3D interactive learning media is effective in increasing learning motivation (Carolina, 2023). Next, Dinayusadewi & Agustika's research (Dinayusadewi et al., 2020) who tries to design augmented reality-based mathematics learning media. Dinayusadewi & Agustika research results (Dinayusadewi et al., 2020) explained that the trial results concluded that the media was feasible to use.

Augmented reality has been recognized as an interesting learning media, increases enthusiasm, interest, enthusiasm and motivation and learning outcomes and is suitable for use in various subjects (Dinayusadewi et al., 2020; Ismayani, 2021; Qorimah et al., 2022; Rusli et al., 2023; Silva et al., 2023; Wannapiroon et al., 2021). The use of augmented reality as a learning media for Pancasila and Citizenship Education has the potential to be relatively as good as the research and development of these learning media in other subjects. Having many advantages such as being effective, interactive, universally usable, simple, and inexpensive makes Android-based augmented reality technology easy to use and adapt to various needs (Carolina, 2023; Mustaqim & Kurniawan, 2017; Stechert, 2023). The potential for augmented reality is strengthened by the high use of smartphones in Indonesia (Rahmayani, 2018; Sadya, 2022). Utilization of augmented reality can be integrated into the android owned by students in the class so that each student has access and the opportunity to interact with augmented reality media in the classroom (Carolina, 2023; Irwansyah et al., 2018; Rahmayani, 2018; Sadya, 2022). Nurholisa, Legiani, & Nida (2022) used it as a learning medium for Pancasila and Citizenship Education learning which developed augmented reality learning media based on social phenomena. Meanwhile, Halimah (2021) is developing a puzzle based on augmented reality to inculcate Pancasila values.

In contrast to previous studies, this research is aimed at the content material "National Integration within the Bhinneka Tunggal Ika Frame" in the Senior High School Pancasila and Citizenship Education subject. The selection of this topic is following the learning needs of students in class. The development of augmented reality designs is carried out by taking into account the principle of self-instruction; self-contained; alone; adaptive; and user-friendly so that the use of augmented reality in learning can be maximized (Amalia et al., 2022; Mulyani & Haliza, 2021; Rachman et al., 2022). This study will also refer to Edgar Dale's cone of learning experiences (1969), augmented reality media has the potential to achieve student involvement in a more real learning experience (Rusli et al., 2023; Silva et al., 2023). Thus, the developed augmented reality learning media has the potential to provide a complete learning experience to students in line with Bruner's opinion which includes: direct experience (enactive), pictorial/image experience (iconic) and abstract experience (symbolic) (Ana & Wakhudin, 2020; Arsyad, 2011; Sumarno, 2020). Students will gain new experiences (knowledge, skills and attitudes) that are relevant to the times (Bloom, 1956; Branson, 1999; Savitri, 2019a; Silva et al., 2023). In addition, augmented reality media is integrated with android so that it can be used in various devices that use the android operating system. This integration considers that each student has access to a device so that each student can interact with learning materials through augmented reality media.

The research aims to produce appropriate android-based augmented reality learning media on National Integration within the Bhinneka Tunggal Ika Frame; know student responses to augmented reality learning media on National Integration within the Bhinneka Tunggal Ika Frame; and as a tool for the learning process of Pancasila and Citizenship Education. The results of this development research provide additional variations of learning media that can be chosen by Pancasila and Citizenship Education teachers to create a more interactive and enjoyable Pancasila and Citizenship Education learning atmosphere for students. Therefore, it is interesting to conduct research and development of augmented reality learning media in Pancasila and Citizenship Education subjects that are suitable for use in the learning process.

2. METHOD

Research and development is a research method that aims to produce certain products and test the effectiveness of these products (Dinayusadewi et al., 2020; Sudaryono, 2021). Research and development carried out to produce augmented reality learning media for Pancasila and Citizenship Education learning at the secondary education level. Research and development uses the 4D model by Thiagarajan which consists of define, design, develop, and disseminate stages (Nurhayati et al., 2021; Winaryati et al., 2021). The define stage is an activity that aims to identify and analyze the problems and learning needs of students. The design stage is an activity that aims to carry out the initial design of the product. The development stage is an activity that aims to test the feasibility of the product that has been developed. Finally, the dissemination stage is an activity that aims to disseminate products that have been declared fit for use in the learning process (Nurhayati et al., 2021; Winaryati et al., 2021). The 4D model design is presented in Figure 1.

This research was conducted in class X Medan Methodist 7th Senior High School. The determination of the subject is based on the purposive sampling technique. The subjects in this study used 6 class X students for small-scale tests and 27 students for large-scale tests. To measure the feasibility of augmented reality learning media, a material and media feasibility validation test was carried out by 1 material expert and 1 media expert. The selected validators are experts in their fields with a minimum educational qualification of Masters and already have competency certificates. After the augmented reality learning media has been declared feasible by the validator, the media is then tested and gives a response (assessment) by Pancasila and Citizenship Education teachers and students in small-scale and large-scale tests. Data collection techniques using observation, document study, interviews and questionnaires. Observations were made in class X when the Pancasila and Citizenship Education learning process was taking place, document studies were carried out by analyzing lesson plans, syllabus, and Pancasila and Citizenship Education teacher's books. Interviews were conducted with teachers and students to obtain information about the problems and needs of students during the Pancasila and Citizenship Education learning process. The distribution of questionnaires/questions was given to material experts, media experts, Pancasila and Citizenship Education teachers and students to obtain data on the feasibility and attractiveness of augmented reality learning media. The questionnaire instrument grids for media experts, material experts, teachers, and students are presented in Table 1.

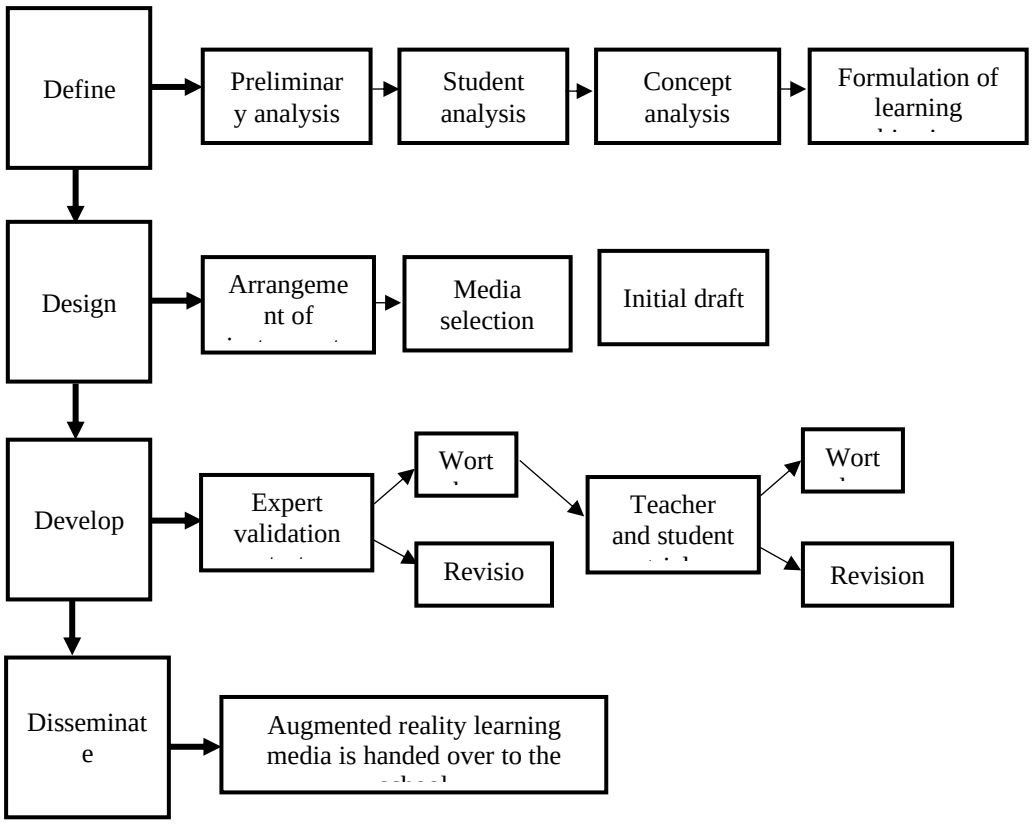

Figure 1. 4D Development Model Design

Table 1. Media Feasibility Test Questionnaire Grid

Appropriateness	Aspect	Indicator
Material	Content Eligibility Aspects	a. Suitability of the material with Basic Competency b. Material accuracy c. Adequacy and breadth of material d. Material update
	Presentation Aspects	a. Serving technique b. Presentation support c. Presentation of Learning
Media	System Quality	a. Functionally b. Efficiency
	Display Design	a. Consistency b. Use of color c. Icon use
	Augmented Reality	a. 3D objects b. User interaction with augmented reality c. Augmented reality controls
	Development Principles Media	a. Self-instruction b. Self-contained c. Stand alone d. Adaptive e. User friendly

The results of the data obtained through distributing questionnaires will then be analyzed using a simple percentage statistical formula by Purwanto (2012). Then the results are transformed into categories in Table 2.

Table 2. Learning Media Feasibility Category

Category	Percentage	Criteria
4	80% - 100%	Very worthy/ Very interesting
3	66% - 79%	Worthy/ Interesting
2	56% - 65%	Less worthy / Less interesting
1	<55%	Very unworthy / Very unattractive

3. RESULT AND DISCUSSION

Result

Research and development of android-based augmented reality learning media are carried out on national integration material within the Bhinneka Tunggal Ika framework. Research and development begin with the define stage. The **define stage** is carried out by collecting data which includes initial analysis, analysis of student needs, concept analysis, and formulation of learning objectives. The initial analysis was carried out to find out the general problems found in the Pancasila and Citizenship Education learning process taking place. Student analysis was carried out to find out the obstacles faced by students when participating in Pancasila and Citizenship Education learning while at the same time knowing the needs and learning styles of students that are relevant. Concept analysis was carried out to determine the characteristics of the material and the learning objectives to be achieved. The formulation of learning objectives is carried out to find out and detail the indicators achieved after the learning material has been given. The results of the analysis found that there were problems and need for Pancasila and Citizenship Education learning media that had not varied, lack of interest and fun in learning; learning media that are not following the differences in the characteristics and learning styles of students; and discrepancies with the material as well as design and learning objectives so that it underlies the need to develop augmented reality learning media in Pancasila and Citizenship Education subjects. Based on the problems and needs at the define stage, the next stage is the design stage.

The design stage includes the preparation of instruments, media selection, and initial media design. The preparation of the instrument serves as a means of collecting data from experts, teachers and students. Media selection is carried out to determine suitable and appropriate media to present teaching material interestingly. The initial design was carried out to design learning media as attractive as possible before conducting media validation tests. The results of the design stage show that the instrument is structured in such a way that it is suitable and feasible to use to collect data related to the learning media to be developed. The preparation of the instrument as much as possible must pay attention to aspects of the feasibility of the material and the eligibility of the media owned by the media. The selection of media is based on the analysis of the defined stage that has been done before. Researchers chose android-based augmented reality learning media as an alternative solution to overcome any limitations and problems that existed during the Pancasila and Citizenship Education learning process. The initial design was carried out by designing augmented reality learning media in such a way as taking into account aspects of appearance, suitability with the material, system quality, learning media principles, and the usefulness of the designed learning media.

The develop stage carries out product development and tests the feasibility of the product being developed, namely in the form of augmented reality learning media for national integration material within the Bhinneka Tunggal Ika framework. Testing the feasibility of learning media is carried out by validators who already have competency certificates and the minimum educational qualifications of Masters. In addition, validation was also carried out by Pancasila and Citizenship Education teachers and students. The results of data analysis regarding the feasibility of augmented reality learning media were found in the first stage to obtain a score of 67% from material experts and a score of 77% from media experts in the appropriate category. It is necessary to revise it so that the developed augmented reality learning media reaches the very feasible category. Thus, in the second stage, a score of 88% was obtained from the material expert and a score of 90% from the media expert in the very decent category. The results of the first and second-phase validator assessments are presented in more detail in Table 3.

Table 3. Learning Media Validation Score

Validation	Aspect	Stage 1		Stage 2	
		Percentage	Criteria	Percentage	Criteria
Material	Contents	68%	Worthy	94%	Very worthy
	Presentation	63%	Less worthy	86%	Very worthy

Validation	Aspect	Stage 1		Stage 2	
		Percentage	Criteria	Percentage	Criteria
Media	System Quality	75%	Worthy	88%	Very worthy
	Display Design	68%	Worthy	83%	Very worthy
	Augmented Reality	70%	Worthy	91%	Very worthy
	Media Principle	83%	Very worthy	92%	Very worthy

Learning media that have been declared feasible by material experts and media experts can then be tried out in schools to obtain validation assessment scores from Pancasila and Citizenship Education teachers and class X students. The results of data analysis obtained from Pancasila and Citizenship Education teachers' assessment of the augmented reality learning media that have been developed reached a score of 91% with a very feasible category so that the augmented reality learning media can be tested on students. The trial was conducted for the first time on a small group consisting of 6 students and an assessment score of 89% was obtained with a very interesting category. After obtaining very interesting assessment results from small-scale tests, augmented reality learning media can be tested in large groups of 27 students. The large group trial of the developed augmented reality learning media also obtained an assessment score of 89% in the very interesting category. In more detail, the results of teacher and student assessments are presented in Table 4.

Table 4. Learning Media Assessment Score

Teacher			Student		
Aspect	Percentage	Criteria	Aspect	Percentage	Criteria
Content	93%	Very worthy	Display Design	88%	Very worthy
Presentation	90%	Very worthy	Augmented Reality	89%	Very worthy
Media Principle	91%	Very worthy	Media Principle	90%	Very worthy
			Media Benefits	89%	Very worthy

It has been obtained the results of assessments from validators, teachers, and students on augmented reality learning media with very appropriate and very interesting assessment categories. So with this assessment, in the final stage of **the dissemination stage**, the augmented reality learning media on national integration material within the Bhinneka Tunggal Ika framework is handed over to the school for use in the Pancasila and Citizenship Education learning process.

Discussion

The design of developing augmented reality learning media is based on learning problems and learning needs (Ledford & Sleeman, 2000; Morrison et al., 2013; Seel et al., 2017; Sudaryono, 2021; Yamin, 2007). The problems and learning needs that form the basis for the design of augmented reality learning media on national integration material within the framework of Bhinneka Tunggal Ika, include: the availability of variety, attractive and fun Pancasila and Citizenship Education learning media; learning media according to the different characteristics of students; and following the material, design and learning objectives. The need for media variations in the Pancasila and Citizenship Education learning process is an obstacle to creating an interactive learning environment for students (Ana & Wakhudin, 2020; Arsyad, 2011; Nurdiansyah, 2019; Rose & Nicholl, 1997; Sanjaya, 2008; Savitri, 2019a; Yamin, 2007). Previously, the use of media that only focused on textbooks and power points indirectly gave rise to the impression of teacher-centered learning. In addition, the demands for teaching materials are quite complex and learning objectives and the needs of students who want and even require that the media developed include visual, audio and kinesthetic elements cannot be fulfilled because the use of learning media is not appropriate (Budiarjo, 2008; Carolina, 2023; Rose & Nicholl, 1997; Sanjaya, 2008).

The need for Pancasila and Citizenship Education learning media is driven by differences in the characteristics of students. Students generally have different characteristics and tendencies of certain learning styles in understanding the material being studied easily (Budiarjo, 2008; Ningrat et al., 2018; Rose & Nicholl, 1997; Sanjaya, 2008). Students need learning media that are innovative, creative and fun that meet differences in the characteristics of students and learning objectives. Augmented reality learning media on national integration material within the framework of Bhinneka Tunggal Ika must provide students with experience of interaction with abstract concepts or examples towards concrete (Ana & Wakhudin, 2020; Silva et al., 2023; Sulistyarini & Dewantara, 2020; Sumarno, 2020; Wannapiroon

et al., 2021). The development of augmented reality media must be based on the principles of media development, concepts involving symbols, concepts stating processes, concepts stating attribute names, and concepts stating attribute sizes (Ana & Wakhudin, 2020; Qorimah et al., 2022). The development of augmented reality media must provide learning concepts by providing visualization into the user's real-world environment quickly (Carolina, 2023; Ismayani, 2021; Mustaqim & Kurniawan, 2017). As far as possible, augmented reality media presents abstract concepts in learning through concepts based on real examples that are relevant to the real environment (Ana & Wakhudin, 2020; Pujilestari & Susila, 2020; Qorimah et al., 2022; Sumarno, 2020). Thus, learning can be more contextual (Komalasari, 2017; Rachman, Taufika, et al., 2021; Schunk, 2012). Augmented reality learning media is one of the interactive media that is very effective in presenting scientific material. Augmented reality can stimulate imagination and motivate students in learning (Qorimah et al., 2022; Varisa & Fikri, 2022; Wannapiroon et al., 2021). Augmented reality media provides variations for teachers other than books and power points when delivering material but can lead students to explore, understand, and experience the material being studied in real-time (Kara et al., 2022; Nurrita, 2018; Wannapiroon et al., 2021). Augmented reality media is very relevant to be used to prepare students to face future challenges (Smaldino et al., 2010, 2015). AR media encourages students to be active and directly involved in the learning process. AR media can digitally visualize objects that have the potential to maximize complex subject matter to become simpler, more concrete, and more interesting in the process of delivering the substance of the material content (Ana & Wakhudin, 2020; Ismayani, 2021; Wannapiroon et al., 2021). Augmented reality is very interactive and effective for conveying national integration materials within the Bhinneka Tunggal Ika framework (Carolina, 2023; Nurrita, 2018; Silva et al., 2023).

Augmented reality helps teachers create participatory learning experiences according to learning objectives (Firdanu et al., 2020; Qorimah et al., 2022). As far as possible, augmented reality design combines various learning activities and experiences to increase students' knowledge, attitudes, and skills competencies (Bloom, 1956; Branson, 1999; Kounlaxay et al., 2021; Silva et al., 2023). The knowledge aspect is designed by elaborating national integration materials within the framework of Bhinneka Tunggal Ika in a structured manner, displaying pictures, videos, quizzes and 3-dimensional illustrations merging the virtual world with the real world in line with opinions (Jazuli et al., 2018; Prastowo, 2011; Yulaika et al., 2020) that aspects of knowledge include facts, concepts, principles, and procedures. Aspects of attitude as much as possible regarding the value of cooperation, mutual honesty, enthusiasm for learning/work, and accepting opinions in group activities (Komalasari & Grace, 2019; Komalasari & Saripudin, 2017; Prastowo, 2011; Sulistyarini & Dewantara, 2020). Thus, the attitude aspect of augmented reality learning media is designed using a project-based learning model, namely the assignment of joint/group drama projects. Then the skill aspect includes the ability to come up with ideas/ideas, choose and use all materials or tools, as well as techniques or ways of working (Komalasari & Saripudin, 2017; Prastowo, 2011). Thus, the skill aspect of augmented reality learning media is designed with the PjBL learning model as well, where students are assigned to make plays and edit drama videos in groups and create posters individually.

Thus, students are actively involved independently in the learning process according to student learning styles and gain direct experience with the material being studied (Ana & Wakhudin, 2020; Komalasari & Grace, 2019; Prastowo, 2011). This is in line with Bruner's theory, which explains that image experience, abstract experience, and direct experience interact with each other to gain a complete experience covering new aspects of knowledge, attitudes, and skills along with the times (Arsyad, 2011; Jazuli et al., 2018; Silva et al., 2023; Sulistyarini & Dewantara, 2020). Image experience (iconic) in the Pancasila and Citizenship Education learning process by utilizing augmented reality learning media can be fulfilled through observing images, videos, and 3D illustrations. Symbolic experiences can be fulfilled by having concepts, facts, data, and quizzes displayed in sentence form. Direct experience can be fulfilled with project assignments, where direct experience will provide in-depth material understanding, long-term memory of intact material content to students, a more meaningful learning process, and changes in behavior towards a better direction (Pandaleke et al., 2020; Sulistyarini & Dewantara, 2020).

The feasibility level of the developed augmented reality learning media has obtained an assessment in the very feasible and very interesting category. The very feasible category was obtained from the validation test of material experts with a score of 88%, media experts with a score of 90%, and Pancasila and Citizenship Education teachers' assessment with a score of 91%. While the very interesting category was obtained from student assessments with a score of 89%. So that through these results it can be concluded that augmented reality learning media is appropriate for use in the Pancasila and Citizenship Education learning process because it meets the eligibility criteria for a product, one of which is determined by the level of validity of the product being developed. The augmented reality learning media that has been developed also meets the principles of a learning media, namely self-instruction, self-

contained, stand-alone, adaptive, and user-friendly (Amalia et al., 2022; Mulyani & Haliza, 2021; Rachman et al., 2022). The overall score for the principle of augmented reality learning media obtained very feasible and interesting criteria. Very feasible criteria were obtained from media experts with a score of 92%, from Pancasila and Citizenship Education teachers with a score of 91%, and very attractive criteria from students with a score of 90%. The feasibility of materials, media, and learning media principles that are already owned by augmented reality learning media makes this learning media one of the most effective, efficient and interactive media in providing a complete learning experience for students (Bruner, 1973; Ismayani, 2021; Pandaleke et al., 2020; Wannapiroon et al., 2021). In line with this, referring to the cone theory of learning experience Edgar Dale (1969) states that the higher the position of a type of media in the cone, the less the senses are involved. For the learning process to achieve good results, students need to utilize all of their senses, namely by direct experience (doing) (Pida, 2023; Sanjaya, 2008). The developed augmented reality learning media presents images (visual), video (audio), and 3-dimensional illustrations showing the quality of augmented reality learning media, namely material that students will remember by 30% with a level of visual involvement. Then in the augmented reality learning media, there are videos that students will analyze, and there are also group project assignments to make video dramas and distribute posters to the public (kinesthetic) (Carolina, 2023; Pida, 2023).

The fulfilment of audio, visual and kinesthetic elements in augmented reality learning media shows that the potential of augmented reality can deliver students to gain new experiences (knowledge, skills and attitudes) that are relevant to the times (Bloom, 1956; Branson, 1999; Savitri, 2019a). This means that students are directly involved in learning so that the information or material that students remember is 90% of the level of involvement in doing. The feasibility of augmented reality learning media through expert, teacher, and student validity tests has proven that the media is very feasible and interesting to use in the teaching and learning process of Pancasila and Citizenship Education subjects in schools. So augmented reality learning media is declared suitable for use as Pancasila and Citizenship Education learning media and may be handed over to the school, especially to Pancasila and Citizenship Education teachers to increase student learning interest and create a fun learning environment for students (Pida, 2023; Silva et al., 2023; Varisa & Fikri, 2022).

This study contains novelties from previous studies, augmented reality learning media in previous studies focused on chemistry and social studies at the tertiary, elementary and high school levels (Carolina, 2023; Dinayusadewi et al., 2020; Silva et al., 2023). No one has yet developed augmented reality learning media for Pancasila and Citizenship Education subjects which are focused on national integration material within the Bhinneka Tunggal Ika framework. The developed augmented reality media provides a stimulus to students' learning experiences based on Edgar Dale's cone (1969) and Bruner's (1973) experiential theory. Augmented reality learning media provides learning experiences by presenting images (visual), video (audio), and demonstrations through 3-dimensional illustrations (merging between the virtual world and the real world) (Carolina, 2023; Dale, 1969; Ismayani, 2021; Mustaqim & Kurniawan, 2017; Stechert, 2023). Media pembelajaran *augmented reality* memungkinkan meningkatkan keterlibatan visual dan dayaingat siswa dari proses pembelajaran hingga 30% (Dale, 1969). The utilization of media has the potential to be maximized with the availability of project assignments in groups to make and distribute socio-drama videos and posters because students are directly involved in showing information (material). This learning experience will increase students' memory by 90% with the level of involvement in doing (Dale, 1969). The active involvement of students in the learning process provides picture experiences, abstract experiences, and direct experiences interacting with each other to get a complete experience covering aspects of knowledge, attitudes, and new skills along with the times (Arsyad, 2011; Bruner, 1973). Augmented reality learning media is very compatible and feasible to be applied to Pancasila and Citizenship Education subjects which are focused on national integration material within the framework of Bhinneka Tunggal Ika.

The augmented reality learning media developed in this study also pays attention to the feasibility principles of a learning media which include self-instruction, self-contained, stand-alone, adaptive, and user-friendly (Amalia et al., 2022; Mulyani & Haliza, 2021; Rachman et al., 2022). This android-based augmented reality learning media has shown results that are following the feasibility of a learning media, so the teacher is more assisted in conveying Pancasila and Citizenship Education learning material to students. In the future, researchers will carry out further studies testing the effectiveness of android-based augmented reality learning media, especially in improving learning outcomes, activities, and student motivation after previously being declared feasible. In the current digital era, teachers must be adaptive so they are not out of date, besides that Pancasila and Citizenship Education teachers must have competence in the field of technology and use technology in learning so that they can meet the needs of 21st-century education (Hasanah, 2021; Salsabila et al., 2023; Wantini et al., 2023). Pancasila and Citizenship Education teachers needed in the 21st century are teachers who can prepare the needs of

students in the future; able to make changes to the learning process from teacher-centered learning to student-centered learning; and students have the opportunity to become an integral part of classroom management (Garrett, 2008). Interactive media in augmented reality change the learning atmosphere in the classroom from monotonous to innovative, from informative learning to stimulating, interactive, fun learning, and students are more responsible in learning and utilizing technology to facilitate the learning process (Cik'ani, 2021; Garrett, 2008; Nurhayati et al., 2021; Sulistyarini & Dewantara, 2020; Yulaika et al., 2020) so that students acquire good knowledge, attitudes, and skills according to the times (Bloom, 1956; Branson, 1999; Le et al., 2018; Savitri, 2019a; Silva et al., 2023).

4. CONCLUSION

Based on research and discussions, augmented reality learning media has been produced on national integration material within the framework of Bhinneka Tunggal Ika, which is suitable for use in the Pancasila and Citizenship Education learning process. The very feasible category is obtained from the results of assessments by material experts, media experts, Civics teachers, and student responses. Based on the assessment that has been obtained, augmented reality learning media is very suitable and recommended for use in the Pancasila and Citizenship Education learning process. Making augmented reality learning media provides various learning media that teachers can use to create a more interactive and enjoyable learning atmosphere for students so that the Pancasila and Citizenship Education learning process can run optimally.

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