



Exploring Self-Regulated Learning for Alpha Generation Adolescence in Digital Era

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Abstract

The aim of this research is to explore the implementation of Self-regulated learning on digital era Alpha Generation adolescents, particularly high achieving junior high school students. The study aims to understand how they integrate the use of digital technology in SRL process and identify the strategies used to counter digital distraction. The method used is qualitative with phenomenology approach and involves five high-achieving students from SMP Negeri 1 as research subject. Data is obtained through semi-structured interview, participant observation, and documentation, then it is analyzed using Miles and Huberman interactive analysis technique. Based on the results, it is known the students implement SRL effectively through learning time planning, gadget use management, and technology utilization for learning monitoring and evaluation. However, the challenge namely social media distraction, technology addiction, and difficulty in actively participating in the classroom remains prevalent. In conclusion, Alpha Generation require educators' and parents' guidance to develop adaptive SRL strategies, enabling technology to serve as learning tools, not obstacle. These findings contribute to the model development application to this digital era, particularly in Indonesia.

Keywords: Self-regulated learning; Alpha Generation; Digital Era; Adolescence

1. Introduction

In this era of society 5.0, technology continues to develop rapidly. Digital technology has penetrated in various fields, such as video games, social media, artificial intelligence tools and many others. The phenomenon that occurs in the world of education today is that alpha generation teenagers are very close to digital technology. The alpha generation is a generation that has a very strong relationship with technology because it can be considered to have a lot of access to information and technology.

This alpha generation is a child with a risk of being born in 2010-2025 (Nasution, 2024). The very rapid development of this technology, it is not uncommon for children to do activities outside of learning activities, they often play online games or often online on social media and even use AI (*Artificial Intelligence*) or artificial intelligence to perform its tasks (Wu, 2024). The impact of all of this, not only affects the way they interact with the world, but also affects the way they learn. It is necessary to know that the success of children is not only determined from the intellectual side of the child but also from the extent to which the child can regulate and control control in the learning process which is called Self-regulated learning (Schunk, 2005).

Self-regulated learning is the ability of an individual to actively monitor, regulate, and control certain areas of his or her own learning process (Paul R Pintrich, 1995). Self-regulated learning first introduced by Zimmerman in the early 1980s developed from Bandura's social cognitive theory in 1986 and redeveloped by Pintrich and Schunk (Zimmerman, 2002). Bandura (1991) underlies the concept of Self-regulated learning by emphasizing the role of the individual in directing the learning process.

In the concept of self-learning or Self-regulated learning, students act as the main drivers who determine learning targets, develop strategies, and assess their own learning progress (Zimmerman, 2002). This process involves three important areas, namely cognitive, motivation, and action (Paul R Pintrich, 1995). Cognitive is concerned with students' skills in designing, monitoring, and evaluating their learning progress. Motivation includes beliefs, perceptions, as well as emotional impulses that affect their involvement in learning activities (Pintrich & Groot, 1990). Meanwhile, the behavioral area includes the steps students take to create a conducive learning environment and manage time efficiently. Application Self-regulated learning provide various benefits, such as improving academic results, encouragement to study harder, independence in acquiring knowledge, and strengthening analytical skills (Latipah et al., 2021). Some approaches that can be used to hone these skills include planning, monitoring progress, process control, and evaluation (Paul R Pintrich, 2004). This ability is very relevant for the alpha generation given the rampant disruption of the digital world. By mastering Self-regulated learning, they can reduce the negative impact of distractions that often hinder learning productivity so that they can improve their academic achievement (Saputra et al., 2024).

Recent studies reveal that the academic achievement of students in this era does not only depend on the lack of use of devices, but rather on the skills of effective self-regulation through independent learning or Self-regulated learning. Some research from Singh & Kanujiya (2025) and Shi & Liu (2025) emphasizing that students who are technologically literate actually use digital devices to prepare study plans, monitor progress, and evaluate learning outcomes. Research from Flanigan et al. (2025) even states that Self-regulated learning It is the main differentiator between students who are easily distracted by gadgets and those who remain concentrated in the midst of a digital environment full of distractions. This phenomenon is further amplified by the use of artificial intelligence, such as chatbot-based *Artificial Intelligence* (Engness & Nohr, 2025) and adaptive learning systems (Patrick et al., 2025) which not only provides content, but also adapts to the learning habits of its users.

Furthermore, research from Herold & Seufert (2025) stated that the provision of digital-based learning support carried out from the beginning plays an important role in fostering learning independence from an early age. In fact, students who work closely with their peers have been shown to be more resistant to the adverse effects of excessive use of digital devices. Analysis of learning data from de Barba et al., (2025) It also indicates that students who regularly evaluate their learning progress through digital platforms tend to be more academically disciplined. So, although the use of gadgets is often associated with learning disorders, students with Self-regulated learning The good ones are actually able to turn technology into a means of controlling learning, not a distraction.

This research is important to be carried out because the researcher wants to find out how adolescents, especially the alpha generation, manage their learning process in the digital era but can have high academic achievements. There are still not many specific studies examining Self-regulated learning in alpha generation adolescents with high academic achievement who have coexisted with technology in Indonesia since childhood. In addition to being relevant for the academic field, this research can also be a reference for educators and parents in helping students or children in designing learning strategies that are suitable for this alpha generation of adolescents. Thus, this study aims to explore Self-regulated learning in alpha generation adolescents with high academic achievement in this digitalization era so that it is expected to contribute to education in the modern era, especially in Indonesia.

2. Method

This study uses a phenomenological approach to deeply understand the experience of research subjects related to self-management in learning. This approach was chosen

because it is able to reveal the meaning behind the phenomenon through the perspective of the participant holistically (Scott, 2019). Phenomenological research focuses on how individuals interpret their life experiences. This approach is appropriate because the research aims to understand the essence of the subject's awareness of the phenomena experienced. This research uses a qualitative method, which according to Sugiyono (2019)), qualitative research is suitable for exploring social phenomena in depth in a natural setting. The researcher plays the role of the main instrument in collecting data through direct interaction with the research subject. This method allows researchers to understand the complexity of phenomena from a student's point of view (Creswell & Poth, 2018).

The main technique of data collection is semi-structured interviews. Sugiyono (2019) explains that this technique provides flexibility in digging into in-depth information while still being guided by the core question. Interactive data analysis techniques initiated by Miles and Huberman are utilized, which include data reduction, data presentation, and verification or drawing conclusions (Saleh, 2017). They revealed that activities in qualitative data analysis are carried out interactively and take place continuously until complete, so that the data is saturated.

The validity of the data is maintained through several techniques. We use interviews. *Member check* used to verify the interpretation of data with students. *Trail audit* Applied to document the entire research process in detail (Creswell & Poth, 2018). The subjects of this study are students who are still studying at the junior high school level aged at least 15 years old with high academic achievement (first place in the previous semester) and have a high duration in the use of gadgets every day. Specific criteria can help researchers get students who truly understand the phenomenon being studied.

The research uses *a purposive sampling technique*, where the selection of students is based on certain considerations. According to Sugiyono (2019), this technique is appropriate for qualitative research that prioritizes the depth of information rather than generalization. Samples were selected based on their ability to provide in-depth information about the phenomenon being studied. Researchers collected data through in-depth interviews from seventh and eighth graders at the junior high school level. After passing the selection session, five students were obtained who met the criteria. The five students will be interviewed further to be analyzed related to Self-regulated learning in this digital era.

Table 1: Research Subjects

Criterion	Subject				
	CA	SA	DT	RD	DF
Gender	Woman	Woman	Woman	Man	Man
Age	15 Years	15 years	15 Years	15 years	15 years
Last Semester Rankings	1	1	1	1	1
Duration of use of the gadget (hours)	Weekday 4 – 5 hours	5 – 6 Hours	1 – 3 Hours	± 4 Hours	± 3 Hours
	Weekend 7+ Hours	16 Hours	± 12 Hours	± 12 Hours	5 Hours

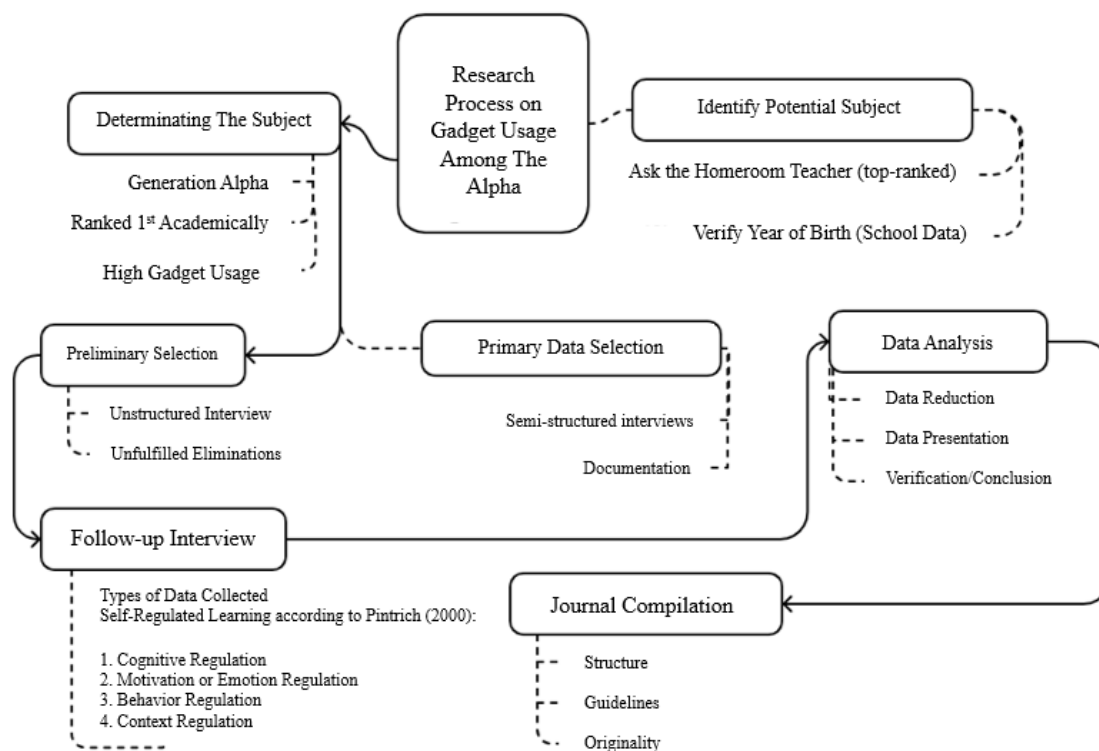


Figure 1: Data Collection Procedure

3. Results and Discussion

3.1 Results

The process of independent learning in alpha generation adolescents cannot be separated from the influence of the ever-evolving digital environment. By concept Self-regulated learning submitted by Pintrich (2000), there are several important areas that need to be considered in understanding how adolescents manage their learning process in the midst of rapid technological advancements. These areas consist of cognitive regulation, motivational or emotional regulation, behavioral regulation, and context regulation. In this study, all the regulatory areas proposed by Pintrich appeared in each student but with different intensities.

Table 2: Conclusions Drawn from Interview Results and Narratives related to Cognitive Regulation Areas

Cognitive Regulation			
Aspects	Key Findings	Sample Quotes	Subject (percentage)
Planning	Keep your study schedule fixed with a gadget management strategy	"I learned maghrib-isha, cellphones are kept in the closet unless absolutely necessary" (CA)	CA, DT, SA (60%)
Monitoring	Combine consulting to others and digital in times of difficulty	"Ask a friend first, if you don't understand, just search on YouTube" (DT)	DT, DF, RD (60%)
Evaluation	All students are aware of the positive and negative impact	"Google helps you find quick answers,	All subjects (100%)

of gadgets in learning *but notifications are often annoying" (RD)*

The majority of informants showed careful learning planning skills, as seen in CAs who disciplinedly allocated study time and regulated the use of gadgets. However, not all students are able to be consistent, as experienced by SA who still has difficulty avoiding the distraction of online games. In facing learning difficulties, most informants combine various strategies, some prefer to ask questions directly to teachers, parents, and friends, while others use digital platforms such as YouTube and Google to seek additional explanations.

Table 3: Conclusions Drawn from Interview Results and Narratives related to the Motivation Regulation Area

Motivation/Emotion Regulation			
Aspects	Key Findings	Sample Quotes	Subject
Intrinsic	Motivated by a specific interest in a particular field	<i>"I myself like science, I want to deepen that subject so that maybe I can go to a doctor's job so maybe I can study biology, chemistry, physics" (SA)</i>	SA, DF, RD (60%)
Extrinsic	Driven by the ranking system and family expectations	<i>"During the exam, I usually study harder so that I can get rank 1 and then not disappoint my parents" (DT)</i>	DT, CA, SA, RD (80%)
Task Value	Finding satisfaction in mastery of material regardless of grades	<i>"Satisfied because I understand other material better than the one in the assessment" (CA)</i>	CA, RD, DF, DT (80%)
Confidence in Self-Ability	Showing confidence in learning without gadgets	<i>"Never, because if you don't study on a cellphone, you can study in books, you can study in books, you can study in my brother's old books" (SA)</i>	RD, DF, SA (60%)
Self-Confidence Control	Use special strategies to manage emotions	<i>"Playing games overcame my anxiety" (RD)</i>	RD, CA, DT, SA (80%)
Anxiety ahead of the Test	Showing anxiety at the time of the test	<i>"Every time I wake up I feel like I'm going to panic" (CA)</i>	CA, DT, RD (60%)

In terms of learning motivation, it shows significant diversity. Some students like SA have strong intrinsic motivation related to career aspirations in science, while DT and RD are more motivated by external factors such as academic ranking. Some respondents such as CA showed appreciation for the learning process itself, where understanding concepts is considered more important than grades alone. Emotion management shows a unique adaptation to technology. Some students like RD use games as a means of relaxation when stressed about exams, while DF actually finds calm and enthusiasm in the learning activities themselves. This variation in emotional responses reflects the diversity of

character and individual needs in managing academic stress. These findings indicate that the motivational approach of each student cannot be standardized for this generation.

Table 4: Conclusions Drawn from Interview Results and Narratives related to Behavior Regulation Areas

Regulation of Behavior			
Aspects	Key Findings	Sample Quotes	Subject (percentage)
Repetition	Choose to reread the material that has been taught	<i>"Relearn and re-read the recorded material"</i> (DF)	All Subjects (100%)
Record Preparation	Choosing handwriting over digital typing	<i>"Writing helps me remember better"</i> (RD)	DT, CA, SA, RD (80%)
Critical Thinking	Still hesitant to express his opinion even though he understands the material	<i>"Fear of my question being considered strange"</i> (CA)	CA, RD, DF, DT (80%)

In learning behavior, some informants develop various adaptive techniques and still maintain the tradition of manual notes in notebooks because they are considered more helpful for comprehension. This is reinforced by the expressions from DF and RD who prefer to take manual notes because writing will help to remember better than typing. But on the other hand, to actively participate in the classroom is still a challenge, many students are reluctant to ask questions because of concerns about social judgment. This pattern shows that there is a gap between cognitive ability and the courage to express themselves in the academic environment.

Table 5: Conclusions Drawn from Interview Results and Narratives related to Context Regulation Areas

Regulation of Context			
Aspects	Key Findings	Sample Quotes	Subject (percentage)
Time and Environment Resource Management	Choose a room and at night to start studying	<i>"At night", "the problem is that during the day because I am tired, so I want to have a little entertainment first, then at night when it is fresh then continue studying"</i> (RD)	DT, RD, CA, SA (80%)
Utilization of Assistance	Choosing to ask others first and then to gadgets	<i>"Usually I ask my friends for help, if I'm at home chatting with my friends, or not I immediately ask Google"</i> (DT)	DT, RD, CA, DF (80%)
Peers	Choosing friends as the best partner in learning	<i>"I'm more inclined to study with my friends, if it's good to be able to discuss, if digital media can be wrong,</i>	CA, DT, DF (60%)

that's the answer"

(CA)

In utilizing sources of help, there is a difference in the tendency between students who are more comfortable discussing with their peers and those who rely more on digital media. CA described students who feel that studying with friends actually interfere with their learning because they tend to joke, so they prefer to study independently using digital media which is considered more practical and fast in finding information. Judging from these findings, it can be underlined the importance of a learning approach that is in accordance with the learning process needed by students.

The implications of these findings show that high-achieving alpha generation adolescents have quite good Self-regulated learning skills in this digital era. They are able to utilize technology such as google, AI (Artificial Intelligence), and other digital media to deepen understanding, manage learning time, and choose effective learning strategies. However, the main challenges of this digital influence arise, ranging from over-reliance on technology, distractions of social media or games, and difficulty expressing opinions in class. The findings of this study also reveal that alpha generation adolescents with high academic achievement show a unique pattern of Self-regulated learning, in which they are able to integrate technology productively in the learning process. The key to their success lies in structured cognitive regulation strategies such as disciplined study time planning and gadget management, the ability to manage both intrinsic and extrinsic motivations, and adaptation of learning behaviors that combine traditional methods such as manual recording with the use of digital resources. Thus, these findings emphasize the importance of developing Self-regulated learning strategies that are adaptive to the characteristics of the alpha generation and at the same time confirm that the digital environment is not just a tool, but also shapes the mindset and learning habits of the alpha generation, where their Self-regulated learning process is greatly influenced by the way they interact with technology.

3.2 Discussion

The alpha generation is the generation that emerged after generation Z, namely from 2010 to 2025. This generation has several distinctive characteristics because this generation grew up in the midst of the dominance of digital technology. The majority of teenagers today rely heavily on smartphones or other digital devices, even though their use is more for entertainment than education. Behind this, alpha generation teenagers are often disturbed, especially in their field of learning. Many of them are more interested in spending time playing online games or surfing social media platforms than studying school lessons or doing homework (Putri & Erlina, 2023). What is more concerning, some students are used to using artificial intelligence technology to do academic tasks instantly without trying to understand the material first (Wu, 2024). However, not a few teenagers can use digital devices productively as a means of supporting learning. These differences in behavior reflect variations in self-control abilities in learning among the alpha generation. Some manage to divide their time and maintain concentration while studying, while others find it difficult to escape the temptation of digital entertainment. Without the ability to manage time and determine a priority scale, most will choose fun activities over studying.

These findings confirm that the digital environment is not just a tool, but also shapes the mindset and learning habits of the alpha generation. Students' independence in managing learning or Self-regulated learning are heavily influenced by the way they interact with technology (Zimmerman, 2002). It was revealed that in the implementation of Self-regulated learning Alpha generation has a complicated relationship. Complicated means digital media or tools that have layered effects, can be positive and can also be negative depending on the user. Based on theory Pintrich (2000), it is seen that digital technology significantly modifies the way students manage their learning process. This is

also in line with the research conducted Urbina et al. (2021) which shows the influence caused by technology related to the individual learning process. This research also reveals a unique pattern in the independent learning of the alpha generation. Even though we live in a digital era full of distractions, there are students with high academic achievement who are able to develop adaptive strategies by combining technology and methods well. This challenges common assumptions about the younger generation's dependence on digital devices. This is in line with research Wu (2024) which states that technology can be a means of deep learning or Deep Learning when used with a good and appropriate strategy. However, there are still many teenagers of the current generation who still lack the ability to Self-regulated learning.

Lack of capability Self-regulated learning will have a negative impact on teenagers. However, this phenomenon actually has a double impact on the learning process of adolescents (Elgeka & Pujibudojo, 2023). On the one hand, the rapid development of this technology can expand and facilitate the dissemination of information that can help adolescents in their learning process, but on the other hand, excessive use of technology can hinder the learning process due to the many distractions such as online games and social media so that it has the potential to increase procrastination behavior and decrease motivation in learning (Sutarni et al., 2021). It is not uncommon for alpha generation teenagers to experience dependence on digital media assistance when completing tasks given by teachers at school, thereby lowering their ability to understand something independently which should have been built with the independent learning process (Wu, 2024). This will gradually affect the cognitive development of adolescents, it's just that there are some adolescents who can regulate their cognition so that they can use technology well like the informant interviewed by the researcher.

In the area of cognitive regulation or mind, some informants regulate the tempo or duration through an equal division of time between learning and interacting with gadgets. According to Wolters & Brady (2021), effective time management is an important component of Self-regulated learning in learning, as students must allocate time to study, complete assignments, and engage in activities without external reminders. Without adequate time management, students may struggle to meet the demands of assignments, leading to a lack of engagement and decreased academic performance. Meanwhile, providing a distance between the body and gadgets is a strategy for a small number of informants. During the learning process, they choose to keep their phones away rather than having to be close if there is no need. This was stated by (Paul R Pintrich, 2004), there are some variations in learning strategies. There are some students who use digital gadgets or platforms well, but there are also those who have not found a good digital use strategy. Digital media is like a double-edged sword, if used properly it will be very useful, but if used poorly it will have the opposite impact.

Monitoring of the learning process is often carried out by each informant to measure the extent to which he has understood the lesson. Most informants choose to relearn it through package books and personal notes without the help of anyone independently. Some informants also use their classmates as intermediaries for solutions to understand material that has not been well understood. Students also rely on teachers, parents, and the internet as strategies that are usually used by a small percentage of informants by making this strategy a last resort after several attempts to ask peers have not yielded results. According to Wolters & Brady (2021), Self-regulated learning Often seen as an independent process, the help-seeking behavior exhibited by informants highlights that Self-regulated learning does not occur in isolation. Many students realize the importance of seeking support from peers, parents, and teachers when needed.

Through internet browsing, gadgets have been proven to help informants in the process of independent learning. The use of internet platforms such as google and chatbots has advantages in terms of time efficiency and accuracy of answers. Chatbot is an artificial

intelligence program that functions to provide information but with a model such as human conversation so that it is easier to use it (Thimmanayakanapalya et al., 2025). According to Salamin et al. (2023), chatbots have emerged as a technological application that greatly improves interpersonal communication and learning. Some chatbots offer interactive methods and user-friendly interfaces to provide a wide range of information and knowledge, serving as a tool for individual consultation. A small number of informants use gadgets as support in providing entertainment on the sidelines of the independent learning process taking place like music. However, it should be noted that the weakness of gadgets is that they always divert the activities of informants from the independent learning process, either in the form of games or social media. In fact, one of the informants said that music which was initially a support for learning can be an obstacle that lowers the focus of learning.

In terms of motivation or emotion regulation, the study found a diverse pattern. As stated by Pintrich dan Groot (1990)), learning motivation is influenced differently by the digital environment. SA students show strong intrinsic motivation through exploration of science-related content so that they want to become doctors, while DTs are more motivated by external factors such as academic ranking. This will also affect the emotions in the students. By the time students are about to take the exam, these findings show how technology plays a dual role. RD students use games as a stress management mechanism. Meanwhile, CA experienced anxiety due to remembering the difficulties that would be faced continuously due to viewing content from digital media. This illustrates the failure of self-monitoring to find out the negative emotions that exist in him. where they evaluate how they feel about the pressure of learning and respond to it by doing Coping with, preventing, and so on. These findings reinforce the existence of motivational differences in theory Self-regulated learning with additional insight into the role of technology as a motivational medium.

In the area of behavioral regulation, it reveals unique adaptations in the alpha generation. The habit of manual note-taking maintained by all students shows that they have not fully embraced the digital transformation in total. This is proven at a time when all informants are still using written media as the best process for recording because it is considered still relevant and easier to remember. This is corroborated by the results of the research Kurniawanto (2025) which states that digital transformation has not completely changed the learning process of the alpha generation and still maintains the tradition of taking notes on paper or notebooks. However, they still have some difficulty in actively participating in the classroom reflecting the impact of the lack of social interaction training due to the fear of being judged by others and sticking to the standards of social media, but with new challenges in the digital age.

In contextual regulation, students show awareness of the need to manage their digital space. Practices such as saving cellphones while studying (CA) or choosing night time (RD). According to Pintrich (2004), effective learning is learning that is in an environment that they modify to create conditions conducive to individuals to think. This is in line with research from Flanigan et al. (2025) which emphasizes the urgency of establishing a learning zone that is free from any distractions. In this regulation, students make a plan to choose a place and time and they also control themselves so that they are not distracted by anything. These findings can also make an important contribution by adding a dimension of digital space management in Self-regulated learning.

The implications of these findings underscore the importance of strategies in strengthening Self-regulated learning in the alpha generation to face the onslaught of this digital era full of distractions. Although the majority of adolescents with academic achievements are good at avoiding digital distractions, it is still necessary to provide them with an understanding of Self-regulated learning in order to develop strategies that not only focus on the use of technology, but also on strengthening awareness of students'

thinking processes and self-regulation. Good technology management can be improved to support their Self-regulated learning skills so that technology will be used as a means to support their learning, not as a distraction.

With this, it has been confirmed that the learning strategies of students with high academic achievement in facing the onslaught of the digital era. This starts from time management, management of gadget use, fostering intrinsic motivation in oneself, emotion management, and so on that have been explained above. Adolescents need to understand Self-regulated learning in order to overcome digital distractions in today's era.

4. Conclusion

This alpha generation is a child with a risk of being born in 2010-2025. This generation is growing along with technological advancements. This gradually has an impact on their Self-regulated learning. Self-regulated learning is the ability of individuals to actively monitor, regulate, and control certain areas of their own learning process. This includes cognition, motivation, and behavior. Self-regulated learning was first introduced by Zimmerman in the early 1980s, developed from Bandura's social cognitive theory in 1986 and redeveloped by Pintrich and Schunk. This theory contains four areas, namely: cognitive regulation, motivational or emotional regulation, behavioral regulation, and context regulation. Self-regulated learning also has several phases including the control phase, the repetition phase

From the results of the analysis of the five junior high school students above, it can be concluded that alpha generation adolescents have shown quite good Self-regulated learning skills in facing the challenges of the digital environment. They have a strategy for each informant so that they are able to manage study time, monitor understanding, and manage emotions and learn independently. Cognitively, most students have efficient learning strategies, such as scheduling time, taking notes, and looking for additional information through digital media. In terms of motivation, they have good intrinsic and extrinsic traits, such as an interest in learning, appreciation, or wanting to be proud of their family. Despite this, the regulation of behavior and emotions is still a challenge, such as the fear of asking questions in class and the use of gadgets as an escape. Digital tools such as google and artificial intelligence can be helpful, but in their uncontrolled use it can be a serious distraction. In terms of context regulation, students can choose the time and place of their own study and make flexible use of friends, teachers, and technology.

Therefore, there are two sides of the digital environment to the Self-regulated learning process in alpha generation adolescents, namely as a facilitating tool as well as a potential distraction. Assistance by educators and parents in understanding and developing adaptive learning strategies is needed to help adolescents who are going through a period full of digital growth. With these findings, it has been confirmed that students with high academic achievement tend to have their own strategies in learning so that they have good self-regulation. It should also be noted that the digital environment is not just a tool, but also shapes the mindset and learning habits of the alpha generation, where their Self-regulated learning process is greatly influenced by the way they interact with technology. Suggestions to researchers to explore students' Self-regulated learning at different levels of achievement by combining digital environments and AI (Artificial Intelligence) systems.

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