Microlearning in Teaching and Learning Process: A Review

Tira Nur Fitria
Institut Teknologi Bisnis AAS Indonesia
Korespondensi penulis: tiranurfitria@gmail.com

Abstract. This study reviews micro-learning including its use, benefits, and limitation. This study is library research. The analysis shows that microlearning can be delivered through video, application, gamification, infographics, and social media. Numerous studies demonstrate the benefits of microlearning that lessons can be delivered in a short amount of time. It can be accessed anytime and anywhere. Microlearning is flexible to accommodate different learning styles and can be customized to students' needs. With short material, students can choose which material is needed, desired, and relevant. Microlearning help increases students' retention rates and comprehension levels. If the material is broken down into smaller parts, it is easier for students to remember lessons, and easier for teachers to update content and to know learning outcomes. However, the limitations are that microlearning is not suitable for complex and complicated material, and requires detailed explanation. The learning method is dependent on the learning objectives. If the material is in small parts, it can prevent students from understanding the material in-depth. Educators are required to produce their learning content. However, not all educators have the capacity and time to prepare content. Microlearning strategies are related to the individual qualities of learners, the propensity of teachers to utilize digital technology, and external circumstances such as the availability of learning resources.

Keywords: *learning, microlearning, teaching*

Abstrak. Penelitian ini mengulas micro-learning termasuk kegunaan, manfaat, dan keterbatasannya. Penelitian ini merupakan penelitian kepustakaan. Analisis menunjukkan bahwa microlearning dapat disampaikan melalui video, aplikasi, gamifikasi, infografis, dan media sosial. Sejumlah penelitian menunjukkan manfaat microlearning bahwa pelajaran dapat disampaikan dalam waktu singkat. Dapat diakses kapan saja dan dimana saja. Microlearning fleksibel untuk mengakomodasi gaya belajar yang berbeda dan dapat disesuaikan dengan kebutuhan siswa. Dengan materi yang singkat, siswa dapat memilih materi mana yang dibutuhkan, diinginkan, dan relevan. Bantuan microlearning meningkatkan tingkat retensi dan tingkat pemahaman siswa. Jika materi dipecah menjadi bagian-bagian yang lebih kecil, lebih mudah bagi siswa untuk mengingat pelajaran, dan lebih mudah bagi guru untuk memperbarui konten dan mengetahui hasil belajar. Namun, keterbatasannya adalah microlearning tidak cocok untuk materi yang kompleks dan rumit, serta membutuhkan penjelasan yang detail. Metode pembelajaran tergantung pada tujuan pembelajaran. Jika materi dalam bagian-bagian kecil, dapat menghambat siswa untuk memahami materi secara mendalam. Pendidik dituntut untuk menghasilkan konten pembelajarannya. Namun, tidak semua pendidik memiliki kapasitas dan waktu untuk

menyiapkan konten. Strategi microlearning terkait dengan kualitas individu peserta didik, kecenderungan guru untuk memanfaatkan teknologi digital, dan keadaan eksternal seperti ketersediaan sumber belajar.

Introduction

Since the Covid-19 virus has spread to almost all countries in the world, many schools/institutions have implemented online learning (Fitria, et al., 2022). There are many challenges in carrying out this online learning, including the focus and attention of students who cannot be kept constant during study time. Of course, it is not practical if the learning time in online learning is made the same as face-to-face learning in class, apart from the high cost, the attention of students can certainly decrease due to fatigue and boredom following long and long lesson times.

E-learning does not always make the learning process run optimally, sometimes some of the goals of learning itself are not achieved. Some students who use e-learning systems are easily distracted by many notifications from social media, online games, or other things outside the context of learning (Fitria, 2022). Therefore, presenting material or content in e-learning becomes a challenge that must be concerned, with how to find a strategy that is a solution to presenting good, interesting, and easy-to-understand content for students in many distractions that can shift focus while studying. It is supported by Fitria (2020) that the decreased focus, motivation, and attention of students during online learning were also experienced by training participants in various companies and government offices.

For those reasons, solutions are sought to overcome the problem of decreased focus and attention of students. One of these solutions is microlearning, which was introduced in 1963 by Hector Correa. This term was introduced in his book entitled: The Economics of Human Resources. Since the implementation of online learning, microlearning has become popular and many schools, companies, and government offices have implemented this learning system because it is considered to be able to help students absorb lessons more easily and in a faster time. A new strategy emerged, namely Microlearning which is predicted to be able to help students achieve learning goals in e-learning. Microlearning consists of two words (Micro/Micro means small size) and (Learning means learning activities) so that it can be interpreted as learning activities on

a small scale. Microlearning is used as a strategy for designing learning content into small and focused segments. The content in question is in the form of learning objects used in e-learning.

Biech (2018) states that microlearning is an increasingly popular method used to deliver specific, small content to learners, who choose what and when they learn. It is supported by Badrul et al. (2021) that microlearning is one of the latest trends in the eLearning industry. Sozmen (2022) defines microlearning as one of the creative teaching designs that employ digital technology. It involves creating bite-size training material that can be understood in a very short time. Microlearning is a tool that exposes students to small pieces of content that they can access whenever they want. Microlearning may involve watching a short video, viewing an infographic, or attending a short virtual class with group discussion. The term microlearning is not a structured concept, but a metaphor referring to a set of learning models (Hug, 2007).

According to Simonson et al. (2018), microlearning is simply a term that refers to a pedagogy that encourages learning in short segments and can be supported through multiple platforms. Microlearning provides small learning content, usually lasts only a few minutes, and is easily accessible via mobile (Palmer & Blake, 2018). The concept of "Micro-Learning" (ML) has been frequently emphasized as an effective learning strategy for a variety of learning phenomena (Khong & Kabilan, 2020). Microlearning has been considered a promising topic in work-based learning (Leong et al., 2020). Microlearning is becoming popular because it is easy to use and can be delivered in a variety of ways. This makes it convenient for people who are busy and want to learn new information. In addition, microlearning is easily affordable and can be used in conjunction with other forms of learning. This learning has the aim of providing information in a way that makes it easier for people to remember and apply it in everyday life.

The concept of microlearning is not a new thing but has often been used in the learning process such as in the development of blended learning. In blended learning, learning is carried out from a combination of instructions in face-to-face classes and then followed by microlearning as a reinforcement of learning. Reinforcement in microlearning is provided in the form of mini-learning, micro-courses, infographics, explanatory videos, motion graphics, and the like. The development of the use of microlearning is in line with the growth of technology. Especially with the advancement

of navigation in gadget users. The gadget's ability to find documents, tags, links, and instant views makes using microlearning easier to do. This allows students to access information and teaching materials anytime and anywhere when they feel ready to learn. Based on the explanation above, the researcher is interested to know more about microlearning. Therefore, the objective of this study is to review the use of micro-learning in the teaching and learning process, its benefits and limitations.

Literature Review

This part describes micro-learning such as microlearning and long-duration learning, characteristics of microlearning media, and forms of microlearning media in teaching.

A. Micro-Learning as Short-Term Learning

Micro-learning is one of the learning methods that require a shorter time. That is why micro-learning or micro-teaching is often referred to as short-term learning. Micro-learning does not have a standard definition that can be given, but with this understanding of course we can understand the principle of this method. Microlearning is a learning method carried out by teachers by the shorter one. In simple terms, microlearning is a method of learning for the short term. Microlearning is concerned with relatively small learning units and activities for short-term learning. This term is used in e-learning and related fields in the sense of the learning process in a mediated environment. Microlearning is a holistic approach to -based learning and education skills associated with relatively small learning units. It involves a short-term focus strategy designed specifically for understanding/learning/skill-based education. Micro-learning also enables finding related data, photos, and videos in mobile environments in real-time, so that the time required to find certain themes and contents can be shortened (Park & Kim, 2018).

Rafli & Adri (2022) explains that micro-learning is a learning method carried out by teachers in a shorter way. In simple terms, microlearning is learning methods for the short term. With this micro-learning method, teachers can create appropriate content with students in various forms ranging from text, multimedia, and others, etc. which can be followed briefly. Some examples of micro-learning content or micro-learning are 1) Text. In using this text, you can take short paragraphs that can be used with ease for students to understand. 2) Images: the use of images can use photos that

are taken for real and also can be an illustration. 3) Video: a short video containing part of the lesson that conveys the material brief or how-to-work steps.

Microlearning is usually held by educational institutions, such as schools, and colleges, or can be also held by the company. Various themes and concepts of microlearning can be found now so that learning does not have to take a long education, but it can also be the following microlearning as a short learning method. Microlearning methods only focus on learning a small amount of information in a short period. This differs from traditional learning methods, which involve learning large amounts of information at one time. Microlearning is more efficient because it helps us to remember information better and faster. This type of learning encourages us to explore and use our knowledge, which can help develop skills and knowledge that we didn't have before. Microlearning is also an effective way to increase productivity and help us complete more tasks in less time.

Micro-learning is a method of learning in a short time, such as online courses, training, seminars, workshops, etc (Fitria, Simbolon, et al., 2022). We may familiar with the short event, and we often follow it, so we will know how the principles of micro-learning can be done with a short process. This learning is usually carried out in a matter of days or even hours. Sometimes we also get a certificate for the short lesson as an acknowledgment that we have learned the skill or knowledge about the content of the lesson. Micro-learning is usually held by educational institutions, such as schools, and colleges or it can also be held by companies. Various themes and concepts of micro-learning can be found today so that learning does not have to take a long education, but can also follow micro-learning as a short learning method.

With microlearning, learning content with a fairly long duration is presented in short videos with a duration of 1-3 minutes, even one infographic in one sheet. This is done to reduce students' cognitive overload so that the content is easy to absorb and remember. Presentation with a microlearning strategy produces the type of content that is short, practical, and can be accessed anytime and anywhere when needed. Microlearning is said to be able to make the learning process in e-learning more effective for 4 reasons. 1). Learning content is made very small (Bite-sized). The focus when students are learning will be easily distracted by other distractions outside the learning context, therefore a short presentation of the material is easier to

understand. 2) Specific. Following the small size, the content presented is not full of theory alone, but one theory with one example or practice that is following the problems that are often found. 3) Fast. The presentation of short content will result in a short learning time so that when accessed on a cellphone, a learning object can be understood quickly. So that student are not attracted to distractions outside the learning context. 4) Adjusting Conditions and Needs. Learning objects can be created whenever needed, making it easier for students to find and re-access the content. Microlearning can make learning content easier to understand and memorable for a long time (Maria & Anna, 2022).

Long-duration learning is learning that is the opposite of Microlearning where students follow a long and rigid learning process. For example, in training, training, or workshops that take 24 lesson hours to 960 lesson hours. Long-term training aims to provide many competencies to students by compressing them into one solid activity. The impact that is most easily felt by the trainees is boredom and fatigue, especially in the middle of learning. Furthermore, this impact makes participants lack concentration in studying the topics presented, especially for training that is mandatory or assignments that do not arise from their desires. Students were only physically present in the classroom but it was different from the knowledge construction they built. The effectiveness of the absorption of the material may show low results. This lengthy learning and training will easily be replaced by media providing micro-content teaching materials such as YouTube, Facebook, Tik Tok and the like. For example, I don't know how many recipes or computer installation tutorials we have done after learning 5 minutes from YouTube. This makes basic computer courses and cooking have begun to be empty of participants. For the record, the platform is not something that replaces this regular course but the content and user experience that is formed while on the platform. The keyword for learning with microlearning is not on the type of platform but on the quality of the content provided.

B. Characteristics of Microlearning

However, each learning method must have its characteristics, as well as micro-learning is a learning method that has its characteristics compared to other learning methods. There are some characteristics of microlearning, as follows:

1. Learning materials are prepared and taught faster. One of the characteristics of microlearning is that the subject matter is delivered in small and short study units. With a small study unit, preparing teaching materials will be shorter. With this microlearning, teachers can create learning materials, courses, or training by preparing dozens of learning units that are assembled into a single unified teaching material. With small study units, it is easier to make changes and improvements, if needed. Of course, making teaching materials with the microlearning method is not as easy as cutting teaching material and turning it into small learning units. If this is done, the integrity of the material in the learning unit will be reduced or even lost, so that students do not get the complete learning material. One of the requirements for a learning unit to be categorized as microlearning is that each learning unit has a complete topic of discussion and can stand alone. That is, one learning unit can be taught as stand-alone teaching material.

2. The cost of making learning materials is cheaper. The cost of making online lectures or training with the microlearning method is cheaper because it only takes fewer resources to create learning materials.

3. Covers almost all topics and learning materials. Various learning materials and course topics can be delivered using the microlearning method, especially materials that teach technical and non-technical skills. Material that discusses a broad topic can be delivered by dividing it into several short teaching units. Only material that discusses a very specific, complex, complicated topic with in-depth discussion is not suitable and will experience difficulties if delivered using this microlearning method.

4. Participants feel the learning process is more interactive. Because the learning materials are delivered briefly with varied learning media, and questions, quizzes, and short exams can be inserted between the delivery of learning materials, students become more interactive. Some students even make an analogy for this microlearning learning method as if they open social media applications on their respective smartphones. Participating in microlearning lessons delivered with short study units only takes a moment to listen to, such as checking the status on social media.

5. Easy-to-remember learning material. Research results prove that it is easier to remember short and short learning materials. This short material also makes it easier for students to repeat certain parts that are less mastered. The subject matter with the microlearning method is very suitable because it is made short.

6. Learning materials can be consumed flexibly. Learning materials in short formats make it easier for students to manage time in studying learning materials. If the learning material is in video format, students can easily download video files and save them on a computer or mobile phone to study offline or offline.

7. Number of Participants. Participants who take part in micro-learning are usually quite small, between 5 to 10 people. The time required for this learning is also quite limited, ranging from minutes to hours, to days. This short time makes the learning objectives must be achieved. One way is to limit the number of participants who participate so that the material giver can focus more on all participants so that learning objectives can be achieved properly.

8. Limited time. Limited time also affects the material or material being taught to be less so that the best material must be selected. Not only that, but the teaching components developed are also limited, unlike long-lasting learning methods so they can be alternated or use various teaching components. That is why it is necessary to have the skills of the material giver to take advantage of the short time available to maximize learning to achieve the goal.

C. Forms of Microlearning in Teaching

Microlearning can be described as short bursts of content that are delivered to students through a variety of delivery methods that include text, images, videos, audio, tests, quizzes, and games (Kulhanek & Mandato, 2022). Therefore, this microlearning can be delivered through various formats, such as video, audio, image, or text. Many people think that microlearning with video is a common and effective form. However, video is not the only example of this form of microlearning. Other examples are e-learning, games, blogs, podcasts, infographics, and other visuals. Then must choose the type of media that is most appropriate for the situation and specific learning needs. For example, when we want to find information about how the universe was formed. If we only read a book about how the universe was formed,

maybe we won't be able to understand the contents of the information in a short time because usually, the writing in the book is too long and detailed. It's different from watching a video explaining how the universe was formed, we might find it easier to understand in a shorter time, usually, it can be accessed via YouTube. This type of learning can help people retain information better because it engages and challenges them actively. The following are some examples of fulfilling the types of microlearning media.

1. Videos. Internet users in the world watch videos whether it's through the YouTube platform, Online Streaming, Netflix, and the like. However, not all of the videos are included in Microlearning. Microlearning videos are usually presented in two forms, namely Video Explainer as exemplified by What If above or in the form of Motion Graphics. Microlearning videos are usually quick videos and are presented in simple language. Some scenes may consist of an image with an explanation. Videos are designed to be entertaining but still have an impact on students' knowledge. Learners stay focused with short video durations and small sizes so they can be easily shared with classmates.

2. Application. The application referred to in microlearning media is a learning application that contains learning micro-content and is equipped with navigation facilities that make it easier for students to learn. The learning concept applied in the application is in the form of instructions for working on, reading, and completing tasks related to the topic being studied.

3. Gamification. Gamification is microlearning which is similar to learning applications except that the learning objectives are disguised in game-like missions. The score obtained by students is more of an achievement that sometimes does not come from standard scoring rules following measurement theory. This gamification aims to increase the motivation and number of students' learning activities with more fun methods. An example of this gamification is like answering questions in the form of a quiz where each correct answer may have different results from other people even though the results are the same.

4. Infographics. Infographics are two-dimensional media that contain information in the form of graphics, images, and words. Words are arranged in such a way by emphasizing the information and aesthetics of the media produced.

5. Social Media. Social media can also be included in microlearning. Why this is important to note, this is because internet users also spend a long time on social media. Social media such as Facebook, Twitter, Instagram, and Tik Tok can be an alternative to learning. It's just that microlearning is not tied to the platform but to the content presented in it. Each social media has its characteristics so the microlearning content presented must be following the characteristics of the social media platform itself. For example, Instagram is very reliable with its image content, so the appropriate micro-content is Typography and Infographics, while Tik Tok is superior to videos with short durations, so this platform is suitable for Micro-content types of Video explainers or Motion Graphics.

We need to know that not all microlearning methods can be done using all of the methods above. We need to create content that must be tailored to the needs or learning applications that we have.

Method

This research type is library research. The literary study technique consists of a sequence of tasks about the collection of library data, the reading and taking of notes, and the management of materials study. In library research, the researcher encounters textual and qualitative information. The library's data is "ready for usage" (Zed, 2004). This indicates that scholars are utilizing source materials that are already available in the library. General library data are secondary sources, therefore the researcher acquires secondary resources. In this section, the researcher outlines the theory, investigates the study through the literature produced on the subject, and synthesizes it to highlight critical concerns. On the Google Scholar website, the article search is conducted by entering the term "micro-learning." Articles from foreign and domestic journals pertinent to the issue under study were searched.

A qualitative study of the Miles and Huberman model was used for the data analysis, which included data reduction, data analysis, and a conclusion (Miles et al., 2018). In the reduction stage, the researcher simplifies (reduces) and discards unnecessary data in such a way that the data can produce information that is following the research. In the display stage, the researcher sings the data in the form of a table, so that it is easy to

understand. Furthermore, the researcher describes the findings and then concludes with an answer to the existing problems.

Findings and Discussion

Based on the research from Basith & Al-Bari (2022), micro-learning is said to be able to make the learning process in e-learning more effective for four reasons, namely: First, the learning content is made in small pieces as mentioned, the focus during learning so as not to be easily distracted by other distractions outside the learning context, therefore a very short presentation of the material will result in easy to understand and easier, economical, efficient, and effective. Second, the specifics of learning with small sizes, for example, the content presented is not only theory but one theory, one example, or practice according to the problems found. Third, fast short content exposure can cut short learning time, when accessed on a cellphone, one topic can be understood quickly too. So that the learning process is free from outside interference. Fourth, adjusting the conditions and needs of learning topics can be made at any time when needed so that it is very easy for students to make and access the content again. Microlearning, among others, functions as follows: part of the main learning, assignments at home, enrichment, introductory material, the efficiency of material preparation, students learning anytime, anywhere, individual learning, and group learning.

Danver (2016) states that learning activities or events in microlearning may include surveys, decisive assessments draft, listening to podcasts, or viewing videos. For online classes, rather than papers- flashcard-based quizzes or practice, micro-learning activities may consist of interactive tutorials or short webinars with surveys for evaluation in over. Microlearning is applied more often in online education than traditional education because online education depends on relatively small learning units and short-term learning activities or events to master a subject well. In a traditional setting, an instructor can adjust the micro-learning activities if students seem to master safe ideas or concepts. In online courses, paradigm requires progress through each segment, usually, to assess results and confirm the acquisition of knowledge.

We as teachers or lecturers may decide to try implementing this method in our classroom. The first step we have to do is to divide the material into smaller sub-topics. Make sure that the delivery of this sub-topic does not take more than 10 minutes.

Microlearning can also be combined with flipped classroom techniques. The trick, before the class takes place, send material links in the form of videos or infographics to all students. Let them study the sub-material to be discussed and then proceed to the next sub-material. This method is effective for saving time and stimulating students to study independently. During teaching, make sure all students bring the necessary devices such as smartphones or laptops. Deliver your digital material for 5 minutes. Next, invite students to be more involved in learning using online quizzes. Before closing the session, divide the class into groups and have a discussion. After the class is over, give homework (PR) to students to listen to the next sub-topic. In addition to not burdening students, giving homework in this way can sharpen students' memory of the material presented before and during class.

As stated above, microlearning is learning that is carried out in a relatively short time, using only 5-15 minutes or less than 5 minutes. This learning is based on the theory that the ability of the human brain will generally be better at remembering or understanding the subject matter given in a short time. Studying for a long time gives the possibility of boredom, although this will happen differently for each student. When students are continually taught more complex concepts, breaking down material or learning into smaller pieces can help reduce cognitive overload and student burnout syndrome.

Microlearning is a completely new concept. It has been a long time since we have known the use of flashcards as a medium in teaching. The difference is that nowadays the card is converted into an electronic, digital, or online platform. The use of an internet-based learning management system makes it easier to implement learning. The use of electronic or digital media itself also has an unfavorable effect when used for a long time and continuously. Microlearning becomes an alternative to reducing these adverse effects, but the learning objectives and student competencies are still achieved.

In regular learning, microlearning can be carried out in tandem with theoretical or practical face-to-face learning. If regular learning is given 60 – 80 minutes for one meeting, microlearning can be part of the schedule. Microlearning that is applied during regular learning can use electronic or print media. While in online learning like during this pandemic, micro-learning can even be the main way to deliver the material. The use of infographics, student worksheets, learning videos, android-based applications, or even

games can be the delivery of the material provided. The nature of microlearning which is carried out in a short time and using online media makes it possible to do it without being limited by space and time. The small-scale learning method is used as a strategy to design content with small and more focused segments. In the microlearning method, teachers can create various learning concepts ranging from text, videos, images, audio, tests and quizzes, and even games in the learning process. Using this method, the material delivered is shorter, maybe 1-3 minutes, or even just an infographic.

The table below shows the use of microlearning in the teaching and learning process and includes the benefits and limitations as follows:

Table 1. Previous Research about Micro-learning in Teaching and Learning

No	Research Article	Result of Study
1.	(Meng & Wang, 2016)	**Micro-learning, also known as fragmented learning, is distinct from the conventional technique of methodical learning.** With this mode of instruction, learners' learning activities are not restricted by time or location; they may study whenever, wherever, and for a brief period using relatively few learning units. The objective of college-level English instruction is to strengthen students' complete English skills, including hearing, speaking, reading, and writing, as well as their capacity to study independently. The use of microlearning in the college English classroom is highly advantageous.
2.	(Fang, 2018)	**Microlearning can be advantageous to college English teaching since it addresses the issues of limited class time, too many students per class, and diverse student needs.** Students receive a substantial amount of English input, which is one of the advantages of micro-learning. On this basis, children will be able to develop their language output competence through well-designed classroom instruction. Micro-learning is characterized by frequent repetition, fragmentation, and differentiation. When college students adopt this style, their learning motivation will be substantially stimulated, their time spent on independent learning will be prolonged, and their horizons will be widened.
3.	(Mohammed et al., 2018)	**Microlearning can make learning things easier to comprehend and remember over time.** In this study, we evaluated microlearning strategies for teaching ICT in primary schools. We selected two groups from a Primary school in the city of Sulaimani. Then, we instruct the class for six weeks utilizing microlearning approaches in one and traditional ways in the other. After assessing both groups, the **Microlearning group demonstrated around 18% more learning than the standard group.** We may infer that microlearning strategies

		can enhance the efficacy and efficiency of learning. Additionally, the information may be retained for extended durations.
4.	(Gagne et al., 2019)	**Microlearning as an educational strategy has demonstrated a positive impact on health professions students' knowledge and confidence in completing procedures, retaining information, researching, and engaging in collaborative learning.** However, microlearning has disadvantages such as pedagogical discomfort, technology inequities, and privacy issues. Future research should focus on higher-level outcomes, such as patient benefits and practice modifications.
5.	(Nugraha et al., 2021)	A form of innovation in the learning process, universities have the potential to develop micro-learning teaching materials in various formats such as (1) podcasts, (2) PowerPoint slides, (3) infographics, (4) motion graphics, (5) explainer videos, and (6) interactive video conferencing and gamification. **These efforts were made to overcome learning boredom caused by the pandemic by utilizing rapidly developing information and communication technology.**
6.	(Susilana et al., 2022)	**Microlearning is an effective strategy for reducing students' cognitive load in online learning, including those that are intrinsic, extraneous, and germane.** The use of microlearning strategies in online learning makes it easier for students to understand the material; students are more flexible in their learning because the strategy allows them to choose their readiness to learn. This strategy allows students to manage unproductive cognitive load while stimulating relevant cognitive load. As a result, their learning outcomes are nearly excellent.
7.	(Yuniarsih et al., 2022)	**Learning media based on microlearning might be a practical solution for motivating students to learn on their own.** Teachers should provide compelling learning materials to enable students to think creatively and delve deeper into the subjects. The usage of ICT is unavoidable to ensure that the learning process continues. Microlearning may be used by teachers to increase students' creativity and freedom in the learning process. Teachers should be able to develop compelling microcontent that inspires students to think creatively.
8.	(Rafli & Adri, 2022)	**Microlearning is one of the E-Learning methods that present information concisely and focuses on the core of learning.** This method is an ideal way to find answers quickly to specific questions with the guidance contained in the form of media that have been prepared to increase the attractiveness of students towards the course. Later there will be some learning content will be created such as infographics in the form of photos containing material which will later be posted via social media such as Instagram, hyper content modules which will be in the form of a complete explanation of the material and accompanied by a QR-code as a liaison to other reading sources and media in the form of PowerPoint as a percentage of the material and is

		also equipped with a supporting video. which will make it easier for students to access this material anywhere and anytime.
9.	(Yusnidar & Syahri, 2022)	After the experiment, an evaluation of the achievement (effectiveness) of the case study-based micro-learning implementation was carried out, with the t-test result of 7.769 proving that there was an effect of case study-based microlearning implementation on student learning outcomes. **The implementation of case study-based microlearning can be carried out in a blended learning manner to minimize the obstacles faced by students.**
10.	(Zarshenas et al., 2022)	**Micro-learning is an excellent training strategy for enhancing nursing students' learning outcomes and self-efficacy, particularly in internship units.** This strategy is suggested since multimedia accommodates various learning styles and influences learning outcomes and learner self-efficacy.

As stated by previous studies microlearning has some benefits or advantages. First, Meng & Wang (2016) state that micro-learning is separate from the traditional systematic learning process. Therefore, learners' learning activities are not constrained by time or place; they can study whenever, wherever, for a limited length of time, and with a small number of learning units. Second, Fang (2018) states that addresses the concerns of limited class time, excessive class size, and various student demands. Frequent repetition, fragmentation, and differentiation are characteristics of microlearning. When college students embrace this approach, their learning motivation will be significantly boosted, their time spent on the independent study will be extended, and their perspectives will be broadened. Third, Mohammed et al. (2018) state that microlearning can facilitate comprehension and retention of information over time. Microlearning techniques can boost the efficacy and efficiency of learning since the microlearning group displayed approximately 18% more learning than the conventional group. Fourth, Gagne et al. (2019) state that microlearning has demonstrated a positive impact on health professions students' knowledge and confidence in performing procedures, retaining material, conducting research, and engaging in collaborative learning. Fifth, Nugraha et al. (2021) state that universities have the potential to develop micro-learning teaching materials in various formats. Utilizing fast-growing information and communication technologies, these microlearning initiatives aimed to combat the learning boredom brought on by the epidemic. Sixth, Susilana et al. (2022) state that Microlearning is an effective

technique for minimizing the cognitive burden of students in online learning, encompassing intrinsic, superfluous, and pertinent tasks. The use of microlearning tactics in online learning makes it simpler for students to comprehend the information; because the strategy allows them to pick their readiness to study, students have greater learning flexibility. Seventh, Yuniarsih et al. (2022) state that Microlearning-based learning material might be an effective way to motivate pupils to study independently. Teachers can employ microlearning to boost students' creativity and autonomy during the learning process. Teachers should be able to provide microcontent that motivates students to think creatively. Eighth, Rafli & Adri (2022) state that microlearning provides short information and concentrates on the essence of learning. This technique is a great way to rapidly get answers to particular concerns with assistance information in the form of media that has been developed to boost the course's appeal to students. Ninth, Yusnidar & Syahri (2022) state that the implementation of case study-based microlearning can be carried out in a blended learning manner to minimize the obstacles faced by students. There was an effect of case study-based microlearning implementation on student learning outcomes after the experiment. Tenth, Zarshenas et al. (2022) state that micro-learning is an excellent training technique for improving students' learning outcomes and self-efficacy. This method is recommended due to the fact that multimedia accommodates many learning styles and improves learning outcomes and learner self-efficacy.

Based on the explanation above, shows that microlearning is effective, and efficient, and allows learners to focus on a very specific skill (Furterer & Wood, 2021). Microlearning is a relatively new approach to on-demand learning to meet the need for continuous learning and improvement (Ford, 2020). Microlearning is ideal for situations where the learner has limited time, and knowledge and skills can be acquired quickly. It is a flexible solution that can adapt to the specific needs of the learner (Greene, 2020). It is also supported by the statement that Mobile micro-learning is an effective form of informal learning which can meet the personalized needs of language learners (Huo & Shen, 2015). According to Torgerson & Iannone (2019), microlearning can be a great solution. By giving learners small, targeted lessons, we help them complete work assignments quickly and effectively so they can return to work.

We already know what form of micro-learning is that only focuses on delivering content in small, manageable chunks. Here are six benefits of microlearning includes 1) Microlearning easily adapts to different contexts and situations. 2) Lessons can be completed in a short amount of time, which makes them perfect for studying in any situation. 3) Microlearning is flexible enough to accommodate different learning styles, making it more inclusive for students. 4) Microlearning can be customized to meet needs, so each learner receives personalized feedback. 5) Easy-to-digest microlearning can help increase retention rates and increase overall comprehension levels. 6) Microlearning can be accessed anytime and anywhere, this is suitable for those of us who are busy and only have limited study time.

Besides that, the Microlearning method is one of the effective methods in the teaching and learning process, it also shows: 1) Easier for students to remember lessons. Interestingly packaged short materials using animated videos, infographics, and other digital materials have proven not only to attract students' interest but to make each material better remembered. 2) Easier for teachers to update content. Because the content presented is shorter, it becomes easier for teachers to revise and edit. This is certainly beneficial because it can save a lot of time and teachers can focus more on teaching. 3) Microlearning is more efficient. Because the material is broken down into smaller sub-materials, students can understand the lesson faster. The faster students master the lesson, the more learning efficiency will increase. 4) Easier for teachers to know learning outcomes. Teaching specific material in a short time makes it easier for teachers to evaluate the effectiveness of learning. Thus, teachers can refine their teaching materials more easily. 5) Lesson materials become more personal. With short material, students can choose which material is most needed, desired, and most relevant for their study.

In addition to providing benefits in learning, is microlearning the best way to learn? It turns out that microlearning also has some limitations that must be considered. Learning materials in microlearning are only small pieces of information. It may that we cannot get a complete understanding of the learning material. 1) Microlearning is not suitable for complex and complicated material, heavy material, and requires detailed explanation. It cannot be said that a certain learning method is better than other methods. 2) The choice of learning method is very dependent on the

objectives to be achieved. Microlearning is not suitable for conveying a complex concept, topic, or learning material with detailed and in-depth discussion. If the learning material is forced to be delivered with short study units, then the discussion of the material cannot be detailed and in-depth. For example, microlearning is suitable for learning conversational English where the discussion material can be delivered in small and short study units, it doesn't require much in-depth discussion. 3) Microlearning can be confusing if the creator of the material cannot connect and draw a common thread from the many sub-topics that exist.

As a comparison, we can be more objective in understanding this one learning method, here are several shortcomings of microlearning. 1) Microlearning takes a longer time to complete the material. If in general a subject matter can be completed in one session, in microlearning you need two to three sessions. This is due to the nature of microlearning which can divide the material into various smaller sub-materials. 2) microlearning is not suitable for complex and complicated materials. This method is not suitable for heavy materials and requires a detailed explanation. For example, explaining material about complicated quantum physics. 3) Microlearning can be confusing if teachers are not skilled. Because microlearning contains topics that are broken down into sub-topics, students can get stuck in confusion if the teacher cannot connect and draw a common thread from the many sub-topics. In microlearning, learning material also is broken down into small parts. This can prevent participants from having a thorough understanding of the learning material. Participants can also find it difficult to relate to each material being taught. In general, microlearning is not suitable when the material being taught must be understood thoroughly and in detail. Microlearning is also not suitable for learning related to case studies.

The main obstacle to implementing microlearning is the limited availability of content. Teachers are also required to produce their learning content such as videos, audio, infographics, quizzes to games. However, not all teachers have the capacity and time to prepare all the content. For that, we need the help of educational technology which in this case is the Learning Management System (LMS). Microlearning plays an important role in the learning process, especially in employee training, where not all students/learners have the same basic knowledge but can still

learn according to their individual needs and speed. Microlearning is considered more effective than conventional learning which takes longer so that participants (students) are easily distracted, and in the end, participants (students) can miss important information.

Learning is an ongoing process. Like when in school, learning gradually to understand the next material. Such a learning process helps students capture and implant knowledge in their brains more easily. Therefore, sometimes information or knowledge that is given suddenly and at the same time is very easy to forget. What's more, our focus is decreasing due to distractions from social media. A learning paradox is a learning process where students need to know ideas or things that need to be prepared before doing something. But unfortunately, students often forget the information or knowledge that is given quickly. This is where microlearning can fill the gaps in the learning process. As is well known, microlearning is knowledge or information that is made specific and in small sizes that are easy to capture by memory.

Gagne et al. (2019) state that microlearning as an educational strategy has demonstrated a positive impact on health professions students' knowledge and confidence in completing procedures, retaining information, researching, and engaging in collaborative learning. However, microlearning has disadvantages such as pedagogical discomfort, technology inequities, and privacy issues. Future research should focus on higher-level outcomes, such as patient benefits and practice modifications.

Conclusion

Microlearning is covered in this review. In teaching and learning process, microlearning can be delivered through various formats, such as video, application, gamification, infographics, and social media. Numerous studies also demonstrate that microlearning facilitates learning by breaking material into smaller pieces, and motivates students to study. This approach permits on-demand learning for students, as it permits the use of a broad variety of activities and is readily integrated into the everyday routine. Microlearning is an effective way to learn new information in a short time. It is a convenient form of learning and adaptable to different situations. Microlearning is that

learning can be completed in a short time. However, this learning is not perfect and there are some shortcomings, such as the material being few and not suitable for heavy material and requiring detailed explanation. However, with the many benefits that can be obtained, microlearning is a powerful tool that can be used to improve learning outcomes. On the other hand, the effectiveness of microlearning strategies is intimately tied to the individual qualities of learners, the propensity of teachers to utilize digital technology, and external circumstances such as the availability of learning resources.

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