

## Generation Alpha Numeracy Learning Assistance with Anti-Gadget Media at SDN Tongas Wetan IV Probolinggo

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### Abstract

The numeracy skills of SDN Tongas Wetan IV students are at a low level. The school is located in the remote Tongas Wetan village, surrounded by rice fields, with limited road access. Unfortunately, the absence of a cable or Wi-Fi internet network hinders technological adaptation and forces the numeracy learning process in the classroom to rely primarily on classical methods, with minimal use of learning media. Therefore, it is essential to assist students in learning numeracy using media that do not require the use of gadgets. To address this issue, a service-learning approach is employed to assist SDN Tongas Wetan IV students in three stages: the preparation stage, mentoring stage, and reflection stage. This assistance aims to create various simple learning media that can be utilized in the numeracy learning process without the need for gadgets. As a result, students become more enthusiastic and active participants in the learning process of numeracy. The positive response from the teacher indicates that the learning interactions have become more interesting. Additionally, students' numeracy skills have demonstrated an average increase of 30.47%.

**Keywords:** Gen A; Numeracy; Anti-Gadget Media

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### Introduction

The global outbreak of the COVID-19 pandemic led to a widespread adoption of remote learning, which was implemented as a necessary measure to ensure continuity of education during lockdowns and stay-at-home mandates. To promote social distancing and reduce the spread of the virus, students and their parents increasingly relied on mobile devices like smartphones, tablets, and laptops to access educational resources. As a result of distance learning, parents, especially those of Generation Alpha, had to assume a more active role in guiding their children's education compared to traditional face-to-face classes (Ziatdinov & Cilliers, 2021).

The naming of the Generation Alpha marks a departure from the previous generational nomenclature, including Generation X, Y, and Z, signifying the beginning of a new nomenclature for a distinct generation in the current millennial era. However, some argue that the naming of this generation is driven primarily by marketing purposes. It is suggested that the Generation Alpha is essentially a continuation or evolution of Generation Z, rather than a completely separate entity, continuing their existing characteristics. Consequently, the Generation Alpha shares similarities with the two previous generations, Generation Y and Z, in terms of their digital interaction and reliance on the internet in their lives. Thus, these three generations can be collectively categorized as the digital generation. However, there are differences in the initial experience of interacting with the internet and technology among them. Generation Y became familiar with the internet during their teenage years and early adulthood, Generation Z grew up with the internet from childhood, while the Generation Alpha was born into a world of rapid technological advancements (Arifah et al., 2021).

Generation Alpha, which began in 2010, marks the first cohort to be born entirely in the twenty-first century. This generation witnessed a surge in birth rates, leading to a projected total of nearly two billion births by December 2024, making them the largest generation in history. Being the first generation fully born and shaped by the twenty-first century, most of Generation Alpha can expect to live long enough to witness the twenty-second century. Throughout their lives, Generation Alpha has only experienced a world where technology and connectivity are integral. Their childhood has been greatly influenced by personalized experiences and advancements in technology. While Generation Z witnessed increased customization, Generation Alpha has embraced a higher level of personalization, where items like Nutella and Coke containers or storybooks can be ordered with individual names displayed (McCrindle, 2021).

Generation Alpha, also known as Gen A, refers to a group of individuals who were born between 2011 and 2025. It is stated by Santos and Yamaguchi (2015) that Generation Alpha is a group born after 2010. Although relatively new, Generation Alpha has shown characteristics such as the use of technology, research abilities, and critical thinking. They value technological tools and the benefits of communication facilitated by them so highly, that physical contact in the future will probably be less frequent and more valued. One of the

striking things today is that Generation Alpha has created its own existence in the realm of commercialization with the support of technology (Hidayat, 2021).

The Generation Alpha consists of individuals with behavioral characteristics focus on their creativity, dynamism, leadership and influence will be responsible for choosing their future career, most of which will be directed towards leadership professions, autonomy for decision-making and most of the professions related to technology. Digital Influencers, bloggers and "Youtubers" are among the most sought after by this generation (Reis, 2018).

They are the generation most used to the internet in history. They are the generation most familiar with digital technology and are considered the most intelligent generation compared to previous generations (Setyo Widodo & Sita Rofiqoh, 2020). The traits are high entrepreneurial soul, high intelligence in technology and rely heavily on social media, prefer to shop online, they are highly influenced by their parent and they are able to fulfill their needs and desire on their own, more educated and have highly prepared to face greater challenges in the future life (Schawbel, 2014).

Besides that, the Generation Alpha also has weaknesses such as being bossy, dominant, and controlling; not fond of sharing; reluctant to follow the rules; technology has become an integral part of their lives, and they cannot imagine a world without social networks; their ability to communicate directly is greatly reduced (Setyo Widodo & Sita Rofiqoh, 2020).

SDN Tongas Wetan IV, is one of the public elementary schools located at latitude -7 and longitude 113 coinciding in the Dusun Kapasan, Tongas Wetan Village, Tongas District, Probolinggo Regency, East Java. The location of the school is quite far from the main road with a distance of approximately 30 minutes by car or motorcycle. This school is located in an area surrounded by rice fields with paved road access but is a bit far from residential areas. The total number of active students in the 2023/2024 academic year is 146 students with 77 male students, and 69 female students (Dapodik, 2023).

Based on initial observations, learning activities both literacy and numeracy are still teacher-centered. Student-centered learning activities are still relatively low. Technology adaptation is relatively minimal, this is due to the lack of technological facilities in the target schools. Coupled with internet network access which still relies on cellular networks whose

coverage is still inadequate. Thus, in administrative reporting schools still rely on Telkomsel's cellular network.

The Generation Alpha is known as a technology literate generation (Arifah et al., 2021) if contextually with these conditions, of course it becomes less relevant. Therefore, this community service activity is focused on creating a learning atmosphere that is fresher, more fun and can later improve the competence of students at SDN Tongas Wetan IV, especially their numeracy competence. This effort is carried out through numeracy learning assistance using anti-gadget media. The anti-gadget media was deliberately chosen by adjusting the field conditions as described above.

## **Method**

This mentoring program uses a service-learning approach. Service learning is a learning approach that combines academic goals with efforts to increase awareness in addressing problems or events that exist in the community directly. In addition, service learning was chosen because in it there is an element of 'serving activities' which is the spirit to develop people, as Maxwell said that servanthood is the soul for developing people (Maxwell, 2013). This approach integrates academic achievement and student character development through experiences inside or outside the classroom. By using the service learning approach, teachers can connect the theory taught in class with real situations in society (Setyowati & Permata, 2018). Assistance in this activity uses a service learning approach which consists of three stages, namely preparation, service, and reflection (Wajdi et al., 2020).

In the early stages, the companion team made preparation for mentoring. This preparation is carried out through observation, interviews, and tests (AKM pre-test [Asesmen Kompetensi Minimum]). Observations were made to get an overview of the numeracy learning process carried out as well as an overview of the atmosphere of the teaching and learning process in the classroom. Interviews were conducted with the school principal and several class teachers to obtain initial data about the challenges or obstacles encountered in the teaching and learning process, the strategies and methods used, and the opportunities or potential that the mentoring team could later develop.

The second stage is the service stage. In this stage, the mentoring team works closely with the teachers to jointly assist the numeracy learning process both inside and outside the

classroom. The learning process by prioritizing a fun learning model, and using anti-gadget media developed by the development team.

The third stage is the reflection stage. In this stage, the team together with the teachers evaluates the mentoring process that has been implemented. This mentoring activity was carried out from February to April 2023.

## **Results and Discussion**

Learning activities at SDN Tongas Wetan IV tend to use classical methods and are teacher-centered, where the teacher plays a greater role in explaining material to students. Less student-centered learning, so that the role and interaction of students in the learning process is relatively low.

In the preparatory phase, the team reported themselves to the Probolinggo District Education Office, which then headed to the target school, namely SDN Tongas Wetan IV, because this activity was part of the 5th batch of the Kampus Mengajar program. After meeting with the school principal and staff, the team introduced itself as part of the implementing Kampus Mengajar activities in charge of SDN Tongas Wetan IV. On this occasion, the service team conducted interviews and observations for a week. Observations were made to obtain an initial picture of the condition of the target schools.

To find out the minimum competency level of students, the team also conducted a Numerical Minimum Competency Assessment (AKM [Asesmen Kompetensi Minimum]) pre-test which was held on March 11, 2023. From the pre-test, it was concluded that the numeracy competency of Tongas Wetan IV Elementary School students was in the low category.

This is also supported by the results of interviews and observations which show that learning numeracy in class still tends to use classical methods in the process. The lack of teaching media that can be used in the teaching and learning process, as well as media developed by the teachers themselves is also one of the factors causing students' low interest in learning numeracy. This is compounded by the absence of an internet network, either a cable network or WIFI. So, to access teaching materials or important online information, teachers must rely on cellular networks with certain network providers that have good signal quality.

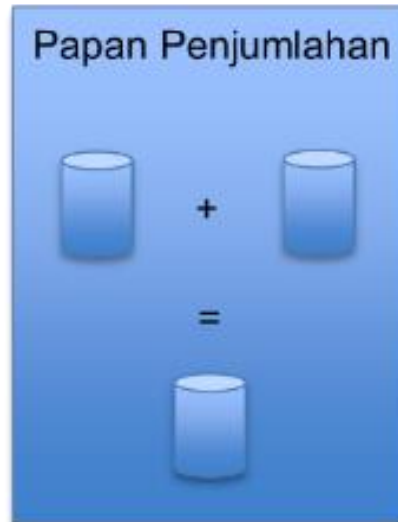
After obtaining these initial data, the mentoring team then compiled an activity program designed to be carried out from February to April 2023. In the design of the activity program, one of them was learning numeracy using anti-gadget learning media.

After the preparatory stage was carried out, the team then developed several forms of media, then used them in the learning process in the classroom. The development of this anti-gadget media was carried out by team members, namely Dicha Riski Triwahyuni and Vika Zida Akmaliah, both of them are Mathematics Education study program students. Media developed with an emphasis on learning media output products that can be used manually without digital tools (anti-gadget media). Some of these media are made from colored paper or printed paper with colored designs, and some are made from cardboard and used mineral water bottles. Others are designed in advance using special software and then printed, and there are also media that only use paper and handwriting. The media then used in the class by adjusting the level or class of students.

The media that have been developed are:

- **Sum Board**

The addition board media is used because it has a high level of significance to improve students' numeracy competence, especially the addition operation (Matondang & Martias, 2021). This medium uses 1 used cardboard, 3 used drinking bottles, some ice cream sticks, glue, manila paper, black paper, green paper, and some decorations. Cardboard is then cut into a rectangle, then covered with manila paper, and at the top is written "Papan Penjumlahan". Next, the drink bottle is cut into half. Then the black paper is cut to form a "+" symbol and an "=" symbol. The two bottles are attached to a rectangular cardboard board, and a "+" symbol is placed between them. The third bottle is placed at the bottom of the cardboard board, and the "=" symbol is placed above it.



**Figure 1.** Sum board design

This media is then used at the lower grade level to study material about the introduction of basic addition operations, namely class I and II.



**Figure 2.** Use of the sum board media

The steps for using this media are as follows:

1. Students are asked summary questions, for example,  $3+2$ .
2. Students are asked to put three ice cream sticks into the bottle on the left and two popsicle sticks into the bottle on the right, then move all the ice cream sticks into the bottle below.
3. Students count the total number of ice cream sticks. The final result of the calculation is the answer.



### ▪ **Multiplication Board**

This multiplication board media was designed using Canva software on a single page, then printed according to the number of students. The target use of this media is a class of students who learn about multiplication. So, in the field this media is used in class III, IV, V and VI. This media was chosen in this assistance because it has a significant impact on improving student learning outcomes (Kurniawati, 2022).

The procedure for using this media is as follows:

1. Students are asked to fill in all the boxes sequentially from the start line to the finish line, which can be done individually or in groups.
2. The student who reaches the finish line first and produces the correct answer is the winner.



**Figure 3.** Using of the multiplication board media

### ▪ **Looking for Questions**

This media is prepared using white paper or contrasting colored paper to make it easier for students to find it. The paper used can be A4, F4, or half of it. The question is written on the paper, then placed or pasted in a certain place. One sheet of paper contains an order or question. So that in its use, it is possible for the teacher to make several questions or orders onto several pieces of paper which are then spread to several places. This media is quite synonymous with educational games which can increase students understanding quickly, because it is supported by interesting games and students become active (Wijayanto & Istianah, 2017). The use of this media can be in the classroom or outside the classroom. However, this assistance is used in the field and school environment so that learning also stimulates students' psychomotor (Arifin, 2018). Learning outside the classroom in the context of service learning does not just refer to the



place where learning is carried out in different places so as not to get bored or to make it more interesting (Nusanti, 2014).



**Figure 4.** Use of learning media looking for questions

Besides being used for learning numeracy, this media can also be used for literacy learning and can be used for various grade levels from grade I to grade VI by adjusting the weight of the commands or questions. This media is based on a form of play that fits the characteristics of elementary school students who tend to play (Fitriyani, 2017).

The procedure for using this media is as follows:

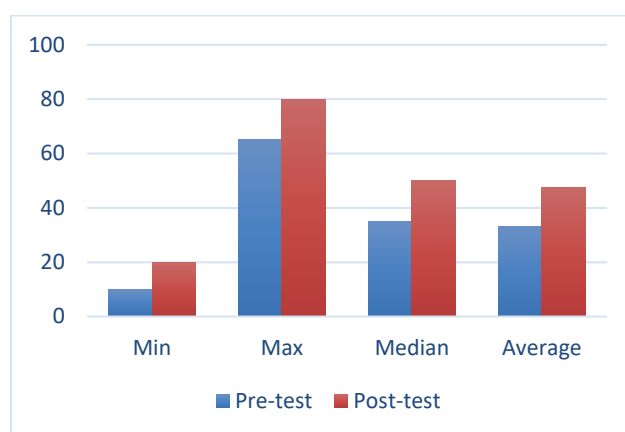
1. Students are asked to prepare writing instruments and a blank sheet of paper
2. Students listen to the directions from the teacher
3. Students are asked to look for questions that have been prepared by the teacher (questions can be in the form of summary, subtraction, multiplication, and so on, according to the level of students' numeracy abilities).
4. Students write down their answers on the pieces of paper they brought.
5. The student who finds the question and answers it quickly and correctly is the winner.

The next stage is the reflection stage, where the team reflects on the service activities that have been implemented. This reflection includes the use of anti-gadget media that has been developed, student responses and interactions in the mentoring process, and teachers' responses. To measure the results of the assistance, at the end of the activity, an AKM post-test was carried out.

There are several weaknesses of the media that have been developed, one of which is the repeated use of media in the same class can cause students to get bored. So, it is necessary to modify the media or technical use. The Multiplication Board media is classified as disposable media, because one sheet of media paper is also a means for students to fill in their answers. While the Media Searching for Questions in use takes quite a lot of time, because

students have to search and find the questions first, then answer the questions, then submit them to the teacher, and then make corrections together.

In the reflection process, it was found that students became more enthusiastic about participating in the learning process because learning used media that was synonymous with games. Where children in grades 1 and 2 are still categorized as kindergarten because they tend to play (Julianto et al., 2019). This can be seen from the activities carried out by students who look very motivated and confident to understand the material and answer questions asked during learning (Ramlah et al., 2022). Likewise, with the teacher's response who seemed happy with the development and use of this anti-gadget learning media, because it had the impact of positive changes that occurred in student interactions with the learning process.



**Figure 5.** Comparison of pre-test and post-test results of AKM numeracy

Students' numeracy skills have also increased compared to before the assistance was implemented. This is proven through the results of a comparison between the pre-test and post-test results of the AKM, which on average increased by 30.47%. Student responses and interactions with learning materials were also more enthusiastic. Especially the media used in learning outside the classroom, because in addition to cognitive and affective aspects, students are also required to use their psychomotor aspects.

The results of this study are consistent with the research findings of Pan et al. who reported that the game in learning numeracy experienced a significant increase in the acquisition of mathematical knowledge or positive attitudes towards learning mathematics, especially the collaborative game mode (Pan et al., 2022).

## Conclusion

This assistance still has great opportunities to be developed, including technology adaptation by developing information technology infrastructure, especially internet networks. Considering that the Generation Alpha is a generation already familiar with the internet. If internet facilities and various supporting devices are available, it will be possible for teachers to develop IT-based learning media. However, even with the limited internet facilities owned by schools, teachers must be open to adapting to technological developments. So that teachers can develop materials, strategies, and learning media that are by the context of the times.

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## References

- Arifah, M. N., Munir, M. A., & Nudin, B. (2021). Educational Design for Alpha Generation in the Industrial Age 4.0. *Proceedings of the 2nd Southeast Asian Academic Forum on Sustainable Development (SEA-AFSID 2018)*, 168, 137–145. <https://doi.org/10.2991/aebmr.k.210305.026>
- Arifin, M. (2018). Pengaruh Media Pembelajaran Mind Mapping terhadap Hasil Belajar Kognitif dan Psikomotorik IPA Siswa Kelas IV SD Negeri 01 Kandangmas. *JGK (Jurnal Guru Kita)*, 2(4), 31–38. <https://doi.org/10.24114/jgk.v2i4.13573>
- Dapodik. (2023). *Data Pokok Pendidikan SDN Tongas Wetan IV*. <https://dapo.kemdikbud.go.id/sekolah/73A91DBF0047A14352E9>
- Fitriyani, F. N. (2017). Perkembangan Bermain Anak Usia Dini. *As-Sibyan: Jurnal Pendidikan Anak Usia Dini*, 2(02), 125–140.
- Hidayat, A. (2021). *Pendidikan Generasi Alpha* (1st ed.). Jejak Pustaka.
- Julianto, I. N. L., Cahyadi, I. W. A. E. C., & Artawan, C. A. (2019). Color Interactivity as Visual Stimulation in the Study Room of Grade 1-3 of Elementary Students in Denpasar City. *Sandyakala: Prosiding Seminar Nasional Seni, Kriya Dan Desain*, 1, 56–64.
- Kurniawati, L. N. (2022). Meningkatkan Hasil Belajar Siswa pada Materi Perkalian

- Menggunakan Papan Perkalian. *PTK: Jurnal Tindakan Kelas*, 2(2), 113–119.  
<https://doi.org/10.53624/ptk.v2i2.52>
- Matondang, D., & Martias, M. (2021). Efektivitas Media Pembelajaran Papan Penjumlahan dalam Meningkatkan Kemampuan Operasi Penjumlahan pada Anak Berkesulitan Belajar. *Ranah Research: Journal of Multidisciplinary Research and Development*, 3(1), 126–130.  
<https://doi.org/10.38035/rrj.v3i1.334>
- Maxwell, J. (2013). *How Successful People Think*. Hachette Book Group.
- McCordle, M. (2021). *Generation Alpha*. Hachette Uk.
- Nusanti, I. (2014). Strategi Service Learning Sebuah Kajian untuk Mengembangkan Kegiatan Pembelajaran. *Jurnal Pendidikan Dan Kebudayaan*, 20(2), 251–260.  
<https://doi.org/10.24832/jpnk.v20i2.142>
- Pan, Y., Ke, F., & Xu, X. (2022). A Systematic Review of The Role of Learning Games in Fostering Mathematics Education in K-12 Settings. *Educational Research Review*, 36(March), 1–13.  
<https://doi.org/10.1016/j.edurev.2022.100448>
- Ramlah, R., Riana, N., & Abadi, A. P. (2022). Fun Math Learning for Elementary School Students Through Interactive Puzzle Media. *SJME (Supremum Journal of Mathematics Education)*, 6(1), 25–34. <https://doi.org/10.35706/sjme.v6i1.5775>
- Reis, T. A. dos. (2018). Study on The Alpha Generation And The Reflections of Its Behavior in the Organizational Environment. *Journal of Research in Humanities and Social Science*, 6(1), 09–19. [www.questjournals.org](http://www.questjournals.org)
- Schawbel, D. (2014). *5 Predictions For Generation Alpha*.
- Setyo Widodo, G., & Sita Rofiqoh, K. (2020). Pengembangan Guru Profesional Menghadapi Generasi Alpha. *Jurnal Ilmiah Pendidikan Citra Bakti*, 7(1), 13–22.  
<https://doi.org/10.38048/jipcb.v7i1.67>
- Setyowati, E., & Permata, A. (2018). Service Learning: Mengintegrasikan Tujuan Akademik dan Pendidikan Karakter Peserta Didik Melalui Pengabdian Kepada Masyarakat. *Bakti Budaya: Jurnal Pengabdian Kepada Masyarakat*, 1(2), 143.
- Wajdi, M. B. N., Ubaidillah, M. B., Mulyani, S., Anwar, K., Istiqomah, L., Rahmawati, F., Hikmawati, S. A., Ningsih, D. R., & Rizal, H. S. (2020). Pendampingan Redesign Pembelajaran Masa Pandemi Covid-19 bagi Tenaga Pendidik di Lembaga Pendidikan berbasis Pesantren di Jawa Timur. *Engagement: Jurnal Pengabdian Kepada Masyarakat*,

4(1), 266–277. <https://doi.org/10.29062/engagement.v4i1.193>

Wijayanto, E., & Istianah, F. (2017). Pengaruh Penggunaan Media Game Edukasi Terhadap Hasil Belajar IPA Siswa Kelas IV SDN Kajartengguli Prambon Sidoarjo. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 5(3), 254411.

Ziatdinov, R., & Cilliers, J. (2021). Generation Alpha: Understanding the Next Cohort of University Students. *European Journal of Contemporary Education*, 10(3), 783–789. <https://doi.org/10.13187/ejced.2021.3.783>