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Designing Creative, Visual, and Adaptive Educational Media through Workshops for Elementary School Teachers to Enhance Learning Engagement in Generation Alpha

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ABSTRACT

This community service program aims to enhance elementary school teachers' competence in designing creative, visual, and adaptive learning media based on traditional games to improve learning engagement among Generation Alpha students. The problem identified among partner schools is the limited use of contextual and culturally relevant learning media, as well as teachers' dependence on conventional and technology-centered approaches that do not fully stimulate students' cognitive and social development. The program was conducted in collaboration between the Elementary School Teacher Education Program (PGSD) of STKIP Kusuma Negara and SD Negeri Makasar 07. The activities were carried out through training and workshops, which included: (1) fostering an imaginative culture through character education based on visual awareness, (2) material on Generation Alpha covering technology, local wisdom, and learning media, and (3) demonstrations of traditional game-based learning media. The results of the program indicate an improvement in teachers' understanding of developing creative, visual, and adaptive learning media. This is reflected in participants' ability to design and implement traditional game-based learning media within classroom learning scenarios. In addition, most participants demonstrated active engagement during the activities and were able to adapt the developed media to suit the characteristics of Generation Alpha students. Participant feedback also showed positive responses to the implementation of the program, particularly in terms of the relevance of the materials, ease of application, and its benefits in improving the quality of learning. This program also encourages teachers to integrate local cultural elements into more innovative and contextual learning practices.

INTRODUCTION

Generation Alpha, born between 2010 and 2025, is a generation that grew up in a very intensive digital environment and has visual, interactive and adaptive characteristics towards technology (Jha, 2020). This condition presents its own challenges in the learning process in elementary schools, especially for teachers who are required to be able to develop learning media that are relevant to the needs and characteristics of students (Tafonao, Saputra, & Suryaningwidi, 2020). However, learning practices in elementary schools are still dominated by

conventional and less contextual media, thus failing to fully optimize the learning engagement of Generation Alpha students. Therefore, innovative learning media are needed that are not only creative and visual, but also adaptive and able to integrate local cultural elements as part of a meaningful learning experience.

Generation Alpha is present in the context of 21st century life which is marked by the rapid development of science and technology (Nasir, 2024). From an early age, even in the womb, this generation has been exposed to an intensive digital environment (Ziatdinov & Cilliers, 2021). The massive use of touchscreen devices in everyday life makes them accustomed to fast, interactive, and instant visual stimulation (Saifuddin, Dilshad, Afzal, & Parveen, 2025). This condition not only has a positive impact in terms of access to information, but also has implications for learning patterns, attention span, and preferences for visual and attractive learning media.

In the context of basic education, this phenomenon is a challenge for teachers, especially in designing learning that can accommodate the characteristics of Generation Alpha (Kaynova & Adigüzel, 2026). The use of learning media that lacks variety and visual elements has the potential to reduce student engagement. Therefore, innovative learning media that is not only technology-based but also integrates creative and contextual approaches, such as the use of traditional games, are needed to create more meaningful learning experiences tailored to student needs.

Children born as Generation Alpha have a tendency to experience a decrease in direct social interaction due to the dominance of time spent in the digital world (Casey, 2025). Data shows that this generation, often referred to as screenagers, is estimated to reach around 2 billion global population by 2025, and is projected to be a major actor in shaping the future of the world by 2029 (McCrinkle & Fell, 2020). This condition shows that Generation Alpha grew up with different interaction patterns, learning preferences, and ways of thinking compared to previous generations (Höfrová, Balidemaj, & Small, 2024).

In the context of basic education, this phenomenon is a challenge for teachers, especially in creating learning that is able to develop not only cognitive aspects, but also social and emotional skills of students (Romli, Prima, & Dharin, 2025). Reliance on individualized digital media has the potential to reduce collaborative interaction in classroom learning. Therefore, learning media that are more contextual, interactive, and closer to the world of children are needed, such as the use of traditional games, which are not only visually appealing but also able to stimulate social interaction, cooperation, and active student involvement in the learning process.

This shows that the future of the world is in the hands of Generation Alpha, so appropriate coaching efforts are needed so that they can develop into a generation capable of bringing about positive change (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2020). Through education, this generation needs to be fostered holistically, encompassing cognitive, language, moral and religious, physical motor, and social emotional development (Sumiyati, Nada, Prasetiadi, & Aziz, 2025). However, these efforts cannot be optimally achieved without the support of learning strategies tailored to student characteristics. Therefore, elementary school teachers need learning media that are not only visually appealing but also able to stimulate various aspects of student development in a balanced manner. Creative, adaptive, and contextual learning media are key to creating meaningful learning experiences that are relevant to the needs of Generation Alpha.

Schools, as education providers, face increasingly complex challenges in responding to the characteristics of Generation Alpha, particularly at the elementary school level. At this stage, students are at a stage of rapid cognitive development, requiring learning that optimally stimulates various aspects of development (Heriwan & Taufina, 2020). However, in practice, teachers still face various obstacles, such as difficulty in selecting and developing learning media that are appropriate to the characteristics of Generation Alpha, low student attention span during learning, and the dominant use of digital media that is passive and does not encourage social interaction (Nurmeidina, Lazwardi, & Ariyanti, 2020).

This condition requires teachers to have the ability to design more progressive, innovative and contextual learning to meet the needs of students (Vessonen, et al., 2024). Therefore, it is necessary to strengthen teacher competency in developing learning media that are not only visually attractive, but also able to increase students' active involvement and social interaction in the learning process.

Learning for Generation Alpha needs to be designed effectively, efficiently, and enjoyable to accommodate the visual, interactive, and technology-adaptive characteristics of students. In this regard, teachers are required to present learning materials using strategies that align with current developments, curriculum demands, and student mindsets. 21st-century learning emphasizes mastery of critical thinking, communication, collaboration, and creativity skills, which requires the use of innovative and contextual learning media (Wahyuni, Susilawati, & Yaqin, 2025).

However, based on field conditions, many elementary school teachers still experience difficulties in developing learning media that can optimally integrate 21st-century skills. The use of learning media tends to be conventional or limited to passive digital media, thus failing to fully increase active student engagement. Therefore, a form of intervention is needed through Community Service activities in the form of training and webinars for elementary school teachers to improve their competency in designing creative, visual, and adaptive learning media based on traditional games.

Several previous training and research activities have emphasized the importance of technology-based learning media innovation. However, few have integrated creative, visual, and adaptive approaches with the use of local wisdom, particularly traditional games, as contextual learning media for Generation Alpha. Therefore, this Community Service activity offers a novelty in the form of developing and training traditional game-based learning media, packaged creatively, visually, and adaptively through a national webinar for elementary school teachers. The aim of this activity is to improve teacher competence in designing and implementing innovative, contextual learning media that are in accordance with the characteristics of Generation Alpha, as well as encouraging the integration of local cultural elements in learning in elementary schools.

IMPLEMENTATION METHOD

This community service activity was systematically designed to address the needs of elementary school teachers in developing innovative learning media. This activity was implemented through a series of structured activities, such as training and webinars, aimed at improving teachers' competency in designing creative, visual, and adaptive learning media. There are three stages in implementing this PKM. These three stages are the preparation stage, the implementation stage, and the evaluation stage. The implementation flow for these three stages is described as follows:



Figure 1. Flow of Community Service Implementation

The preparatory stage begins with preparation for the Community Service Program (PKM) activities. The PKM activity is one of the assignments of the Community Service Program (KKN) course. This course is given to fifth-semester students of the Elementary School Teacher Education (PGSD) Study Program, STKIP Kusuma Negara. In this course, students are required to examine complex problems occurring in the community and alternative solutions. In this case, PGSD students, who are essentially being prepared to become elementary school teachers, must be able to identify educational problems currently experienced by teachers and then solve these problems.

Students began their preparatory activities by forming a Community Service Program committee. Afterward, they conducted observations at Makasar 07 Public Elementary School, East Jakarta, to assess the learning needs of students and teachers. After collecting data, they held a focus group discussion (FGD) to discuss alternative solutions to the existing problems. After finding alternative solutions, the implementation team reported their findings to the lecturer in charge of the Community Service Program course.

After that, the team and lecturers in charge of the KKN course determined the resource persons for the national webinar activity as a form of PKM implementation. The chosen theme for the national webinar was Contemporary Educational Media: Creative, Visual, and Adaptive for Generation Alpha. The lecturers who would be the resource persons were Arhamuddin Ali, M.Sn. and Maria Ulfa, M.Pd. Then the students contacted the resource persons to confirm their willingness and discuss the material that would be presented during the webinar. The FGD took place with the results of the material that would be presented during the webinar, namely Forming an Imaginative Culture through Visual Awareness-Based Character Education (speaker 1) and Generation Alpha: Technology, Local Wisdom, and Learning Media (speaker 2).

The selection of material from these two speakers was based on the current needs of the educational world in responding to changing student characteristics in the digital age. Generation Alpha tends to learn visually, interactively, and intimately with technology, necessitating a learning approach that emphasizes not only cognitive aspects but also builds character and imagination through relevant and contextual media.

Furthermore, this theme was chosen to bridge the integration between modern technology and local wisdom values in the learning process. By strengthening visual awareness and utilizing culture-based learning media, teachers are expected to be able to create more meaningful, creative learning experiences that align with the demands of 21st-century learning.

The PKM activity implementation phase was held on Saturday, May 10, 2025, at 1:00 PM WIB. It was conducted online using Zoom meetings and broadcast live on the STKIP Kusuma Negara Official YouTube channel. In this phase, students from Class III Regular A served as the activity committee. The activity lasted for 3 hours, with presentations from two speakers and an interactive question and answer session. Following the PKM (Community Service Program) activities, the next step is evaluation. This evaluation is conducted by all Regular A class III students, along with the lecturer in charge of the KKN course. This stage includes reflection on the webinar implementation and appropriate feedback to address any issues that arose during the webinar's Q&A session.

RESULTS AND DISCUSSION

The Community Service (PKM) activity, which is part of a series of KKN course assignments, was carried out by class III Regular A students by presenting two speakers from the Elementary School Teacher Education Study Program (PGSD), STKIP Kusuma Negara. This activity was held in the form of a national webinar on Saturday, May 10, 2025, at 1:00 PM WIB. The materials presented included Forming an Imaginative Culture through Visual Awareness-Based Character Education by the first speaker, and Generation Alpha: Technology, Local Wisdom, and Learning Media by the second speaker.

The implementation of the activity demonstrated high participant enthusiasm, as evidenced by the attendance of 238 participants with diverse backgrounds, such as students,

teachers, and the general public. The level of active participation was reflected in the intensity of interaction in the question and answer session, where participants asked various critical questions related to the implementation of visual-based character education and the integration of technology and local wisdom in learning. In addition, the results of feedback obtained through ... showed that the majority of participants considered this activity relevant and useful in increasing understanding and insight regarding learning strategies for Generation Alpha.

Participants responded positively to the material "Shaping an Imaginative Culture through Visual Awareness-Based Character Education." This was evident in their increased understanding of the importance of visual awareness in developing character and imaginative mindsets in students. During the discussion session, participants actively linking the material to classroom learning experiences and putting forward creative ideas for integrating visual approaches into the learning process. This response demonstrates that the material presented is not only conceptually understood but also encourages participants to reflect on and apply it in an educational context.

During the webinar, it was discovered that some participants, particularly teachers, did not fully understand Generation Alpha's internet usage tendencies, which shape visual-based perspectives in virtual spaces. Previously, social media use was viewed primarily as a means of entertainment or communication, without considering its impact on students' identity formation. Following the presentation, a shift in perspective was evident, as demonstrated by participants' responses during the discussion session. They began to realize that visual content on social media does not always represent reality but rather a constructed image.

This shift in understanding was also reflected in participants' ability to connect the material to learning practices, such as the importance of building visual awareness in students to be more critical in filtering information. Several participants even expressed plans to integrate visual literacy into learning activities as an effort to minimize the negative impact of social media exposure. This demonstrates that the material presented not only broadened knowledge but also encouraged a shift in perspective and readiness for implementation in educational settings (Puspita, 2024).

The material on visual intelligence provided a new understanding for participants, especially teachers, who previously had limited understanding of the concept. During the webinar, it was revealed that most participants were more familiar with cognitive intelligence, but did not yet understand that visual intelligence is part of multiple intelligences that plays a vital role in students' learning processes. After the presentation, participants began to realize that visual intelligence can be identified through sensitivity to color, shape, and space, as well as the ability to see objects from various perspectives.

This change in understanding was evident in the responses of participants who began to be able to relate the characteristics of visual intelligence to real-world classroom situations, such as recognizing students who were more active in visual and spatial-based activities than verbal ones. Furthermore, participants also showed interest in developing learning strategies that leverage students' visual strengths, for example through the use of images, concept maps, and space-based activities. This demonstrates that the material not only broadened participants' horizons but also fostered awareness of the importance of optimizing the potential of visual intelligence in learning (Ratnasari, 2020).

The material on the role of art in developing visual intelligence provided participants with a new understanding that visual sensitivity does not arise naturally but needs to be stimulated through appropriate learning experiences. During the webinar, it was revealed that most participants had not previously associated art as a means of developing visual intelligence, but rather merely as an aesthetic activity. After the presentation, participants began to understand that art can be used to train sensitivity to visual meanings, symbols, and realities that are not always immediately apparent.

This shift in understanding was evident in the participants' responses during the discussion, where they proposed the use of art activities, such as drawing, creating visual works, and in-depth observation of objects, as part of their learning strategies. Several participants also recognized that through art, students can develop the ability to understand the meaning behind

the visuals they see, rather than simply observing them superficially. This demonstrates that the material presented is not only conceptual but also encourages participants to integrate an artistic approach into their learning as an effort to develop students' visual intelligence (Shklovsky, 2015).

The discussion on the role of art as an educational medium received special attention from participants because it was deemed relevant to the characteristics of Generation Alpha, who tend to be visual and expressive. Before the webinar, some participants still viewed art as merely a supplementary activity in learning. However, after the presentation, participants began to understand that art can be an effective means of developing students' emotional aspects, creativity, and self-expression.

This response was evident in the participants' questions and responses, which highlighted how art can be used to foster deeper learning engagement, not only cognitively but also affectively. Several participants also expressed plans to integrate exploratory and creative arts activities into their learning, as an effort to educate students more holistically. These findings suggest that the material presented transformed participants' perspectives on the function of art, from merely a supplement to a crucial pedagogical strategy in Generation Alpha learning.

In education, visual intelligence plays a role in student learning. Learning must be based on a visual culture. This will accustom students to imagination and stimulate critical and creative thinking skills, especially for Generation Alpha children. Generation Alpha children have visual behavioral patterns. More than 80% of parents with Generation Alpha children spend an average of 7–8 hours in front of a screen (Höfrová, Balidemaj, & Small, 2024). This means that from an early age, Generation Alpha children are accustomed to consuming visual entertainment. This results in a decline in critical thinking.

Given the unique characteristics of Generation Alpha, teachers are particularly impacted. They must employ innovative strategies and focus on developing the technological skills needed to teach Generation Alpha. Therefore, it's no surprise that many technology-themed training courses are being attended by teachers struggling to keep up with technological developments and recognizing the importance of staying up-to-date and innovating in teaching Generation Alpha.

Through digital interactions, they also develop awareness of their skills and talents. However, the impact that emerges is the alteration of moral values due to digitalization (Darwati, Abidin, & Sutini, 2025). The increase in online interaction will undoubtedly raise concerns about a decline in social ethics and a weakening of self-control. Therefore, the learning process needs to be designed with emotional intelligence and strong moral integrity in mind.

Generation Alpha, who grew up in an environment rich in cultural diversity, inclusion, and differences, faces a number of challenges such as technology addiction, lack of social skills, and minimal opportunities to play and interact directly in real life (Putri & Zega, 2024). Therefore, it is important for them to receive a balanced education, one that not only emphasizes the use of technology but also develops the social, creative, and physical aspects that are essential for their growth and development. Generation Alpha is known for its more practical mindset, less emphasis on traditional values, and is often considered more individualistic than previous generations. Some of the distinctive characteristics of Generation Alpha include being digital natives, which can lead to gadget addiction. One way to address gadget addiction is through traditional games.

Traditional games are more than just a cultural heritage. With technological advances and modern lifestyles that increasingly involve minimal physical activity, understanding how traditional games can impact health is becoming increasingly important. Traditional games can positively impact various aspects of health, from physical health to mental well-being, which is closely associated with Generation Alpha (Ismoyo, Nasrulloh, Hermawan, & Ihsan, 2024). Traditional games are often considered old-fashioned and therefore inappropriate for today's era. However, traditional games can be a contemporary experience for Generation Alpha. This is because Generation Alpha has never been exposed to traditional games. Traditional games are a luxury for Generation Alpha, who crave the stimulation of movement and socialization.

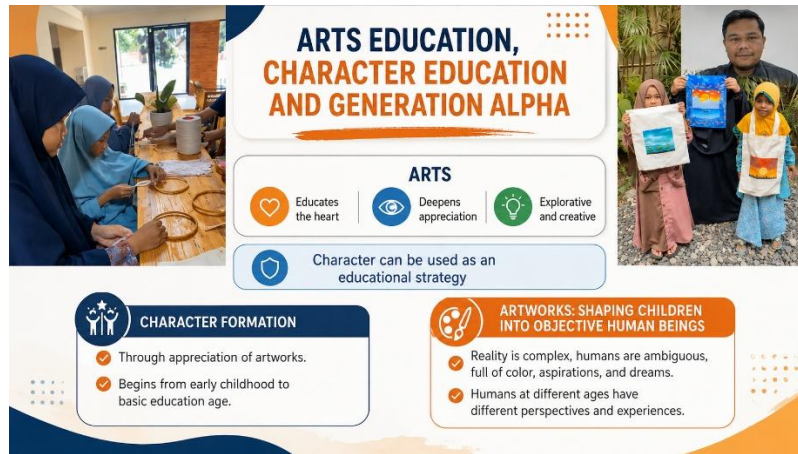


Figure 2. Material on Forming an Imaginative Culture Through Visual Awareness-Based Character Education (Source 1)

Traditional games are not merely recreational or entertaining activities, but also play a role in shaping identity and strengthening relationships between individuals within a community. Moreover, traditional games are not only entertaining but also often used as a means to improve players' cognitive skills, strategy, and basic mathematical calculations. This is something Generation Alpha never played. Alpha generation teachers naturally come from the previous generation. They should have a thorough understanding of and experience playing traditional games. Traditional games can be used in education. They can be used as an appropriate learning method or medium and can bring positive impacts to the Alpha generation (Temel, Kangalgil, & Çalı, 2024).

For example, the game Engklek (Mountain Footprint) can be used in mathematics learning. Engklek (Mountain Footprint) is a game played by more than one child. Players must walk on one foot across each square arranged until they reach the peak or mountain. Each square is numbered. These numbers can be used for learning number recognition. Engklek (Mountain Footprint) is composed of squares, rectangles, and semicircles. The images of these plane shapes can be used as a stimulus for learning the names and characteristics of plane shapes. Each square in Engklek (Mountain Footprint) can be given a question. If the child walks and throws the ball into a certain square, they must answer the question provided. If they are correct, they can walk.

The benefits of the Engklek (Mountain Foot) game are improving physical fitness, training the ability to maintain body balance, developing social skills, training discipline, improving logical intelligence, and encouraging creativity (Febriyanti, Prasetya, & Irawan, 2018). The advantages of playing Engklek (Mountain Footprint) cannot be experienced virtually, or like the Alpha generation's habit of playing on mobile phones or computers.

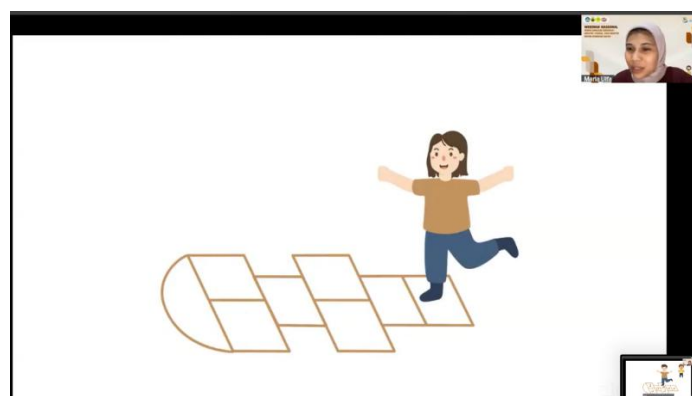


Figure 3. Generation Alpha Material: Technology, Local Wisdom, and Learning Media (Source 2)

Traditional games, such as Engklek (Mountain Footprint), can provide a natural stimulus for child development. This is because all cognitive, perceptual, sensorimotor, emotional, and social aspects are engaged during play. This demonstrates the importance of movement in the growth and refinement of children's perceptual, verbal, and visual abilities, as well as their coordination with their muscles and nervous system. Children have a strong inclination towards movement, which always has a profound impact on their lives.

Learning should be an essential part of character development and social development for elementary school students. Games bring joy when played and can create a fun atmosphere based on regional traditions. They can be played with or without equipment, and are played according to rules agreed upon before the game begins, such as the field used, the number of players, and so on. The dignity of elementary school students must of course be prioritized, namely play-based learning activities (Hasmarita, Muhamad Yusuf Nursyamsi, Gunawan, & Rosmilawati, 2023).

Traditional games can be used as learning tools, games that can teach many things such as sportsmanship, sensory development, counting, improving motor skills, recognizing colors, practicing hand-eye coordination, and can also shape character traits such as honesty, creativity, intelligence, respect for others, cooperation, and mental training for children. It is not just a matter of using technology in the learning process, but it must return to the psychological foundation of learning and consider various aspects of student growth.

Without neglecting technological developments and the obligation to use technology in education, traditional games can be an alternative learning medium. The question arises: which is better, traditional game-based media or technology-based media? Both are excellent if used appropriately and wisely, tailored to the needs of students and to achieve the instructional objectives of each lesson. Participants understood the use of learning media, both technology-based and traditional games, as two complementary approaches to supporting Generation Alpha learning. They recognized that technology use needs to be balanced with contextual approaches, such as traditional games, to ensure meaningful learning and maintain social aspects and local wisdom.

However, several obstacles were encountered during the implementation of this PKM activity, including participants' limited initial understanding of the integration of the two types of media and a tendency to use technology that was not fully geared toward pedagogical goals. Furthermore, some participants also expressed limitations in accessing or developing innovative and contextual learning media. As a mitigation measure, the resource person offered alternative strategies, including the judicious use of technology combined with a local culture-based approach, such as modifying traditional games to suit learning needs. This approach aligns with research findings that emphasize the importance of integrating technology and local wisdom to create contextual and meaningful learning. Thus, this activity not only provided insights but also provided practical solutions for participants in addressing the challenges of learning in the digital age.

CONCLUSION

Based on the results of the activity, participants demonstrated an increased understanding of the importance of using creative, visual, and adaptive educational media in learning for Generation Alpha. Prior to the activity, some participants were still using conventional learning media and had not considered visual aspects and students' diverse learning needs. However, after attending the webinar, participants began to realize that using interactive and multisensory media can help increase student engagement and understanding. These findings were reinforced by participant responses during the discussion and feedback sessions, where they revealed that visual media and adaptive technology can facilitate material delivery and make learning more engaging. Furthermore, several participants expressed readiness to begin integrating more innovative learning media tailored to student characteristics. This demonstrates that the PKM

activity has had a tangible impact on changing participants' perspectives and practices regarding the use of learning media.

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