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Reconstruction of Generation Z's Learning Strategies through a Real-Life-Based Microlearning Approach in an Educational Perspective

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ABSTRACT

Changes in the characteristics of students in the digital era require a reconstruction of learning strategies that are more flexible, contextual, and in accordance with the needs of the new generation. Generation Z as a group of learners who grow with the development of digital technology has different learning characteristics compared to the previous generation, especially in terms of preference for access to fast, visual, interactive, and real-life information. However, conventional educational practices still maintain a learning pattern based on long and memorization-oriented material delivery, which has the potential to cause low student engagement and meaningful learning. This article aims to analyze the microlearning approach as an alternative pedagogical strategy in creating a more meaningful learning experience for Generation Z through the integration of learning materials in small units that are focused, contextual, and applicative. This study uses a literature review method by analyzing various empirical studies related to microlearning, digital learning, student engagement, and learning characteristics of Generation Z. The results of the study show that microlearning has the potential to increase learning motivation, knowledge retention, learning flexibility, and cognitive and emotional involvement of students when designed with the principles of context relevance, interactivity, quick feedback, and connectedness to real-life experiences. This approach not only functions as a material simplification strategy, but also as a new paradigm in building adaptive learning to the needs of 21st-century students. The implementation of microlearning needs to be directed not only to follow technological trends, but to be part of a pedagogical design that places students as active subjects in the process of knowledge construction.

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1. INTRODUCTION

The development of digital technology has brought fundamental changes to various aspects of human life, including in the field of education. These changes are not only related to the use of technological devices in the learning process, but also related to changes in student characteristics, learning interaction patterns, and expectations for a more flexible and relevant educational experience. Today's students, especially Generation Z who were born and developed in a digital environment, have different learning characteristics compared to previous generations. They are used to obtaining information quickly through various digital platforms, have a tendency towards visual and interactive content, and expect a learning process that is able to provide a direct link between academic knowledge and daily life.

Generation Z is often referred to as the *digital native generation* because since their growing up they have interacted with the internet, smart devices, and information

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technology. These conditions form a more independent, flexible, and experience-oriented learning pattern. However, the formal education system still uses a traditional *teacher-centered approach* with a pattern of delivering material that is long, linear, and lacks room for exploration to students. The mismatch between the characteristics of modern learners and conventional learning designs can lead to low student *engagement*, decreased learning motivation, and the emergence of a perception that learning has no real relationship with their needs.

In this context, pedagogical innovations are needed that are able to bridge the needs of students with the demands of 21st century education. One approach that has developed in recent years is *microlearning*. *Microlearning* is a learning approach that presents material in small, focused, and easily consumed units by students in a relatively short time. Unlike conventional learning which often provides a large amount of information in one session, *microlearning* divides complex concepts into simple parts that have specific learning objectives. This approach allows students to learn a concept gradually according to their abilities and needs.

The concept *of microlearning* develops in line with cognitive *load theory*, which explains that human working memory capacity has limitations in receiving and processing new information. Presenting too much material at one time can cause cognitive overload so that the process of understanding and storing information becomes less than optimal. By dividing information into smaller units, *microlearning* allows students to process information more effectively and increases the likelihood of knowledge retention in the long term.

In addition to supporting cognitive aspects, *microlearning* is also related to the principle of *meaningful learning*. According to the theory of meaningful learning, the learning process does not only occur when students receive new information, but when the information can be related to experience, previous knowledge, and real-life contexts. Therefore, the success of *microlearning* is not only determined by the short duration of the material, but also by the ability of educators to design content that is contextual, relevant, and related to real problems faced by students.

The implementation of *microlearning* in education is growing because it is supported by advances in digital technology such as Learning Management Systems (LMS), mobile-based learning applications, educational short videos, digital quizzes, and adaptive learning platforms. Research by Dolasinski and Reynolds (2020) explains that *microlearning* is a new learning model that suits the needs of modern society because it provides access flexibility and allows students to learn at their own pace. This model is very relevant to be applied in educational environments that face challenges in the form of time constraints, increasing need for independent learning, and changes in information consumption patterns.

However, the application of *microlearning* in education cannot be understood simply as an attempt to shorten the learning material. A common mistake in the implementation of this approach is to assume that shorter learning automatically becomes more effective. In fact, the quality of instructional design remains a major factor. Material that is too simple without depth of concept can lead to fragmentation of knowledge, which is a condition when learners understand small parts but are unable to connect the concepts into a complete understanding. Therefore, *microlearning* needs to be designed with continuity between material units, clear learning objectives, and reflective activities that help learners connect concepts with real practice.

In the perspective of Generation Z education, meaningful learning must be able to provide an authentic experience. Students not only need information, but also need reasons why it is important to learn. For example, mathematics learning is not enough to just provide formulas and calculation procedures, but needs to connect these concepts with financial, technological, or daily life problems. Similarly, learning social sciences, language, and science needs to be directed so that students are able to see the relationship between academic theory and the phenomena they encounter.

Real-life-based microlearning *approaches* offer opportunities to build those relationships. Each learning unit can be designed in the form of *micro-challenges*, short case studies, problem simulations, experiential reflections, or simple projects that allow learners to apply concepts directly. Thus, the learning process does not stop at the activity of receiving information, but develops into a process of building meaning through experience.

Several studies have shown that the use of *microlearning* can increase student engagement. Research on the integration of *microlearning* in digital platforms shows an increase in cognitive, affective, and behavioral engagement of students because the materials provided are more accessible and understandable. Other studies also show that *microlearning* can improve learning retention and academic outcomes when combined with the right digital learning strategies.

However, studies on *microlearning* still often focus on the effectiveness of technology or quantitative improvement of learning outcomes. There is still a need for more in-depth study on how *microlearning* can be used as a learning reconstruction strategy that is in accordance with the characteristics of Generation Z, especially in building meaningful and real-life learning experiences.

Based on this background, this article aims to analyze how the *microlearning* approach can be reconstructed as a relevant learning strategy for Generation Z. This study focuses on three main aspects, namely the learning characteristics of Generation Z, effective *microlearning* design principles , and opportunities to apply *microlearning* based on real experience in creating more meaningful learning.

2. RESEARCH METHODS

This study uses a literature *review approach* with a descriptive-critical analysis method to examine the concept and implementation of *microlearning* as a relevant learning strategy for Generation Z. The literature review method was chosen because this study aims to understand the development of concepts, find previous research patterns, identify study gaps, and formulate new perspectives on the application of real-life *based microlearning* in education.

The source of research data was obtained from various scientific articles published in reputable international journals and accredited national journals. The literature analyzed includes research on *microlearning*, digital learning, *student engagement*, *cognitive load theory*, meaningful learning, and the learning characteristics of Generation Z. The literature search process is carried out through academic databases such as Scopus, ScienceDirect, SpringerLink, ERIC, and Google Scholar using the keywords: "*microlearning*", "*digital learning*", "*Generation Z learning behavior*", "*student engagement*", "*meaningful learning*", and "*technology-enhanced learning*".

The criteria for selecting literature in this study include: (1) articles published in scientific journals; (2) have a direct relationship with the research theme; (3) discuss pedagogical aspects, educational technology, or learning behavior of students; and (4) complete bibliographic information is available including DOIs. Literature that is

opinionated, popular articles, or does not have clear academic sources is not used in the analysis.

Data analysis is carried out through several stages. The first stage is the identification and selection of literature based on the relevance of the topic. The second stage is the process of categorizing research findings based on the main theme, namely the learning characteristics of Generation Z, the principles *of microlearning design*, the benefits and limitations *of microlearning*, and the integration of real-life learning. The third stage is the interpretation of the results of the study to build a conceptual understanding of the position of *microlearning* as a new pedagogical approach in 21st century education.

The validity of the study results is carried out through a comparison of various literature sources (*cross-reference*) to ensure that the conclusions obtained do not only come from one research perspective. With this approach, this study is expected to provide a comprehensive overview of the potential and challenges of implementing *microlearning* as a learning strategy that is adaptive to the needs of Generation Z.

3. RESULTS AND DISCUSSION

The change in the characteristics of students in the digital era shows that education can no longer use the same approach as in the previous era. Generation Z as a group of learners who grow up with the development of digital technology has a different way of interacting, obtaining information, and building knowledge than the previous generation. They are used to an environment that provides quick access to information through digital devices, so they have a tendency to learn that is flexible, visual, interactive, and able to provide a direct relationship between academic concepts and daily life. This condition poses challenges for the education system that still applies a lot of conventional learning patterns with the dominance of lectures, the delivery of large amounts of material, and evaluations that are more oriented towards the ability to remember information.

The change in the characteristics of students not only shows the need for the use of technology in education, but also requires a paradigm shift in designing learning experiences. Technology cannot be seen only as a tool to replace traditional learning media, but must be understood as a means to create a more personalized, active, and meaningful learning experience. Mayer (2009) explained that the effectiveness of technology-based learning is not determined by the existence of technology alone, but by how information is designed to fit the way humans understand and process knowledge. Thus, the transformation of education in the digital era requires an approach that is able to integrate technology with appropriate pedagogical principles.

One approach that has great potential to answer the learning needs of Generation Z is *microlearning*. This approach offers learning concepts through the presentation of material in small units that have specific, focused, and easy-to-understand learning objectives. In contrast to traditional learning which often provides information in one long session, *microlearning* allows students to learn a concept gradually according to their abilities and needs. Hug (2005) explained that *microlearning* is not only related to short-duration learning, but also includes aspects of flexibility, context, and the ability of students to access knowledge independently.

The main advantage of *microlearning* lies in its ability to adapt the learning process to the limitations of human cognitive capacity. Based on cognitive *load theory*, humans have limitations in processing new information at the same time. When learners receive too much information in a short time, the ability to understand and retain the information can decrease. Therefore, presenting the material in small parts can help students manage

information more effectively. Sweller (1988) explained that a good learning design needs to consider the capacity of working memory so that the knowledge formation process can take place optimally.

In the context of Generation Z education, *microlearning* is increasingly relevant because it is in accordance with the information consumption patterns that are developing in the digital era. Students are currently accustomed to obtaining information through short content such as educational videos, infographics, short podcasts, and various other forms of digital media. However, the application of *microlearning* in education should not only follow the trend of digital information consumption, but must remain based on pedagogical goals. Short material does not always mean effective learning. The quality of the design, the relevance of the content, thinking activities, and the connection of the material to the students' experience are important factors that determine the success of this approach.

One of the important aspects that distinguishes *microlearning* from simply simplifying material is its ability to create real-life experience-based learning. Meaningful learning occurs when students are able to relate new information to previous experiences, knowledge, and situations they encounter in daily life. Ausubel (1968) explained that learning will be more effective when new information can be associated with the cognitive structure that students already have. Therefore, *microlearning* designed with a contextual approach can be a strategy to bridge academic concepts with the reality of students' lives.

For example, in mathematics learning, the concept of percentages is not only given through formulas and exercises of abstract questions, but can be packaged in the form of small learning units regarding the calculation of shopping discounts, personal money management, or the price analysis of digital products. In science learning, the concept of climate change can be developed through short activities such as environmental data analysis, observation of local phenomena, or solving simple problems related to sustainability. This approach allows students to understand that the knowledge they learn has real benefits outside the school environment.

The application of real-life-based microlearning is also closely related to increasing *student engagement*. Learning involvement is not only related to the physical presence of students in the learning process, but also includes aspects of attention, motivation, emotional involvement, and active participation in building knowledge. Fredricks, Blumenfeld, and Paris (2004) explained that student involvement consists of three main dimensions, namely behavioral, emotional, and cognitive involvement. Learning approaches that are relevant to students' experiences have the potential to improve these three aspects because students understand the reasons why a material needs to be learned.

In its implementation, *microlearning* also provides opportunities for teachers to develop their role as learning facilitators. Teachers are no longer the only source of information, but play a role in designing learning experiences, choosing the right learning resources, providing feedback, and helping students connect various information obtained. This change in role is important because wide access to information through technology causes educational functions to no longer only focus on the delivery of knowledge, but also on developing critical thinking skills, creativity, communication, and problem-solving.

Although it has various advantages, the application of *microlearning* in education also faces several challenges. One of the main challenges is the risk of knowledge fragmentation if the material is only presented in small pieces without a clear conceptual relationship. Learners may be able to understand certain information separately, but have difficulty integrating these concepts into more complex understandings. Therefore, *microlearning*

design needs to pay attention to continuity between learning units so that each part remains related to the larger learning objectives.

In addition, the readiness of educators and technological infrastructure are also important factors in the successful implementation of *microlearning*. Not all schools have the same access to technology, and not all teachers have the ability to design effective digital content. The use of technology in learning needs to be supported by teacher training, school policies, and the provision of adequate facilities. Without this support, *microlearning* has the potential to only change the form of material delivery without providing significant changes to the quality of learning.

Based on these various studies, it can be understood that *microlearning* is not just a strategy to shorten the learning duration, but is a pedagogical approach that can support the creation of education that is more adaptive to the characteristics of Generation Z. When designed with the principles of meaningful, contextual, and real-experience learning, *microlearning* is able to help students build a relationship between academic knowledge and their lives. Thus, this approach can be an alternative in reconstructing learning to be more relevant to the needs of 21st century education.

The implementation of *microlearning* in Generation Z education requires a learning design that not only pays attention to technological aspects, but also considers pedagogical principles that support the formation of in-depth understanding. Based on the study of various literature, an effective *microlearning* model can be developed through several main characteristics, namely material that is structured in small units, specific learning objectives, interactive activities, providing quick feedback, and a strong connection with the context of students' lives. These five characteristics are an important basis so that *microlearning* is not only a method of delivering brief information, but also a learning experience that is able to build understanding and skills.

The structure of the material in *microlearning* needs to be designed based on the principle *of chunking*, which is to divide complex information into small parts that are easier to understand. This concept is related to the way human memory works more effectively in processing information when the information is presented in an organized group. In learning, the principle of *chunking* can be applied through the preparation of short modules that focus on one specific competency. For example, instead of giving one long module on the entire concept of ecosystems, teachers can divide it into several small learning units such as relationships between organisms, food chains, environmental changes, and the impact of human activities on the ecosystem. Each unit remains related so that students can build understanding gradually.

In addition to the structure of the material, the interactivity aspect is an important element in the success of *microlearning*. Learning that only provides short content without thinking activities has the potential to make students remain passive recipients of information. Therefore, each *microlearning* unit needs to be equipped with activities such as reflective questions, simple problem solving, short discussions, simulations, or concept application exercises. According to Chi and Wylie (2014), learning that involves constructive and interactive activities allows students to build a stronger understanding than learning that only involves the activity of receiving information.

The use of digital technology further expands the opportunities for the application of *microlearning*. Online learning platforms, educational applications, educational short videos, and mobile-based learning systems allow students to access materials anytime and anywhere. However, technology only functions as a supporting medium, not as the main goal of learning. Teachers remain the main component in determining how technology is

used meaningfully. The use of short-form videos, for example, will be more effective if they are accompanied by analytical questions or follow-up activities that encourage students to think critically.

In the context of Generation Z, flexibility is one of the main reasons why *microlearning* has great potential to be applied. Today's students have increasingly diverse learning needs. They do not always learn at the same pace and do not always need a uniform form of material presentation. Through *microlearning*, students have the opportunity to repeat certain materials, choose the order of study, and set the learning time according to individual needs. This is in line with the concept of *student-centered learning* which places students as the main actors in the learning process.

In addition to flexibility, *microlearning* also supports the development of *lifelong learning* skills. Changes in the world of work and technological developments cause the knowledge a person has to be constantly updated. Traditional learning models that only focus on formal education are no longer enough to meet the needs of modern society. With the *microlearning* approach, individuals can continue to acquire new knowledge through a lighter, flexible, and sustainable learning process.

However, the application of *microlearning* cannot be separated from the challenges of learning evaluation. Traditional evaluation systems often focus on the final outcome through large exams, while *microlearning* emphasizes the gradual learning process. Therefore, an assessment approach that is able to measure the development of students' competencies on an ongoing basis is needed. Formative assessments such as short quizzes, digital reflections, small projects, and portfolios can be an alternative to evaluation that is more in line with the characteristics of microlearning-based learning.

Another challenge that needs to be considered is the possibility of dependence on short information. The habit of accessing information in short form can cause students to have a tendency to look for quick answers without conducting an in-depth analysis process. Therefore, the application of *microlearning* needs to be combined with deep learning activities such as discussions, simple research, collaboration, and problem-based projects. Thus, *microlearning* does not replace deep learning, but becomes an entrance to more complex understanding.

Based on the results of the analysis, it can be formulated that the *real-life microlearning* model for Generation Z ideally has four main components. First, the *engagement trigger component* is in the form of short material that attracts students' attention. Second, the concept exploration component is in the form of presenting simple and structured core information. Third, the application component is in the form of activities that connect concepts with real problems. Fourth, the reflection component is in the form of activities that help students understand the meaning of the learning experiences that have been carried out.

The model shows that the future of education not only requires technological innovation, but also requires a change in the way of thinking in designing learning. Meaningful education is not determined by the number of materials that are successfully delivered, but by the extent to which students are able to understand, apply, and connect knowledge with their lives. In the context of Generation Z, *microlearning* provides an opportunity to create learning that is more human, flexible, and relevant to the challenges of the times.

4. CONCLUSION

Changes in the characteristics of Generation Z students as a generation that grows up in a digital environment requires a change in learning strategies that are more adaptive and meaningful. Conventional learning approaches that are oriented towards delivering material in a long and one-way manner need to be developed towards a learning model that is more flexible, interactive, and relevant to the students' experience.

Based on the results of the literature review, *microlearning* has great potential as one of the learning strategies of the 21st century because it is able to present material in small units that are focused, easily accessible, and in accordance with the learning characteristics of Generation Z. However, the effectiveness of *microlearning* is not only determined by the short duration of the material, but also by the quality of the learning design, relevance of the context, interactive activities, and the ability to connect academic concepts with real life.

The application *of real-life microlearning can be an alternative approach to creating more meaningful learning because it allows learners to understand the immediate benefits of the knowledge learned. Through the integration of technology, appropriate instructional design, and the active role of teachers as facilitators,* microlearning *can help increase students' motivation, engagement, and learning independence.*

However, the implementation of *microlearning* still requires attention to various challenges such as the risk of knowledge fragmentation, teacher readiness, technology gaps, and the need for appropriate learning evaluations. Therefore, *microlearning* should not be seen as a substitute for all learning methods, but as a strategy that can be combined with other approaches to create a more comprehensive learning experience.

Thus, the reconstruction of learning through *the microlearning* approach is not only a response to technological developments, but is a strategic step in building education that is able to answer the needs of Generation Z and prepare students to face increasingly complex world changes.

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