The Use of Microlearning in Learning Economics in Higher Education: Bibliometric Analysis

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Abstract. The rapid development of information and communication technology demands renewal through new approaches to economic instruction. One of the learning approaches that can use is microlearning. This study aims to explore the use of micro-learning in learning economics in higher education. The analysis method used is bibliometric analysis with the help of VOSviewer software. The results of exploring articles obtained from 2014-2022 publications with the help of publish or perish software and VOSviewer found five clusterization research related to microlearning. Research on the topic of microlearning began to increase from 2018 to 2019. Based on VOSviewer analysis, there are also many types of research related to microlearning. However, there needs to be research on a microlearning approach directly applied to economic learning, especially in higher education. This is a novelty in economic learning related to creative and innovative learning to improve the effectiveness and efficiency of sustainable learning activities. Micro-learning is also able to provide convenience to students in absorbing subject matter.

Keywords: microlearning, economic learning, higher education.

1   Introduction

The integration of technology in learning makes learning a must in the 21st century [1]. Integration of technology in the learning process in an effort to facilitate student learning in order to be able to acquire competencies effectively and efficiently. 21st-century competence is the main thing that students must have in living real life [2]. The generation of students in the 21st century is required to have the ability to literate, think critically in problem-solving, innovate and be creative, collaborate and communicate in social systems, and have good metacognition skills. Efforts to meet the needs of students in preparing a strong person in the 21st century need to be imperative in renewing the learning process.

Learning renewal is an innovation carried out by educators in facilitating and improving student performance. This effort is manifest, one of which is in the form of the integration of learning technology. Currently, many learning technologies can be utilized and developed by educators in facilitating students to achieve learning goals.

One form of learning technology can be digitizing various learning resources and media for students. Learning media must be easy to use and accessible to students anywhere and anytime. The flexibility of obtaining learning media allows for independent and continuous learning according to the level of material absorption ability of each individual.

Educators must design learning media so students can easily absorb material to achieve learning objectives. We must design digital-based learning media as a form of technology integration in the learning process. One can use a microlearning approach designed by learning to be usable by students. The concept of microlearning has characteristics of learning that focus on providing material in small, brief, and directed parts to achieve specific competencies [3, 4]. The microlearning approach can be in the form of digital media that can be accessed anytime and anywhere by students in addition to learning in the classroom [5, 6]. Digital learning media is applied more enjoyable with a variety of media [7]. The micro-learning approach allows students to absorb the material better, faster, denser, and more easily accessible [8, 9]. Microlearning, microcontent, and micro knowledge are innovative concepts that provide flexible and dynamic alternatives in response to the ever-changing landscape of media, social interactions, and environmental factors [10].

The application of microlearning has experienced rapid development in learning activities, but the concept of microlearning is still at a new stage in social science studies. The results also showed that there was no relationship between economic and micro-learning material variables conducted by the researchers. Therefore, this paper analyzes the implementation of microlearning in social science learning, especially in economics in higher education, using a database of articles published on google scholar as a data source by applying bibliometrics to show future research trends and research updates such as the use of digital-based teaching materials.

2   Method

Bibliometric analysis explains data obtained from various literature sources from various online databases, such as articles issued by scientific journal institutions, articles published by conferences, or literature books, without having to go to the field [11]. Bibliometric analysis is using to analyze these data to see the latest research trends, the framework of patterns in a scientific discipline formed on the research topic, and the productivity of scientific work [12]. The results of the analysis are Expectations to map research according to topics, research collaborations, and research trends that are currently carried out and bring up research topics that other researchers still need to carry out.

Articles were published between 2014 and 2023 and collected 2,200 terms. Bibliometric analysis techniques involve the application of Vosviewer software as a tool for analyzing scientific publication data to assist researchers in studying the content of articles taken from Harzing's Publish or Perish database [13]. Analysis data taken from keyword mapping integrated from research data and visualized in the form of pictures of research linkages, trends, and ranges of topics carried out in the research.

Bibliometric analysis using the help of a database from publish or perish as many as 800 articles with the keywords microlearning, economic learning, digital media, and higher education. Based on these, keywords then extract using Vosviewer software.

3   Result and Discussion

Based on the results of scientific publication data analysis, the results of extracting titles and keywords taken using publish or perish software as many as 800 articles with a span of 10 years back, namely from 2014 to 2023 as of June 11, 2023. In Vosviewer software, this paper describes three categories, including Network visualization, Overlay Visualization, and Density Visualization.

3.1   Network visualization of citations from microlearning in economics learning

Using network analysis vosviewer produced 85 items in 6 network visualization clusters. Network visualization (figure 1) describes how network visualization is on the topic of microlearning. At the bottom light blue is the most important related to microlearning, making it a dominant topic in application in learning. The red color on the right shows the direction of research on digital learning during the COVID-19 pandemic. The purple at the top relates to machine learning in its application in learning organizations. The green color on the top left is related to the direction of research on economic topics both in theory and practice and economic policy. The dark blue color on the left is related to the direction of research on economic learning resources. The yellow at the bottom left indicates the research direction in the theoretical material review.

Fig. 1. Network Visualization of microlearning citations on economic learning

3.2 Visualization of microlearning trends in economic learning

The overlay visualization section (Fig. 2) shows the direction of research that researchers still need to carry out. This shows the latest research related to microlearning approaches in economic learning. From 2017 to 2018, there has been much research on economic learning, both in theory and practice. The topic of microlearning began to be researched from 2018 to 2019 where the situation began when the outbreak of the COVID-19 pandemic began. However, few implementations of microlearning in economic learning have positively contributed to economic learning, especially in higher education.

In Fig. 2, the topic of micro-video integration in e-learning is also an essential discussion in microlearning, such as in content development [14–17]. Microlearning can also apply to digital learning through mobile devices [3, 18]. The trend of microlearning topics during the Covid-19 outbreak makes it an essential topic for research. Media elements such as graphics, animation, audio, and video to see to be increasingly evolving components commonly used in classrooms to make the learning process more interesting for students [6]. Using well-designed learning videos according to the learning steps can transmit conceptual knowledge (mental models), provided that the presentation of information follows the steps of solving the problem [19].

Fig. 2. Overlay Visualization microlearning on economics learning

3.3 Density Visualization microlearning on economics learning in higher education
The density visualization section (Fig. 3) shows how frequently researchers have explored the topic. Dark-colored areas indicate research conducted before 2018, while lighter colors indicate more recent research from 2018 onwards. The analysis using Vosviewer software reveals that researchers have extensively studied microlearning.

Additionally, a considerable amount of research has been conducted in economics. These findings indicate the potential for innovative approaches by researchers, such as integrating microlearning into economic education.

Fig. 3. Density visualization microlearning in economics learning

Research with the term microlearning has been widely carried out in online learning so that students can understand the material easily, flexibly, and quickly [6]. Online learning is a planned and systematic series by teachers and students [20]. Research findings also show that the application of microlearning can increase knowledge and confidence in performing skills with the help of mobile devices [3]. This asynchronous mobile micro-learning app supports peer feedback skill development on spoken content while collecting usage data as a learning analytics platform [21]. Microlearning can be the answer to facilitating learning and improving student performance [22]. Microlearning can provide learning experiences to students in developing student creativity [23]. An exciting learning experience will increase student motivation coupled with the application of interactive micro-videos [24]. This makes the basis of microlearning learning more effective with various integration of learning resources [25].

4   Conclusion

The conclusions that can give in this paper can describe as follows; (1) the development of digital learning can be integrated into the development of social sciences, precisely economic material; (2) the application of microlearning in economic learning in higher education as an effort to fulfill 21st-century skills; (3) Further research

to focus on the development of economic learning integrated with digital learning, such as with microlearning approaches in higher education. Through the microlearning approach, students will gain knowledge easier and faster and have more critical problem-solving skills. Therefore, it is necessary to increase the competence of educators related to the ability to use digitalization of technology in learning. This effort can be done by enriching themselves with digital literacy, developing, and integrating digital-based technology in learning.

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