



## Design of smart teaching based on augmented reality as teaching material for local wisdom to support the implementation of the merdeka curriculum in public junior high schools in South Sulawesi

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### ABSTRACT

South Sulawesi have four main ethnic groups (Makassar, Bugis, Toraja, Mandar) that has been recognized globally. Thus, the role of each educational unit is to integrate local wisdom into the school curriculum in accordance with the Merdeka curriculum policy. Therefore, educators must prioritize achieving the dimensions of the Pancasila Student Profile through seven themes, one of which is the theme of local wisdom, that is then implemented in project-based learning. The objectives of this study are: (1) developing a Teaching Module on the theme of local wisdom for public junior high schools in South Sulawesi, (2) writing teaching materials on the theme of local wisdom from the four ethnic groups of South Sulawesi, (3) To design Augmented Reality teaching materials on the theme of local wisdom from the four ethnic groups in South Sulawesi. The method used in this study is qualitative, using interviews to determine the material and to finalize the material for design development. The research results show that (1) teaching module is unavailable in public junior high schools that can adapt the theme of local wisdom from the four ethnic groups in South Sulawesi; (2) There are no teaching materials on the theme of local wisdom from the four ethnic groups in South Sulawesi; (3) The Augmented Reality design themed on local wisdom from the four ethnic groups has received high enthusiasm from teachers in junior high schools and art practitioners in South Sulawesi. The implementation of the Merdeka Curriculum (IKM) in schools is highly dependent on the teacher's ability to provide learning tools that can provide students with experiences that align with the expected learning outcomes. These learning tools include teaching materials and media that can create a thematic and interactive learning environment.

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## 1. Introduction

South Sulawesi has four major ethnic groups: Makassar, Bone, Toraja, and Mandar. However, the knowledge of local wisdom, particularly the symbolic and philosophical meanings of the cultures of these four ethnic groups, is fading and beginning to disappear due to the lack of education based on local wisdom. Preserving this culture is crucial because it represents the identity and character of the nation and local communities. This cultural preservation can be achieved by integrating it into the curriculum. The richness of this culture



should be included in the curriculum of every educational unit, whether as a local content curriculum or as part of the local wisdom theme of the Pancasila Student Profile. Integrating culture, especially local wisdom, into the curriculum is a way to enhance culturally-based character values, particularly local wisdom. This aligns with the BSKAP Kemdikbudristek Decree No. 009/H/KR/2022 concerning the Dimensions, Elements, and Sub-elements of the Pancasila Student Profile in the Merdeka Curriculum.

In implementing the Merdeka Curriculum, modules and teaching materials are crucial to support the ongoing learning process. However, many teachers still struggle to create modules and teaching materials due to a lack of understanding of the Merdeka Curriculum (Vhalery, Setyastanto, and Leksono 2022; Baharuddin 2021; Sari et al. 2023; Isa, Asrori, and Muharini 2022; Kusuma et al. 2024). Additionally, there is a lack of use of learning media, such as Augmented Reality, which is a new trend in learning and aligns with the characteristics of today's students. The use of media like Augmented Reality serves as an effective communication tool with students. It can even help address students' smartphone addiction. Preliminary data collected through a review of the Merdeka teaching platform curriculum as of March 5, 2023, indicates that there is still no project module to strengthen the Pancasila Student Profile on the theme of local wisdom packaged in teaching materials using digital platforms based on Augmented Reality. As a result, the learning process is limited to the local wisdom theme project of a single ethnic group. This condition is also experienced in Junior High Schools that have already implemented the Merdeka Curriculum in South Sulawesi. The development of local wisdom content for the four ethnic groups in South Sulawesi—Bugis, Makassar, Mandar, and Toraja—that is taught in schools still relies on printed books and learning resources from the internet, including YouTube. Based on these issues, this research aims to design teaching materials on the theme of local wisdom to strengthen the Pancasila Student Profile. Therefore, it is important for teachers to enhance their understanding of the Merdeka Curriculum and utilize appropriate learning media to achieve learning objectives effectively.

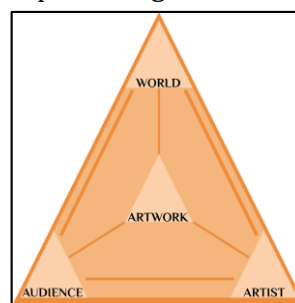
**State Of The Art.** The implementation of the Merdeka Curriculum (IKM) is crucial as an effort to preserve the nation's culture. As a result, many studies focus on the Merdeka Curriculum based on local wisdom. In South Sulawesi, knowledge of the philosophical or symbolic meanings of culture is nearly extinct due to the lack of integration of cultural values based on local wisdom into the curriculum (Salam, Tangsi, and Husain 2022). Even many individuals who engage daily in cultural activities almost do not understand the culture itself. This phenomenon was first highlighted by the prominent cultural expert and curriculum specialist from South Sulawesi, Sofyan Salam, in 2022. Research related to the implementation of the local wisdom-based curriculum has been extensively conducted, with a focus on character strengthening and cultural literacy.

This research used project-based learning and character education methods. Furthermore, the design of teaching materials based on the local wisdom of the four ethnic groups in South Sulawesi has also been conducted based on the 2013 Curriculum (K13). However, these studies require development, particularly in terms of content and the use of technology-based teaching methods. This is crucial for producing teaching materials based on local wisdom implemented with the Merdeka Curriculum. Previous research has not yet produced teaching materials that integrate the Merdeka Curriculum (IKM) with local wisdom or utilize technology such as Augmented Reality (Pattaufi, Aswan, and Hakim 2023; Pattaufi 2020). Although there has been prior research on integrating local wisdom with Augmented Reality, and the development of audio-visual teaching materials, flipped classroom models, and the Pancasila Student Profile, combining all these elements is expected to produce Augmented Reality-based teaching materials that integrate local wisdom into the Merdeka Curriculum. The novelty of this research lies in the design of Augmented Reality-based teaching materials for the local wisdom of the four ethnic groups in South Sulawesi (Toraja, Makassar, Bugis, and Mandar) that supports the implementation of the Merdeka Curriculum in South Sulawesi.

## 2. Method

The research method used in this study is qualitative, employing Freeman's conceptual framework to understand theoretical concepts about artists, artworks, art appreciators, and the art world or era of the four cultures in South Sulawesi (Freeman, N. H., & Parsons 2001). Qualitative analysis is the best method for studying cultural meanings. This research is conducted in four areas: Makassar City, Bone, Toraja, and Mandar in South Sulawesi and West Sulawesi, focusing on the cultures of the four ethnic groups: Makassar, Mandar, Bugis, and Toraja. Mandar is given special attention because, historically, Mandar was part of South Sulawesi before the creation of the new province of West Sulawesi. However, Mandar remains an important part of South Sulawesi's culture. For data collection, this study uses interviews to determine the material for developing teaching materials. The data analysis technique involves using data collected from interviews as the basis for developing cultural materials for the four ethnic groups, incorporating theories from Freeman's conceptual framework, as explained below.

- Analysis of Artist Dimensions : This analysis method examines culture based on the artists themselves. Every culture has artists who continue its traditions and values. This ensures that the collected data is as accurate as possible, supporting the reviewed literature. The artists studied consist of the four major ethnic groups in South Sulawesi.
- Analysis of Artwork Dimensions : Artwork is a crucial study as an artifact for extracting more accurate information. At this stage, the artifacts or artworks of the four ethnic groups are key to creating two- or three-dimensional designs to be implemented in Augmented Reality, which will be applied in junior high schools in South Sulawesi.
- Analysis of Art Appreciator Dimensions : The dimension of art appreciators is important because it allows researchers to observe the community's interest and tendencies regarding the culture of the four ethnic groups. This is valuable for data analysis and subsequent application in the Merdeka Curriculum (IKM), promoting the Pancasila Student Profile effectively at the school level.
- Analysis of Art Era or World Dimensions : The art era or world dimension involves the most in-depth analysis, as understanding the era of a civilization or culture requires thorough literature review and in-depth interviews. This stage is vulnerable to producing biased information, making it essential to conduct detailed and careful studies to obtain accurate information and develop teaching materials.



**Fig 1.** The Conceptual framework

## 3. Results and Discussion

The research results show that:

- Teaching module is unavailable in public junior high : The Table 1 shows that most of the teachers in junior high schools in South Sulawesi do not have teaching materials that can adapt the theme of local wisdom from the four ethnic groups in South Sulawesi, except for Toraja Culture. According to the teachers, most of the materials being taught are based on their understanding of their knowledge. This is not recommended in schools because students will have limited knowledge of their local wisdom. However, this is the case that happened in most of the schools in South Sulawesi which make the creation of teaching

materials is compulsory. This is not surprising, because according to the interview being conducted, some of the teachers who teach in schools, do not have relevant backgrounds of study. This is because the system of hiring a teachers in Indonesia have limitation. Often times, schools do not have relevant teachers to teach subject in schools, because many schools lack of teachers.

**Table 1.** Availability of teaching materials in South Sulawesi

<i>Local Wisdom in Teaching Materials</i>	<i>Availability of Teaching Materials</i>	<i>City</i>
Available	Unavailable	Makassar
Unavailable	Available	Toraja
Unavailable	Unavailable	Bone
Unavailable	Unavailable	Mandar

- There are no teaching materials on the theme of local wisdom : The research in Toraja shows that most of the art dimensions are filled with artist dimensions, audience dimensions, and artworks dimensions. This is due to the Toraja has been practicing their cultural values and traditions unlike any part of the regions in South Sulawesi. Other culture such as Bone and Makassar implemented their cultural value in different ways. However, it can be said that Toraja stood to be the most cultural society in South Sulawesi and even in the world. Interestingly, Mandar who have almost similar characteristics of cultural traditions do not implement their teaching based on cultural value. The availability of teaching materials in Sulawesi can be seen in Table 2.

**Table 2.** Availability of teaching materials in South Sulawesi

<i>Local Culture</i>	<i>Art Dimension being used in schools</i>	<i>Level of understanding</i>
Makassar	Artist	Below Average
Toraja	Artwork, Audience, Artist	Very Good
Bone	Artist	Below Average
Mandar	Artist	Below Average

- The Augmented Reality design themed on local wisdom from the four ethnic groups has received high enthusiasm from teachers and art practitioners in junior high schools in South Sulawesi : With this level of enthusiasm, both teachers and art practitioners expecting the implementation of AR in schools. This not only helping the teachers and providing new way of learning. This could help the students in understanding their cultural better in schools. So that they can implement their cultural values in real life. Moreover, the implementation of the Merdeka Curriculum (IKM) in schools is highly dependent on the teacher's ability to provide learning tools that can provide students with experiences that align with the expected learning outcomes. These learning tools include teaching materials and media that can create a thematic and interactive learning environment. Teachers and art practitioners to AR can be seen in Table 3.

**Table 3.** Teachers and art practitioners respons of AR

<i>Teachers and art practitioners respons</i>	<i>City</i>	<i>General Response (1-10)</i>
Teachers	Makassar	Expecting the teaching materials to be used in schools
art practitioners	Makassar	Enthusias in using the AR
Teachers	Toraja	Developing teaching materials to be used in schools
art practitioners	Toraja	Experience something new in arts
Teachers	Bone	The teachers do not have teaching materials, this will help them in teaching
art practitioners	Bone	Recommended in schools for preserving cultural heritage
Teachers	Mandar	Expecting the teaching materials to be used in schools
art practitioners	Mandar	This innovation is incredible in schools.

This study reveals a gap in providing teaching modules that can adapt the local wisdom themes of the four main ethnic groups in South Sulawesi, particularly in public junior high schools. The local wisdom in question includes the rich and diverse values, traditions, and cultures of the local community, which should be integrated into the curriculum to enhance student learning. However, in reality, both teaching modules and materials specifically highlighting these local wisdom themes are not available in these schools. This findings inlined to previous research (Adiatmana and Hasan 2022). The absence of such teaching materials poses a challenge for teachers attempting to implement the Merdeka Curriculum (IKM). This curriculum is designed to provide schools and teachers with greater freedom in developing learning programs tailored to the needs and characteristics of students. Without adequate learning resources, such as relevant modules and materials, teachers may struggle to deliver content that aligns with the essence and goals of the curriculum (Aryzona, Asrin, and Syazali 2023). Nevertheless, the study also highlights a positive aspect: the high enthusiasm from teachers towards Augmented Reality (AR) designs that focus on the local wisdom of the four ethnic groups in South Sulawesi. These AR designs offer great potential in creating a more engaging and interactive learning experience for students. With AR technology, students can more easily understand and experience local wisdom through realistic simulations and visualizations, facilitating deeper and more meaningful learning (Abdillah, Degeng, and Husna 2020). The implementation of the Merdeka Curriculum (IKM) in schools heavily relies on teachers' ability and creativity in developing and providing learning tools that are not only engaging but also relevant to the cultural and social context of the students. This findings are inline to previous research that highlights the importance of teacher ability in delivering specific courses in their classes. These learning tools, such as teaching materials and technology-based media like AR, must create a thematic learning environment where students can actively engage and directly experience the concepts being taught (Hulu et al. 2023; Isa, Asrori, and Muharini 2022). In this context, developing teaching modules and materials that integrate local wisdom becomes crucial, not only for enriching student learning experiences but also for preserving local culture amid the increasingly strong currents of globalization.

#### 4. Conclusion

The research results show that: (1) teaching module is unavailable in public junior high schools that can adapt the theme of local wisdom from the four ethnic groups in South Sulawesi; (2) There are no teaching materials on the theme of local wisdom from the four ethnic groups in South Sulawesi; (3) The Augmented Reality design themed on local wisdom from the four ethnic groups has received high enthusiasm from teachers in junior high schools and art practitioners in South Sulawesi. The implementation of the Merdeka Curriculum (IKM) in schools is highly dependent on the teacher's ability to provide learning tools that can provide students with experiences that align with the expected learning outcomes. These learning tools include teaching materials and media that can create a thematic and interactive learning environment.

#### Reference

- Abdillah, Akhmad, I Nyoman Degeng, and Arafah Husna. 2020. "Pengembangan Buku Suplemen Dengan Teknologi 3D Augmented Reality Sebagai Bahan Belajar Tematik Untuk Siswa Kelas 4 SD." *JINOTEP (Jurnal Inovasi Dan Teknologi Pembelajaran): Kajian Dan Riset Dalam Teknologi Pembelajaran* 6 (2): 111–18. <https://doi.org/10.17977/um031v6i22020p111>.
- Adiatmana, Donny, and Muhammad Hasan. 2022. "Developing An Electronic Module Based on Local Wisdom in Dokan Village to Optimize the Character Education." *JlIP - Jurnal Ilmiah Ilmu Pendidikan* 5 (9): 3838–43. <https://doi.org/10.54371/jlrip.v5i9.947>.
- Aryzona, Eva Fahriani, Asrin Asrin, and Muhammad Syazali. 2023. "Analisis Kompetensi Guru Dan Desain Pembelajaran Dalam Melaksanakan Kegiatan Pembelajaran Sesuai



- Kurikulum Merdeka SD Negeri 1 Jantuk Tahun Pelajaran 2022-2023." *Jurnal Ilmiah Profesi Pendidikan* 8 (1): 424–32. <https://doi.org/10.29303/jipp.v8i1.1156>.
- Baharuddin, Muhammad Rusli. 2021. "Adaptasi Kurikulum Merdeka Belajar Kampus Merdeka (Fokus: Model MBKM Program Studi)." *Jurnal Studi Guru Dan Pembelajaran* 4 (1): 195–205. <https://doi.org/10.30605/jsdp.4.1.2021.591>.
- Freeman, N. H., & Parsons, M. J. 2001. "Children's Intuitive Understandings of Pictures." In *Understanding and Teaching the Intuitive Mind*, 85–104. Routledge. <https://doi.org/10.4324/9781410605740-7>.
- Hulu, Doni Berkat Tabah, Alianus Zalukhu, Herman Herman, Nesti Surya Astuti Zebua, Dame Ifa Sihombing, and Simon M Panjaitan. 2023. "Kesiapan Belajar Jenjang Sekolah Menengah Atas (SMA) Dalam Implementasi Kurikulum Merdeka (IKM) Di Kabupaten Nias Utara." *Journal on Education* 5 (3): 6040–46. <https://doi.org/10.31004/joe.v5i3.1369>.
- Isa, Isa, Muhammad Asrori, and Rini Muharini. 2022. "Peran Kepala Sekolah Dalam Implementasi Kurikulum Merdeka Di Sekolah Dasar." *Jurnal Basicedu* 6 (6): 9947–57. <https://doi.org/10.31004/basicedu.v6i6.4175>.
- Kusuma, Adi Candra, Hari Tri Wibowo, Gillang Al Azhar, Almas Adibah, Odhitya Desta Triswidrananta, Wahyu Tri Wahono, and Sidik Nurcahyo. 2024. "Pendampingan Pembuatan Dan Publikasi Karya Ilmiah Penelitian Tindakan Kelas Untuk Kenaikan Pangkat Guru." *TAAWUN* 4 (02): 217–28. <https://doi.org/10.37850/taawun.v4i02.708>.
- Pattaufi, Pattaufi. 2020. "Pengaruh Pemanfaatan Bahan Ajar Berbasis Audio-Visual (Video) Pada Mata Pelajaran Sejarah Kelas X Di Sma Negeri 11 Pangkep." *Jikap Pgsd: Jurnal Ilmiah Ilmu Kependidikan* 4 (2): 135. <https://doi.org/10.26858/jkp.v4i2.13684>.
- Pattaufi, Pattaufi, Dedy Aswan, and Abdul Hakim. 2023. "The Development of Teaching Material for Blended Learning: A Strategy to Improve Students' Creativity and Innovation in the 21st Century." *Journal of Educational Science and Technology (EST)* 9 (1): 19. <https://doi.org/10.26858/est.v9i1.37916>.
- Salam, Sofyan, Tangsi Tangsi, and Muh. Saleh Husain. 2022. "Perempuan Pengukir Kayu Tradisional Toraja Di Kete'kesu." *Jurnal Imajinasi* 6 (1): 9. <https://doi.org/10.26858/i.v6i1.32293>.
- Sari, Nelfa, Widia Riani, Winda Lestari, Elsa Berliana, and Aprija Kamelia. 2023. "Problematika Penerapan Kurikulum Merdeka Dalam Mata Mata Pelajaran Pendidikan Agama Islam Di Sekolah Menengah Kejuruan (SMK) Negeri 1 Rejang Lebong." *Jurnal Pendidikan Dan Konseling (JPDK)* 5 (4): 346–54. <https://doi.org/10.31004/jpdk.v5i4.17339>.
- Vhalery, Rendika, Albertus Maria Setyastanto, and Ari Wahyu Leksono. 2022. "Kurikulum Merdeka Belajar Kampus Merdeka: Sebuah Kajian Literatur." *Research and Development Journal of Education* 8 (1): 185. <https://doi.org/10.30998/rdje.v8i1.11718>.