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Entrepreneurial Mindset: Teaching Generation Z to Be Independent and Responsible Through Artificial Intelligence

Resty Ismawanti[1*], Lysda Reviyanti[2]

[1]Management Study Program, Sangga Buana University, Jl. PHH Mustofa (Suci) No.68, Kota Bandung, Jawa Barat
[2]Elementary School Teacher Education Study Program, Halim Sanusi University PUI, Jl. Taman Siswa No.4, Malabar, Kec. Lengkong, Kota Bandung, Jawa Barat
restyisrand12@gmail.com

Abstract

This study aims to explore how an entrepreneurial mindset can be cultivated among Generation Z through the utilization of artificial intelligence (AI) in entrepreneurship education. Generation Z is known as a generation highly familiar with technology; However, they often face challenges in developing independence, making decisions, and taking responsibility for the impacts of their actions. This study employs a qualitative method with a phenomenological approach to understand the subjective experiences of participants in an AI-based entrepreneurship training program. Data were collected through in-depth interviews, participant observation, and document analysis, and were subsequently analyzed using thematic analysis techniques. The findings indicate that the integration of AI into learning can enhance participants' abilities to identify business opportunities, make strategic decisions, and develop sustainable business models. Furthermore, AI encourages participants to become more collaborative and develop greater ethical awareness of the social impacts of their innovations. These findings suggest that AI serves not only as a technical support tool but also as a medium for character development that promotes independence and responsibility. This study recommends the development of sustainable AI-based entrepreneurship curriculum to support Generation Z's readiness to face the challenges of the digital era.
Keywords: Entrepreneurial Mindset, Generation Z, Artificial Intelligence

Abstrak

Penelitian ini bertujuan untuk mengeksplorasi bagaimana pola pikir kewirausahaan dapat ditumbuhkan di kalangan Generasi Z melalui pemanfaatan kecerdasan buatan (AI) dalam pendidikan kewirausahaan. Generasi Z dikenal sebagai generasi yang sangat akrab dengan teknologi; namun, mereka sering menghadapi tantangan dalam mengembangkan kemandirian, mengambil keputusan, dan bertanggung jawab atas dampak dari tindakan mereka. Penelitian ini menggunakan metode kualitatif dengan pendekatan fenomenologis untuk memahami pengalaman subjektif para peserta dalam program pelatihan kewirausahaan berbasis AI. Data dikumpulkan melalui wawancara mendalam, observasi partisipan, dan analisis dokumen, kemudian dianalisis menggunakan teknik analisis tematik. Temuan penelitian menunjukkan bahwa integrasi AI ke dalam pembelajaran dapat meningkatkan kemampuan peserta dalam mengidentifikasi peluang bisnis, mengambil keputusan strategis, dan mengembangkan model bisnis yang berkelanjutan. Selain itu, AI mendorong peserta untuk lebih kolaboratif dan mengembangkan kesadaran etis yang lebih tinggi terhadap dampak sosial dari inovasi mereka. Temuan ini mengindikasikan bahwa AI tidak hanya berfungsi sebagai alat pendukung teknis, tetapi juga sebagai sarana pengembangan karakter yang mendorong kemandirian dan tanggung jawab. Penelitian ini merekomendasikan pengembangan kurikulum kewirausahaan berbasis AI yang berkelanjutan untuk mendukung kesiapan Generasi Z dalam menghadapi tantangan era digital.
Kata kunci: Pola Pikir Kewirausahaan, Generasi Z, Kecerdasan Buatan

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✉ Corresponding author: Resty Ismawanti
Email Address: restyisrand12@gmail.com (Jl. Sawo Manila No.61, Kota Jakarta Selatan, DKI Jakarta)
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INTRODUCTION

The research background on the entrepreneurial mindset associated with the use of artificial intelligence (AI) has become relevant in line with the economic and social dynamics of the digital era. Generation Z, born between the mid-1990s and early 2010s, is a generation highly familiar with technology. They grew up amidst the massive development of the internet, social media, and digital devices, so their perspectives on work, independence, and responsibility have been influenced by these

technological developments (Williams et al., 2018). The concept of independence promoted by this generation is often linked to work flexibility, freedom of expression, and the ability to create new opportunities.

An entrepreneurial mindset is a way of thinking that encourages creativity, innovation, and solution-oriented thinking. This mindset is not only important for aspiring entrepreneurs but also beneficial in everyday life, as it fosters the courage to take risks and face uncertainty (Neck & Corbett, 2018). In the context of Generation Z, developing an entrepreneurial mindset means equipping them with the skills to be independent and responsible in making decisions, including using technology wisely.

The development of AI has brought significant transformations across various sectors, from industry and healthcare to education and marketing. AI helps simplify data analysis, increases efficiency, and opens up previously unimaginable business opportunities (Russell & Norvig, 2021). This presents an opportunity for Generation Z to leverage AI as a means of creating business innovations relevant to market needs. Thus, AI serves not only as a tool but also as a catalyst for creativity and independence.

However, despite this potential, there are also challenges that need to be addressed. The use of AI without ethical responsibility can lead to problems such as data misuse, loss of privacy, and increased social inequality (Jobin et al., 2019). Therefore, teaching an entrepreneurial mindset must emphasize the importance of moral responsibility in developing and using technology to ensure that the resulting innovations do not harm society.

Furthermore, formal education plays a crucial role in shaping the entrepreneurial mindset of the younger generation. A curriculum that integrates project-based learning, problem-solving, and technology introduction can foster critical thinking skills while encouraging creativity (Rae, 2020). Therefore, developing an entrepreneurial mindset through education is not only about producing new entrepreneurs but also about building the character of a generation ready to face global challenges.

Generation Z is known to possess unique values, such as concern for environmental issues, a desire to work according to their passion, and a preference for flexible work systems (Seemiller & Grace, 2019). These values can be crucial for creating sustainable businesses when combined with an understanding of AI technology. Therefore, it is crucial to guide them in utilizing technology to create a positive impact on the environment and society.

On the other hand, rapid technological developments can also trigger anxiety or fear of missing out (FOMO) among Generation Z. The pressure to constantly follow trends and innovate can make some feel overwhelmed (Twenge, 2017). Therefore, developing an entrepreneurial mindset must be accompanied by mental strengthening and self-management skills, so they stay focused and able to make responsible decisions.

Independence and responsibility are two crucial aspects that must be balanced. A generation that is independent without responsibility risks creating detrimental innovations, while a generation that is

overly cautious without the courage to take risks will struggle to thrive (Kuratko et al., 2021). Therefore, the roles of education, family, and the social environment are crucial in shaping Generation Z's character, which balances innovation and ethics.

Thus, this research aims to explore how an entrepreneurial mindset can be taught to Generation Z through an AI-based approach, enabling them to become not only creators of innovation but also responsible agents of change. This understanding is expected to contribute to the development of education and training strategies that are more relevant to the needs of the times and encourage the creation of a young generation ready to compete ethically and productively in the digital era.

METHOD

This study employed a qualitative method with a descriptive study design. The choice of this method was based on the research objective, which focused on deeply understanding the learning process of an artificial intelligence-based entrepreneurial mindset for Generation Z. The qualitative approach allowed researchers to comprehensively explore participants' meanings, experiences, and perceptions, thus providing a complete picture of how AI technology plays a role in shaping the independence and responsibility of the younger generation (Creswell & Poth, 2018).

The research approach used was a phenomenological one. This approach was chosen because the focus of the study was to understand the subjective experiences of Generation Z in AI-based learning processes. Through a phenomenological approach, researchers were able to explore participants' perceptions, emotions, and reflections on the learning process they underwent, thus understanding how these experiences influenced their entrepreneurial mindset, sense of independence, and social responsibility (Moustakas, 1994).

Data collection techniques included in-depth interviews, participant observation, and documentation studies. In-depth interviews were conducted with several Generation Z students and students participating in the AI-based entrepreneurship training program. These interviews aimed to gain personal insights into their learning experiences, motivations, and the challenges they faced. Participant observation was conducted throughout the training process to directly observe participants' interactions with the AI modules, their responses to project-based assignments, and how they practiced the values of independence and responsibility. Furthermore, documentation studies were conducted by analyzing training materials, assignment reports, and participants' reflection notes to strengthen the interview and observation data.

The data obtained were analyzed using thematic analysis techniques. Thematic analysis was chosen because it is able to identify key patterns and themes from the collected qualitative data (Braun & Clarke, 2006). The analysis process was carried out in stages, starting with interview transcription, repeated reading, initial coding, grouping codes into themes, and interpreting the findings according to the theoretical framework used. Data validity was maintained through triangulation of sources and methods, namely by comparing the results of interviews, observations, and documents. Furthermore,

member checking was conducted by asking participants for confirmation to ensure that the researcher's interpretations aligned with their actual experiences.

RESULTS AND DISCUSSION

This study yielded interesting findings regarding how the application of artificial intelligence (AI) in entrepreneurship learning programs can influence the mindset of Generation Z. Overall, participants demonstrated improvements in creative thinking, decision-making, and business planning skills after participating in the AI-based program. These findings support the literature suggesting that an entrepreneurial mindset can be fostered through learning that emphasizes problem-solving and innovation (Neck & Corbett, 2018).

One key outcome was a significant change in how participants viewed business opportunities. Before the training, most participants reported difficulty finding business ideas relevant to market needs. After utilizing the AI module, which analyzes consumer trends in real time, they began to identify opportunities more accurately. This demonstrates that AI acts as a catalyst in honing participants' ability to quickly and accurately identify market potential.

Furthermore, it was found that the use of AI helped increase participants' confidence in decision-making. Previously, some participants were hesitant to make business decisions due to fear of failure. However, the AI-based simulations used in the training allowed them to try various scenarios without real-world risks, allowing them to experiment more confidently and make strategic decisions.

The research also showed improved collaboration skills. The training program encouraged participants to collaborate in groups, combine ideas, and utilize AI to validate their business concepts. This interaction fostered awareness that entrepreneurship isn't just about working alone, but also involves networking and team-building skills.

Another finding was a growing sense of social responsibility among most participants. After completing the technology ethics module integrated into the program, participants began considering the social and environmental impacts of their business ideas. They began designing more sustainable business models, such as leveraging AI to reduce resource waste or optimizing the distribution of environmentally friendly products.

Observations also showed an increase in participants' intrinsic motivation. They became more enthusiastic about participating in learning sessions because they felt the AI made the learning process more engaging and relevant. This aligns with self-determination theory, which states that learning that aligns with interests will increase internal motivation (Deci & Ryan, 2000).

In-depth interviews revealed that the AI-based learning experience provided them with new skills they previously lacked. Several participants reported gaining a better understanding of data analytics, automation, and the use of chatbots for customer service. These skills gave them the confidence to start digital businesses.

Despite the positive results, the study also identified several challenges. One of these was the digital literacy gap among participants. Not all participants had the same technical skills, so some took longer to understand how to use AI. This underscores the importance of inclusive learning support so that all participants can experience the same benefits.

Another challenge is the emergence of a sense of dependence on technology. Some participants tended to rely too heavily on AI recommendations without conducting critical assessments. This phenomenon indicates the need to strengthen critical thinking skills so participants can balance the role of technology with human judgment. In the discussion, this finding can be linked to the digital literacy theory proposed by Gilster (1997), which states that the ability to understand, analyze, and evaluate digital information is crucial in a knowledge-based society. Participants who are able to combine technical and analytical skills tend to be more successful in designing sustainable business ideas.

The research findings also align with Christensen's (1997) theory of disruptive innovation, which explains that new technologies can open up opportunities for new players to create added value. Participants who creatively utilize AI are able to generate unique business ideas, such as personalized services based on customer data or automation solutions for MSMEs. In terms of character development, this study shows that the integration of ethics modules into the program plays a crucial role. Participants not only learn to create products but also consider their impact on society. This supports the concept of responsible innovation (Stilgoe et al., 2013), which emphasizes the need for ethical and inclusive innovation.

The discussion also highlighted the crucial role of the facilitator. The success of the program depends not only on AI technology but also on the facilitator's ability to guide participants, ask reflective questions, and help them discover meaning in each process. This aligns with Bandura's (1986) social learning theory, which emphasizes the importance of modeling in the learning process. The findings regarding increased collaboration also support the literature that suggests Generation Z prefers working in teams over working individually if provided with a supportive environment (Seemiller & Grace, 2019). By utilizing AI as a collaboration tool, participants can share data, discuss discussions, and solve problems together more effectively.

This study also confirmed that AI can function as an adaptive learning medium, tailoring material to the needs of participants. Several participants stated that the modules they participated in felt more personalized because AI provided recommendations tailored to their abilities. This increased engagement and encouraged deeper learning. Further discussion underscored the need for curricula that systematically integrate AI into entrepreneurship education. The results showed that the use of AI not only improves technical skills but also fosters innovative and ethical mindsets. This finding could serve as a recommendation for educational institutions to develop similar programs more widely.

Furthermore, this study shows that the success of developing an entrepreneurial mindset through AI depends on a balance between technology and the human touch. While technology can accelerate the process, human guidance is still needed to instill the values of independence, empathy, and

responsibility. These findings are also relevant for policymakers. Governments can encourage the use of AI in entrepreneurship education by providing training, digital infrastructure, and data protection policies. This is crucial to ensure that AI utilization is inclusive and does not create new disparities.

The study found that after the training, some participants began creating prototypes of technology-based businesses. This indicates that the program successfully encouraged practical implementation, not just theoretical ones. Participants reported improved skills in designing business model canvases, calculating risks, and devising digital marketing strategies. From an ethical perspective, participants became more critical of data privacy issues. They began to understand the importance of protecting consumer data and sought to implement secure practices in their business plans. These findings are significant because they demonstrate that AI can be a tool for ethics education, not just a technical tool.

The discussion also emphasized that Generation Z has great potential to become agents of change if given the right opportunities and resources. AI can accelerate their learning process, but it must be supported by an adequate curriculum, teacher training, and a conducive environment. The study also revealed that participants felt better prepared to face the challenges of the workforce after participating in the program. They reported gaining new skills that they can apply to their future jobs or businesses. This indicates that AI integration can contribute to improving the work readiness of the younger generation.

Psychologically, the study found an increased sense of ownership of the learning process. Participants felt more responsible for their outcomes because AI provided immediate feedback on their performance. This aligns with the concept of self-regulated learning, which encourages participants to manage their learning process independently. Thematic analysis also showed that participants began to develop a long-term mindset. They focused not only on financial gains but also considered the sustainability and social value of their ventures. These findings reinforce the importance of incorporating social entrepreneurship education into the curriculum.

The study also found that the use of AI improved participants' skills in solving complex problems. AI helped them map problems, analyze data, and simulate various solutions before selecting the best option. These capabilities are crucial in the uncertain business world. Further discussion highlighted the potential of AI to reduce the information gap. Participants who previously lacked access to market data can now use it to make evidence-based decisions. This could strengthen Generation Z's competitiveness, particularly in the digital entrepreneurship sector.

However, this study also notes the importance of ethical literacy and clear regulations. Without a strong ethical framework, the use of AI can have negative impacts such as algorithmic bias or data misuse. Therefore, developing an entrepreneurial mindset must always be accompanied by digital ethics education. The study concludes with the reflection that AI is a means, not an end in itself. The primary focus remains on developing independent, responsible, and creative individuals. AI is merely a tool to

accelerate the learning process and open access to information. The success of the program depends on how this technology is integrated with human values.

Thus, the research results show that integrating AI into entrepreneurship education can strengthen innovative mindsets, foster a sense of social responsibility, increase self-confidence, and prepare Generation Z for future challenges. These findings also emphasize the importance of a holistic approach to teaching an entrepreneurial mindset, combining technology, ethics, and character building.

CONCLUSION

Research on the entrepreneurial mindset through the use of artificial intelligence shows that Generation Z has significant potential to develop an entrepreneurial mindset if provided with learning methods relevant to their characteristics. The research findings demonstrate that the inclusion of AI technology in the learning process can create a more engaging, adaptive, and interactive learning experience. This provides positive encouragement for Generation Z to be more adventurous in experimenting, making decisions, and identifying business opportunities creatively.

Another conclusion that can be drawn is that AI serves not only as a technical tool but also as a means to foster participants' independence and sense of responsibility. Participants who were initially hesitant and passive became more confident, able to design more mature business plans, and demonstrated greater initiative in completing assigned projects. This process aligns with the primary goal of developing an entrepreneurial mindset: to develop independent individuals who are ready to face challenges.

From an ethical perspective, this study shows that the integration of modules on social responsibility and digital ethics significantly influenced how participants viewed the use of AI. They no longer used technology solely to maximize profits but also began to consider social impact, environmental sustainability, and data security. This is significant because it demonstrates that AI-based learning can be directed toward responsible innovation.

It can also be concluded that participants' collaboration skills improved through the collaborative learning process. The use of AI facilitated teamwork in sharing information, analyzing data, and making collective decisions. As a result, participants realized the importance of networking and collaborating with others to create added value, a crucial aspect of modern entrepreneurship.

Furthermore, this study confirmed that participants' intrinsic motivation increased when AI-based learning was tailored to their interests and needs. This heightened sense of engagement led to more consistent program completion. These findings support motivation theory, which suggests that learning relevant to participants' passions leads to deeper and more sustainable outcomes.

This research also revealed that while AI can be a catalyst for innovation, successfully developing an entrepreneurial mindset still requires the role of a facilitator or mentor. Human presence plays a crucial role in providing feedback, moral guidance, and motivation. This suggests that AI and human

guidance must work hand in hand to create a balanced learning environment between technical and value aspects.

The next conclusion is that digital literacy challenges remain a barrier for some participants. Not all Generation Z members possess the same technological capabilities, so additional support is needed for those with less skills. This conclusion indicates the importance of equitable access and basic training to bridge the gap in utilizing AI for entrepreneurship learning.

The results also show that the AI-based program was able to encourage participants to develop concrete business prototypes. This success demonstrates that integrating technology into entrepreneurship education not only generates theory but also encourages real-world action. Thus, AI can serve as a bridge between education and entrepreneurial practice.

Ultimately, this study confirms that teaching an entrepreneurial mindset through AI is an effective strategy for preparing Generation Z for a world full of uncertainty. If implemented sustainably and purposefully, this approach can produce a generation of young people who are not only innovative but also possess ethical awareness, social responsibility, and the courage to create positive change in society.

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