THE URGENCY OF HIGH-LEVEL THINKING SKILLS OF MILENIAL TEACHERS IN THE DIGITAL ERA

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Abstract

Education is one of the key factors in achieving national development goals. Millennial teacher candidates as the vanguard in creating change, are required to have high-order thinking skills in dealing with challenges in the digital era. This study aims to explore the urgency of high-order thinking skills for millennial prospective teachers in the digital era. The research method used is descriptive method with a qualitative approach. Data collection techniques used interviews and observations of 10 prospective millennial teachers currently studying at tertiary institutions in Indonesia. Data analysis was carried out using the content analysis method. The results of the study show that millennial teacher candidates recognize the urgency of higher-order thinking skills in the digital era. They realize that these skills are needed to develop critical, analytical and creative thinking skills in solving problems. In addition, millennial teacher candidates recognize that digital technology provides many conveniences in obtaining information and communicating. However, technology also has negative impacts such as dependency and lack of development of social skills. The conclusion from this study is that the high-order thinking skills of millennial teacher candidates have a high urgency in the digital era. Therefore, prospective teachers need to strengthen their critical, analytical and creative thinking skills in order to be able to face challenges in an increasingly complex world of education. In addition, they also need to understand and manage the wise and effective use of technology in the learning process.

Keywords: Higher Order Thinking Skills, Millennial Teacher Candidates, Digital Era, Education.

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1. Introduction

Education is one of the important things in human life, because through education a person can gain knowledge and skills to develop himself and achieve his life goals. Along with the times, the world of education has also experienced significant changes (Fahmi et al., 2019)(Erdogan, 2020)(Gabriele et al., 2019). The increasingly advanced digital era has had a major impact on the world of education, both in terms of learning and teaching methods. Millennial teacher candidates, as a generation that grows and develops in the digital era, are expected to be able to adapt and develop the skills needed in facing challenges in the digital era (Alsaleh, 2020)(Ramdani et al., 2021). This was also revealed in research which suggested that the millennial generation has its own character and uniqueness. influence on their learning styles in class. They are a generation born with technology that is developing rapidly, they think technology is no longer a luxury item, we as teachers must follow their path in learning (Daud, 2020)(Betlona et al., 2019). Education holds a profound significance in shaping the trajectory of this diverse and vibrant country, fostering progress in various aspects of its national development. In Indonesia, education is not merely seen as a means of imparting knowledge but as a powerful catalyst for economic growth. As the country strives to strengthen its position in the global economy, education emerges as a crucial driver. By investing in education, Indonesia nurtures a skilled and knowledgeable workforce, equipped to meet the evolving demands of the job market. Through quality education, individuals gain the necessary expertise and abilities to contribute effectively to various sectors of the economy. They become agents of change, fostering innovation, driving productivity, and attracting investments that fuel economic development. This virtuous cycle results in improved living standards and enhanced opportunities for individuals and communities across the archipelago.

Education holds the key to eradicating poverty and fostering social inclusivity. It acts as a powerful equalizer, providing individuals with the tools to break free from the chains of poverty. By ensuring access to quality education for all citizens, Indonesia empowers its people, enabling them to secure employment, start businesses, and improve their economic well-being. Education becomes a stepping stone to social mobility, reducing income inequality and creating a more equitable society. As the nation invests in education, it paves the way for a brighter future, where every Indonesian has the chance to thrive and fulfill their potential, irrespective of their socio-economic background. Beyond its economic and social dimensions, education plays a pivotal role in nurturing social development and cohesion. It becomes a platform for instilling core values, fostering tolerance, and nurturing respect for diversity. Indonesian classrooms become melting pots of cultures, where students learn not only academic subjects but also the importance of empathy, understanding, and collaboration. Education serves as a unifying force, strengthening the bonds that hold the nation together, and fostering a sense of belonging among its citizens. Education emerges as the backbone of Indonesia's national development. It acts as a catalyst for economic growth, a tool for poverty eradication, and a vehicle for social development and cohesion. By investing in education, Indonesia invests in its people, empowering them with the knowledge, skills, and values required to build a prosperous, inclusive, and harmonious nation. Education becomes the beacon that guides Indonesia towards a brighter future, where every citizen can contribute meaningfully and reap the benefits of a thriving society.

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A previous study stated that the challenges and opportunities that have arisen with technological developments must be accompanied by the teacher's desire to develop competence. So that challenges and opportunities can be overcome properly (Izazi & Fudhla, 2022)(Lestari et al., 2021). Supporting this, other opinions reveal that in this age when the effects of science and technology are evident in all areas of our lives, education, and science education in particular, plays a key role in the future of societies. This indicates the necessity of educating individuals who understand the changes and give new meaning to them to adapt to the developments (Sönmez et al., 2019)(Najatbekova, 2021). In addition, the study also stated that the ability to access, analyze, and use digital information is important in today's education world. This is one of the strongest analytical factors why in the digital era teachers need good thinking skills. This is in line with the opinion of Swartz (2014), that thinking skills have an important position in learning the curriculum. In addition, according to Cotton (1991) thinking skills are needed to deal with the demands of changing times. The importance of prospective teachers having higher order thinking skills (Pratini & Widyaningsih, 2018)(Rintayani et al., 2021). The results of previous research revealed that we see a need for studies that explore the influence of the attitudinal factors on teachers' technology use and teaching behavior aimed at stimulating higher-order thinking, based on clear theoretical frameworks (Wijnen et al., 2021)(Saputri et al., 2019)(Sutiani, 2021). On the other hand, research suggests that the interpretation of digital competence is focused on the ability to integrate technology into teaching practice which aligns with the second phase of digital integration. This encompasses three dimensions; the ability to teach using digital technology, to critically evaluate teaching decisions and to teach students who are using digital technology (Starkey & Starkey, 2019). However, the research also shows that millennial teacher candidates still face several challenges in developing higher-order thinking skills, such as a lack of opportunities to practice and a lack of support from the educational environment. Supporting this, other opinions reveal that teachers experience difficulties in facilitating students in mastering higher-order thinking skills (Mahariyanti & Irwansah, 2021).

Based on these studies, it can be seen that higher order thinking skills are important for millennial teacher candidates in the digital era. Therefore, it is necessary to carry out further research to dig deeper into the urgency of high-order thinking skills for millennial prospective teachers in the digital era and the efforts that can be made to improve these skills. Higher-order thinking skills are the ability to process information more deeply, analytically, and critically, so as to produce better understanding and make the right decisions (Anderson, L. W., & Krathwohl, 2001). Higher-order thinking skills include critical, analytical, creative, and reflective thinking skills (Paul, R., & Elder, 2006). This is in line with the expression of research which reveals that the teacher is one of the movers in the learning process. The creation of a good learning process is inseparable from the teacher's ability to design and formulate the subject matter to be taught (Mahariyanti & Irwansah, 2021). Meanwhile, several education experts also emphasized the urgency of the importance of higher-order thinking skills for prospective teachers in the digital era. According to Hsu et al. (2019), higher-order thinking skills are indispensable for prospective teachers in the digital era because they are expected to be able to guide students in understanding abundant and complex information and develop critical and creative thinking skills (Wang et al., 2019). Likewise with the opinion

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which states that to develop high-level skills, individuals must carry out a meaningful learning process through learning that has value and relevance to personal and societal life. Learning that involves real-world experiences and the ability to collaborate with others provides opportunities for students to construct and organize their own knowledge (Mashudi, 2021). In the context of education, higher order thinking skills are very important for prospective teachers because they are expected to be able to develop critical, analytical, creative and reflective thinking skills in their students.

Based on the description above, the authors assume that higher-order thinking skills for prospective teachers become an urgency which is a consequence for each individual to be fulfilled. Through this research, it is hoped that it will be an alternative for prospective teachers to always develop these skills, especially in facing the digital era, where every element involves the participation of technology and effective communication.

Literature Review

The urgency of developing high-level thinking skills among millennial teachers in the digital era has gained significant attention in educational research and practice. This section reviews existing literature that explores the importance of cultivating advanced cognitive abilities in millennial teachers to meet the demands of the digital age (O'Neal et al., 2017)(McMahon, 2007). Millennial teachers, who belong to the generation born between 1981 and 1996, are entering the teaching profession with a unique set of characteristics shaped by their experiences in the digital era. They have grown up immersed in digital technologies, making them comfortable with technology and more likely to incorporate it into their teaching practices yayuk, 2020). However, their familiarity with technology does not guarantee the possession of high-level

thinking skills necessary for effective teaching in the digital era. High-level thinking skills encompass critical thinking, problem-solving, creativity, and innovation. These cognitive abilities are essential for millennial teachers to engage students in meaningful learning experiences and equip them with the skills needed to navigate the complexities of the digital age (Mustofa & Hidayah, 2020). Research has shown that millennial teachers who possess high-level thinking skills are better prepared to integrate technology into their pedagogical practices. Digital literacy plays a fundamental role in developing high-level thinking skills among millennial teachers. It involves the ability to critically evaluate information, navigate online platforms, and discern the credibility and validity of digital resources (Cetin, 2021)(Edwards, 2016). Millennial teachers must possess digital literacy skills to guide students in their digital exploration and ensure they develop the necessary critical thinking skills to navigate the vast online information landscape (Fitriani et al., 2020)(Hartman et al., 2019). Collaboration and problem-solving are also integral aspects of high-level thinking skills for millennial teachers in the digital era. The digital age emphasizes collaborative learning and the ability to solve complex problems through teamwork and communication (Huda & Rais, 2021). Millennial teachers need to be proficient in facilitating collaborative activities that promote critical thinking, creativity, and problem-solving among their students (Meng et al., 2020). Creativity and innovation are crucial in the digital age, where technological advancements continuously disrupt traditional teaching methods. Millennial teachers need to foster a classroom environment that encourages creativity, originality, and the ability to adapt to rapid changes. Research indicates that promoting creativity and innovation among millennial teachers enhances their capacity to create engaging and interactive

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learning experiences for students (Ramdiah et al., 2019).

To address the urgency of high-level thinking skills among millennial teachers in the digital era, effective professional development and training programs are crucial. These programs should focus on equipping teachers with the necessary knowledge, skills, and attitudes required to integrate technology effectively and cultivate high-level thinking skills in their classrooms (Yuldiz, 2020). Studies have shown that well-designed professional development initiatives can enhance millennial teachers' ability to utilize technology and promote high-level thinking skills in their teaching practices (El Soufi & See, 2019). The urgency of developing high-level thinking skills among millennial teachers in the digital era is evident. Millennial teachers need to possess advanced cognitive abilities such as critical thinking, problem-solving, creativity, and innovation to navigate the challenges and opportunities of the digital age. Enhancing digital literacy, promoting collaboration and problem-solving, and fostering creativity and innovation are essential components of cultivating high-level thinking skills among millennial teachers. Effective professional development and training programs play a vital role in equipping millennial teachers with the necessary skills to adapt to the demands of the digital era and provide quality education to their students (Fahmi et al., 2019)(Alsaleh, 2020).

2. Method

The research method used in this scientific journal is a qualitative descriptive method. The research was carried out by conducting a literature study and analyzing the results of previous research related to the urgency of higher-order thinking skills in millennial teacher candidates. Literature study is done by looking for references from various

sources such as books, journals, articles, and other related documents. Then, the collected data was analyzed qualitatively using content analysis techniques or content analysis. Analysis is carried out by sorting and classifying data, extracting important information, and compiling the findings obtained from the results of the analysis. In addition, this research also conducted interviews with several elements in the field of education to get their views and opinions about the urgency of higher-order thinking skills in millennial teacher candidates. The data obtained from the interviews were analyzed qualitatively using discourse analysis techniques. In conducting this research, researchers used an interdisciplinary approach involving the fields of education, psychology, and information technology. This approach was chosen because higher order thinking skills relate to many aspects and cannot be understood narrowly from just one perspective. In conducting the analysis, the researcher also pays attention to the relationship between higher order thinking skills and the rapid development of information technology.

3. Result and Discussion

High-Order Thinking Skills (HOTS) can have a significant impact on millennial teachers in the digital era. As millennial teachers navigate the complexities of the digital age, the development and application of HOTS are crucial for their teaching practices and their students' learning outcomes (Apriyanti et al., 2014)(Reinhart et al., 2011). Here, we discuss how HOTS can affect millennial teachers in the digital era: Enhancing Critical Thinking: HOTS, such as critical thinking, help millennial teachers evaluate, analyze, and synthesize information in the digital realm. With the abundance of online resources and information, critical thinking skills enable teachers to discern reliable sources, evaluate the credibility of

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information, and encourage their students to think critically as well. This empowers millennial teachers to guide students through the vast digital landscape and develop their own abilities to navigate and critically assess information. Fostering Problem-Solving Abilities: HOTS, particularly problem-solving skills, enable millennial teachers to address challenges arising from the integration of technology in the classroom. As technology continually evolves, teachers need to adapt and find innovative solutions to technological issues, incorporate new digital tools effectively, and support students in problem-solving tasks. By developing their own problem-solving abilities, millennial teachers can model effective strategies for their students, preparing them to be adaptable and resourceful in the digital era. Promoting Creativity and Innovation: HOTS encourage millennial teachers to think creatively and embrace innovation in their instructional approaches. With the rapid advancements in technology, millennial teachers need to think beyond traditional teaching methods and explore innovative ways to engage their digitally native students. By incorporating creative thinking and leveraging technology, millennial teachers can create interactive and dynamic learning experiences that foster student engagement and promote innovative problem-solving. Facilitating Collaborative Learning: Collaborative learning is a key component of HOTS and is particularly relevant in the digital era. Millennial teachers can leverage technology to facilitate collaborative activities that promote effective communication, teamwork, and shared problem-solving among students. By fostering a collaborative learning environment, millennial teachers can enhance their own abilities to engage students in meaningful discussions, encourage diverse perspectives, and promote collective intelligence through digital platforms and tools. Nurturing

Digital Citizenship: HOTS in the digital era extend beyond cognitive abilities. Millennial teachers also play a vital role in cultivating digital citizenship among their students. By integrating HOTS with digital literacy skills, millennial teachers can guide students in responsible and ethical online behaviors. This includes teaching students to critically evaluate information, understand privacy and security concerns, and practice respectful online communication. Millennial teachers themselves must embody these digital citizenship principles to effectively guide their students. HOTS significantly impact millennial teachers in the digital era by enhancing critical thinking, fostering problem-solving abilities, promoting creativity and innovation, facilitating collaborative learning, and nurturing digital citizenship. By developing and applying these skills, millennial teachers can effectively navigate the digital landscape, engage their students, and prepare them for success in an increasingly technology-driven world. Educational institutions and policymakers should prioritize the integration of HOTS into teacher training and professional development programs to equip millennial teachers with the necessary skills to thrive in the digital era and provide high-quality education to their students.

Based on the research results, the urgency of higher-order thinking skills for millennial teacher candidates is very important because millennial teacher candidates are faced with challenges in dealing with rapid changes in today's digital era. They are expected to be able to develop critical, analytical, creative and reflective thinking skills in their students in order to be able to compete in an increasingly complex and dynamic era. Higher-order thinking skills also enable teacher candidates to develop the ability to teach students in more effective and innovative ways. As mentioned by (Ennis, 1996),

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higher-order thinking skills can help teacher candidates to make objective and reasonable judgments, as well as identify weaknesses in an argument. This can help them to identify the difficulties experienced by students and find the right solution. In addition, higher-order thinking skills can also help prospective teachers evaluate sources of information and determine the quality and correctness of the information. In today's digital era, information is very easy to obtain, but not all of it can be trusted. Therefore, higher order thinking skills are very important to avoid spreading misinformation or hoaxes. According to (Facione, 1990) critical thinking skills can also help prospective teachers to make decisions based on available information. This is very important because as a teacher, they are expected to be able to make the right and rational decisions in dealing with various situations that arise in the classroom. Along with the rapid development of information technology, higher-order thinking skills are increasingly needed to deal with the increasing complexity of information. Higher-order thinking skills are also very important to assist millennial teacher candidates in developing creativity and innovation in teaching. According to (Amabile, 1996) creativity is the ability to generate new ideas or solutions that are unique and useful. In the context of education, creativity and innovation can help teacher candidates find new ways of teaching that are more interesting and effective for students. The same thing was revealed in previous research which stated that teacher candidates must fulfill critical thinking skills in the face of digital age learning. This is an effort to meet various adjustments in the context of learning which increasingly require innovation and strategy in the learning process (Khoerudin et al., 2020). Based on the results of research using literature review and interview methods, it can be revealed that there are still some difficulties faced by

teachers in developing higher-order thinking skills as revealed that the difficulties experienced by teachers are that teachers do not understand how to develop high-order thinking skills for students (Mahariyanti & Irwansyah, 2021). Analysis of interview data revealed that prospective teachers who were studying at teacher training colleges still experienced problems in developing HOTS, including prospective teacher understanding of the basic concepts of HOTS, so it was deemed necessary to update the curriculum in tertiary institutions as an effort to develop these skills. This is an important factor as a basic support for prospective teachers to understand the basic concepts of HOTS skills which can then be implemented when they become teachers in the school environment. This is in line with the opinion which reveals that in order to carry out learning that is capable of developing higher-order thinking skills, it must begin with the ability of a teacher to solve a problem in the learning process itself (Mahariyanti & Irwansah, 2021).

The results of subsequent research can be revealed that all research respondents agree that HOTS skills are an urgency in the digital era. This is evident from the analysis of excerpts from interviews with researchers which revealed that research respondents argued that HOTS skills in the digital era are important elements and must be mastered as a necessity in the learning process in the school environment. This is supported by the results of a literature study which reveals that more than that, a good mastery of HOTS needs to be possessed by prospective teachers so they can guide their students in developing HOTS (Maimunah et al., 2020). On the other hand, the results of subsequent literature analysis reveal that HOTS-oriented learning is important for improving students' critical thinking skills (Nur'aeni et al., 2021). Based on the results and discussion that has been carried out, a comparison can be found with previous

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research which proves that higher-order thinking skills are very important for prospective teachers, especially millennial prospective teachers. Several previous studies have also shown something similar. For example, research conducted by (Hoesny & Darmayanti, 2021) shows that the role and duties of the teacher have developed in line with the times, being a teacher in this era is not the same as being a teacher ten or fifteen years ago. There are increasing student needs that must be met in the classroom, curricula are constantly changing, demands for innovation and reform are also increasing.

Research conducted by (Yayuk et al., 2019) also shows that HOTS learning and assessment is not something that is easily implemented by teachers. Teachers must be able to master the concepts and learning strategies. It is hoped that the teacher can attract student responses so that they are more critical and learning is more conducive. Thus, the results of this study are in line with previous studies which show that higher-order thinking skills are very important for prospective teachers, especially in teaching effectively and helping students understand subject matter. better. This shows that higher order thinking skills must be the main focus in the education of prospective teachers.

4. Conclusion

Based on the results of the research and discussion that has been carried out, it can be concluded that higher order thinking skills are very important for prospective teachers, especially millennial prospective teachers. Prospective teachers who have higher-order thinking skills will be more effective in teaching and helping students understand the subject matter better. In addition, higher-order thinking skills can also help prospective teachers in solving complex problems and making better decisions in teaching. Therefore, education

for teacher candidates should pay greater attention to the development of higher order thinking skills. Higher-order thinking skills can be developed in various ways, such as by teaching critical thinking techniques, teaching analytical and synthesis skills, and providing opportunities to participate in discussions and debates. In this case, the role of lecturers and educational institutions is very important to ensure that prospective teachers have adequate higher-order thinking skills to face challenges in the field of education. Thus, the conclusion of this study is that higher order thinking skills must be the main focus in the education of prospective teachers, especially millennial prospective teachers. Education that is effective in developing higher order thinking skills will help teacher candidates to become more effective in teaching and help students to achieve better results in learning.

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