

<sup>1</sup> Tejo Ismoyo  
<sup>2</sup> Sidartha Adi  
 Gautama  
<sup>3</sup> Ayu  
 Andriyaningsih

## Integration of Microlearning in Teaching Buddhism: Analysis of Potentials and Barriers



**Abstract:** - This research explores the implementation of microlearning in Buddhist teaching with a focus on increasing flexibility and effectiveness through educational technology. The research aims to identify and analyze the potential and obstacles faced by educators in integrating microlearning into the Buddhist curriculum and propose innovative solutions to overcome these barriers. The methodology used was a qualitative analysis of selected academic literature and interviews with Buddhist educators which provide in-depth insight into their experiences and perceptions. The main findings show that although microlearning offers opportunities for more adaptive and responsive learning, barriers such as a lack of customized materials and resistance from traditional educators often hinders its implementation. The research also reveals that effective use of microlearning requires a better understanding of learners' needs and strategic integration of technology in learning. The Implications of this research include recommendations for the development of more relevant microlearning resources, training for educators in using the methods, and the utilization of technology to support more interactive and engaging teaching. This research offers important insights for Buddhist educators, policy makers, and researchers in education, highlighting how microlearning can be a valuable tool in modern education.

**Keywords:** Micro learning, Buddhist religious education, learning innovation, educational flexibility.

### I. INTRODUCTION

In an era where technology is redefining the face of education, new approaches to teaching and learning offer avenues to overcome contemporary challenges. Among such innovations, microlearning has emerged as an important method, promising a more flexible, personalized and effective learning experience. This concept, which breaks down educational content into small, easily digestible units, is an approach that makes it easier for students to absorb and remember the material while offering an adaptive way to adapt education to individual needs [1].

Furthermore, microlearning optimizes the use of time and resources, making it an ideal solution for dynamic and diverse learning environments [2]. The application of microlearning in the context of teaching Buddhism, a relatively under-researched field, raises important questions about its effectiveness and adaptability within this scope.

This research adopts a qualitative methodological approach to explore in depth the implementation and challenges faced in microlearning in the context of teaching Buddhism. This research used a systematic literature analysis, referring to the framework developed by Booth, Papaioannou, Sutto, Kvale & Brinkmann [3], [4]. The selected literature sources are from Scopus indexed journals, chosen for their relevance in understanding applicable microlearning theories and principles.

To gain a practical and experiential perspective, this research also involved semi-structured interviews with a group of Buddhist educators, providing an opportunity to explore the rich subjective and contextualized experiences of educators. The data collected was analyzed using the thematic analysis method, as described by Braun & Clarke [5]. Allowing for an in-depth interpretation of microlearning in Buddhist teachings.

This research was designed to not only understand the use of microlearning but also to identify challenges and propose innovative solutions. In designing this research, the researchers considered Creswell's [6] advice on the importance of selecting an appropriate qualitative methodology as well as Maxwell's [7] and Patton's guidance on interactive design and the integration of theory and practice in qualitative research [8].

The researchers expect that the results of this research can make significant contributions to related literature and teaching practice as well as provide practical recommendations for educators, policy makers, and practitioners in the field of education. The researchers also used data from ten Scopus journals specifically selected for their relevance to microlearning in Buddhist teaching, providing a framework theoretical and powerful practicality for analysis and interpretation.

<sup>1</sup>Buddhist Education Department, Jinarakkhita Buddhist College of Lampung, Indonesia. tejoismoyo@stiab-jinarakkhita.ac.id

<sup>2</sup>Buddhist Communication Science Department, Jinarakkhita Buddhist College of Lampung, Indonesia. sidarthaadigautama@stiab-jinarakkhita.ac.id

<sup>3</sup>Buddhist Education Department, Jinarakkhita Buddhist College of Lampung, Indonesia. ayu.andriyaningsih@stiab-jinarakkhita.ac.id

This research aims to answer the critical question: "How can microlearning be implemented effectively in Buddhist teaching to increase learning flexibility and effectiveness?" and "What are the main barriers educators face in integrating microlearning into Buddhist curricula, and how can innovative solutions overcome these barriers?"

## II. METHOD

This research adopts a qualitative methodological approach to explore in depth the implementation and challenges faced in microlearning in the context of Buddhist teaching. This study was designed to gain insight theoretical and practical through systematic literature analysis which refers to the framework developed by Booth, Papaioannou, & Sutton and Kvale & Brinkmann [3]. [4]. The literature sources used in this analysis mainly come from Scopus indexed journals, which were chosen because of their accuracy and relevance in understanding applicable microlearning theories and principles.

To gain a practical and experiential perspective, the research also involved semi-structured interviews with ten Buddhist religious educators, providing an opportunity to explore the rich subjective and contextualized experiences of the educators. These interviews were designed to uncover the experiences, perceptions, and challenges they faced in integrating microlearning into their teaching practices. This method of data collection provides an opportunity to explore the rich subjective and contextual experiences of educators.

The collected data were analyzed using the thematic analysis method, as described by Braun & Clarke [5]. Through this method, data was categorized into specific themes, and interpretation of the meaning of those themes was carried out to understand the deeper context and nuances of microlearning in Buddhist teaching. This research aims to not only understand the use of microlearning but also to identify existing challenges and propose innovative solutions to overcome those challenges. The results are expected to provide significant contributions to related literature and teaching practice.

In designing this research, the researcher considered Creswell's advice which emphasized the importance of choosing a qualitative methodology that suits the context and needs of the research [5]. In addition, Maxwell helps understanding the importance of an interactive qualitative research design that allows researchers to be more responsive to the data and context [7]. According to Patton also provides valuable guidance on the integration of theory and practice in qualitative research to enrich data analysis and interpretation [8].

This research is supported by insights from ten informants who are Buddhist educators, with diverse backgrounds and experiences. These data, combined with a systematic literature analysis of previous studies and literature from Scopus indexed journals, provide a powerful theoretical and practical framework for analysis and interpretation. Data from the 10 Scopus journals used in this research have been specifically selected for their relevance and contribution to the understanding of microlearning in the context of teaching Buddhism. The following 10 Scopus-indexed journals were used:

**Table I.** 10 Scopus-Indexed Journals

No	Researchers	Year	Title
1.	Aldosemani, T. I.	2019	Microlearning for Macro-outcomes: Students' Perceptions of Telegram as a Microlearning Tool
2.	Diaz Redondo , R.P. , Caeiro Rodriguez , M. , Lopez Escobar , J. , & Fernandez Vilas , A.	2021	Integrating micro-learning content in traditional e-learning platforms
3.	Best, T.	2023	Knowledge transfer in a project-based organization through microlearning on cost-efficiency
4.	Cheng, B., Wang, M., Mørch, A. I., Chen, N.-S., Kinshuk, & Spector, J. M.	2014	Research on e-learning in the workplace 2000–2012: A bibliometric analysis of the literature
5.	Hesse, A., Ospina, P., Wieland, M., Lealya, F. A., Nguyen, B., & Heuwieser, W.	2019	Short communication: Microlearning courses are effective at increasing the feelings of confidence and accuracy in the work of dairy personnel
6.	Leong, K., Sung, A., Au, D., & Blanchard, C.	2020	A review of the trend of microlearning

No	Researchers	Year	Title
7.	Mujica , A. , Villanueva , E. , & Lodeiros , M.L.	2021	Micro-learning Platforms Brand Awareness Using Social Media Marketing and Customer Brand Engagement
8.	Sankaranarayanan, R., Leung, J., Abramenska-Lachheb, V., et al.	2023	Microlearning in Diverse Contexts: A Bibliometric Analysis
9.	Zandbergs, U., Judrups, J., Plane, E., & Uscins, R.	2021	Improvement of microlearning with help of learning analytics in enterprises
10.	Mohammed, G. S., Wakil, K., & Nawroly, S. S. M.	2018	The Effectiveness of Microlearning to Improve Students' Learning Ability

### III. LITERATURE REVIEW

Microlearning, as an innovative learning technique, emerged as a response to the challenge of information overload due to rapid technological developments. This transformation has changed aspects of life, work, and education, triggering the need for more adaptive and focused learning strategies. Microlearning, with its focus on the use and production of micro-content offers a solution in filtering the abundance of information in this digital era [9].

As a new concept in the world of education, microlearning is defined as a learning process that prioritizes small learning units and short-duration activities. Goschlberger and Bruck argue that microlearning is a didactical concept that utilizes digital media to deliver small, self-contained content, specifically for short-term learning activities [10]. Leaman and Fox emphasize that microlearning enables the delivery of content in small chunks that strengthen individuals' control over their learning [11]. From this perspective, microlearning can be understood as an approach that focuses on focused and concise small-scale learning.

#### A. Duration and Purpose of Microlearning

The duration of learning in microlearning tends to be short. According to Callisen, Microlearning sessions typically last between 2 to 7 minutes, using media such as video, text, images, or audio [12] mentioned that micro learning is short and focused lessons designed to meet specific learning objectives, usually lasting between 3-5 minutes [13]. The main goal of microlearning is to convey one or two specific learning objectives through short and easy-to-understand content [14].

#### B. Microcontent and Micro-information

In practice, microlearning relies heavily on microcontent. Microcontent is a stand-alone unit of digital information, small in size, reusable, and targeted to individuals [15]. Each micro-unit is designed to serve a specific purpose and can function either as a standalone module or as part of a larger e-learning course. The precision and granularity of microcontent is critical to ensure learning effectiveness.

#### C. Cognitive Load Reduction

Microlearning is closely related to the concept of "chunked learning", where information is processed by breaking it down into smaller units that are easier to digest [12]. This approach is in line with Cognitive Load Theory (CLT) which highlights the way working memory processes information and how cognitive load reduction can facilitate more effective learning [16].

#### D. Microlearning Design Principles

Microlearning design involves key principles such as shortness of duration, timeliness of access, topic focus, and provision of feedback. These principles ensure that learning material is delivered effectively and accessible according to learner needs [17].

#### E. Integration of Microlearning in Teaching Buddhism

In Buddhist teaching, microlearning offers an effective way to convey complex and in-depth teachings through short, focused learning sessions. This approach facilitates the gradual understanding and application of religious concepts.

### F. *Microlearning Supporting Media*

Proper media selection is key in development effective microlearning. Media such as infographics, PDF, e-books, and flipbooks are suggested to support and enhance the microlearning experience, ease access and improve retention [18].

Overall, microlearning is emerging as a learning strategy that responds to today's needs, reduces cognitive load, and enables greater adaptability in the learning process. This approach marks a significant shift in the way we understand and implement learning in the digital era.

## IV. RESULTS

### A. *Implementation, flexibility and effectiveness of learning*

Microlearning has emerged as an innovative and effective learning approach, breaking down content into small units for easy management and comprehension. Existing studies demonstrate the positive impact of microlearning in a variety of educational and training contexts, with significant benefits in increasing student motivation, comprehension, retention and participation.

Research by Hug revealed that students in secondary schools showed a positive response to microlearning, indicating increased motivation and understanding of the material [19]. This research emphasizes the suitability of microlearning to the needs of the digital generation. Meanwhile, Gavrilova found that microlearning increases efficiency and satisfaction in distance learning [20]. Meanwhile Bahrami explored microlearning application in a corporate environment, finding improvements in information retention and employee performance [21].

Overall, the literature suggests that microlearning not only enriches the learning experience through active engagement and increased understanding, but also offers a versatile and effective solution to the needs and preferences of current generation of learners. Further research is needed to further explore the potential applications of microlearning and assess its long-term impact on learning outcomes.

### B. *Barriers to integrating microlearning*

Integrating microlearning into modern education and training systems presents diverse and complex challenges which require a holistic and coordinated approach. One of the key areas requiring attention is ensuring the effectiveness of microlearning in various educational settings. It is not only about creating engaging learning units but also about adapting them to meet specific learning objectives while maintaining learner engagement and motivation [22].

Furthermore, technical and design challenges arise when trying to integrate microlearning content into traditional e-learning platforms. Seamless transitions between different forms of content are essential for a coherent learning experience. Collaboration between content developers and engineers is needed to ensure that e-learning platforms can support and optimize microlearning content [23].

In a corporate context, adapting microlearning requires a deep understanding of training needs as well as culture. The challenge here is to design content that is not only informative but also relevant and engaging which often involves tight schedules and diverse learning needs [24].

Although bibliometric studies provide important insights into the development of microlearning, there is often a lack of focus on practical implementation challenges. Therefore, educators and content developers need to be proactive in seeking strategies and solutions to overcome these practical obstacles, ensuring that theory can be translated into effective practice [25].

Personnel involvement is important in ensuring the effectiveness of microlearning courses. This includes not only motivation from learner but also ongoing support from the teacher or facilitator. These interactions help ensure a deep understanding and practical application of the material studied [26].

In secondary schools, creating effective microlearning content is closely tied to understanding students' unique needs and learning preferences. Creating interesting and relevant content requires creativity as well as an understanding of the dynamics of adolescent education [27].

The integration of micro learning Platforms for young students also requires strategic planning and careful implementation. Technology must be supported by solid pedagogical strategies to ensure effective learning outcomes [28].

Finally, customizing microlearning content for different educational and training contexts can be complex and time-consuming. This adjustment process requires cooperation and coordination between the development team and stakeholders. A commitment to iteration and continuous improvement is important to ensure that microlearning remains relevant and effective [29].

Overall, integrating microlearning requires an integrated and responsive approach to various existing challenges. With a focus on adaptation, collaboration, and innovation, microlearning can be successfully integrated into the education and training ecosystem, providing a rich and dynamic learning experience for learners.

*C. Innovative solutions*

Innovative solutions in microlearning development center on creating content that is interesting, concise and relevant, according to student needs and context. Clark and Mayer highlight that “Microlearning is designed to be concise, focused, and provide timely learning that can be directly applied to the task at hand [30]. This highlights the importance of customized and immediately usable content.

Integration of microlearning content with existing e-learning platforms is key, ensuring broad accessibility and ease of use. Adapting the content to meet the specific needs of the company and its employees becomes vital, ensuring the relevance and practical application of the material. As stated by Gassler, Hug, & Glahn, “Integrated Micro Learning is a powerful tool for supporting modern knowledge workers within and across daily routines with small context-specific learning chunks” [31]. This emphasizes how important it is to ensure microlearning content is relevant to users' daily needs.

Bibliometric studies, combined with research and development, can help overcome challenges in microlearning implementation, ensuring an evidence-based and effective approach. Incorporating interactive and engaging elements in microlearning courses can increase learning motivation and ensure a deeper learning experience.

Specifically for high school students, Hug describes, “The essence of microlearning lies in its minimalist approach to content delivery where learning occurs in small steps, allowing for higher retention and application” [32]. This is key in designing microlearning content that is age-appropriate, engaging, and relevant, encouraging engagement and understanding of the material.

Ultimately, adapting microlearning content for different disciplines ensures that the material is not only engaging but also relevant to the learner's specific needs. This approach ensures that microlearning is not only an effective learning tool but also dynamic and responsive to diverse learning needs. To provide a more detailed picture of how these various aspects of microlearning are explored in the academic literature, here is Table II which outlines the key aspects of microlearning.

Table II categorize these studies into three main aspects: implementation, flexibility, and effectiveness of microlearning; barriers to integrating microlearning; and proposed innovative solutions. This information is important for understanding current trends and future directions of microlearning in education.

**Table II.** Key Aspects of Microlearning

<b>Implementation, flexibility and effectiveness of learning</b>	<b>Barriers to integrating microlearning</b>	<b>Innovative solutions</b>
Microlearning helps in retaining course related information. Implemented in Middle School with positive perception from students.	The challenge lies in ensuring the effectiveness of microlearning in a variety of educational settings.	Develop content that is interesting, concise, and tailored to student needs and context.
Microlearning as a tool in distance learning, can be applied to Buddhist Pancasila material, can be accessed anytime and anywhere according to the needs of the learning process.	The challenge lies in seamlessly integrating microlearning content into traditional e-learning platforms.	Seamless integration of micro-content with existing e-learning platforms and ensuring accessibility.
Using microlearning in corporate studies.	Adapting microlearning to suit a company's context can be a challenge.	Tailor microlearning content to meet the specific context and needs of the company and its employees.
Using a bibliometric approach to study workplace e-learning literature.	Bibliometric approaches do not address the challenges of practical implementation of microlearning.	Complement bibliometric studies with practical R&D to overcome microlearning implementation challenges.
Determining whether online microlearning courses embedded with SOPs are accessible improves performance estimates.	High involvement of personnel is required to utilize microlearning courses effectively.	Incorporate interactive and engaging elements into microlearning courses to motivate.

<b>Implementation, flexibility and effectiveness of learning</b>	<b>Barriers to integrating microlearning</b>	<b>Innovative solutions</b>
Creating microlearning in the secondary school context, implementing an effective learning system on the core material of Buddhist Pancasila.	The challenge lies in creating effective microlearning content for high school students.	Design microlearning content that is age-appropriate, engaging, and relevant for middle school students.
Describe microlearning used for class VII students in secondary schools	Integrating a microlearning platform for young students requires careful planning and execution.	Create a user-friendly and interactive microlearning platform that appeals to young students.
Microlearning is used in a variety of contexts and disciplines, considered an effective instructional strategy for online, hybrid, and blended courses.	Diverse contexts require customization of microlearning content, which can be complex and time-consuming.	Tailor microlearning content for different disciplines and ensure it is engaging and relevant.
Using microlearning to solve problems with Buddhist Pancasila material.	Aligning microlearning with needs is critical.	Align microlearning content with training needs and integrate it.
Exploring the effectiveness of microlearning in improving students' learning abilities, with a focus on learning outcomes and skill mastery.	Challenges in adapting microlearning content to specific student needs and measuring its impact effectively.	Develop interesting and relevant microlearning modules, and use various assessment methods to assess increased learning abilities.

*D. Interview*

This study explores the views of ten informants in the field of education regarding the implementation, flexibility and effectiveness of microlearning. By utilizing in-depth interviews, this research succeeded in identifying the main challenges in integrating microlearning into existing curricula, and at the same time revealed various innovative solutions to overcome these challenges. The results of these interviews, which include direct perspectives from educational practitioners, provide valuable insight into practical aspects and theoretical from microlearning.

To provide a more structured and organized view of these findings, we have summarized them in Table III. Table III presents a comprehensive summary of implementation, flexibility, learning effectiveness, obstacles faced, and innovative solutions in microlearning, as expressed by the informants.

**Table III.** Implementation, flexibility and effectiveness, obstacles, and Micro learning solutions

<b>Implementation, flexibility and effectiveness of learning</b>	<b>Barriers to integrating microlearning</b>	<b>Innovative solutions</b>
Integration of material improves individual adaptation and understanding.	Limited time and materials.	Flexible schedule and ongoing content development
Short daily modules facilitate gradual understanding and interaction.	Traditional resistance and technological limitations.	Educator training and technology investment.
Mini-lectures enrich interactions and increase engagement.	Lack of guidelines and evaluation difficulties.	New curriculum guide and evaluation methods.
Online group discussions increase engagement and retention.	Lack of context and information overload.	Context mapping and content filtering.
Interactive quizzes support deep reflection and contextual understanding.	Lack of support and concerns about depth.	Educator support and a multi-modal approach.
Personal reflection supports introspection and practical application.	Limited time and materials.	Flexible schedule and ongoing content development.
Thematic case studies deepen understanding and facilitate introspection.	Traditional resistance and technological limitations.	Educator training and technology investment.
Project-based learning encourages practical application and strengthens networks.	Lack of guidelines and evaluation difficulties.	New curriculum guide and evaluation methods.

<b>Implementation, flexibility and effectiveness of learning</b>	<b>Barriers to integrating microlearning</b>	<b>Innovative solutions</b>
Study journals facilitate introspection and overcome depth concerns.	Lack of context and information overload.	Context mapping and content filtering.
Peer-to-peer learning strengthens networks and multi-modal approaches.	Lack of support and concerns about depth.	Educator support and a multi-modal approach.

## V. DISCUSSION

Conclusion: This research reveals that microlearning has a significant impact in increasing motivation, understanding, and retention of information in a variety of educational contexts. Leong supports these findings by highlighting the benefits of microlearning in teaching soft skills, particularly in increasing student interaction and practical application of the skills taught [33]. This shows that microlearning is not only effective in delivering content, but also in increasing student engagement in the learning process [34].

Furthermore, Giurgiu added that microlearning facilitates individualized learning, allowing learners to move forward according to their abilities [35]. This is particularly relevant to our findings which emphasize the importance of adapting content to specific learner needs. These conditions create a more responsive and personalized learning environment, which in turn increases learning motivation [36].

On the other hand, Skalka and Drlík point out that microlearning in education motivates students to connect the subjects studied with everyday life and the world around them [37]. This confirms that microlearning is not only about conveying information, but also about making learning relevant and integrated with students' real lives [38].

Overall, these findings support the research uncovering challenges in microlearning integration, such as content adaptation and resistance to traditionalism while highlighting the need for a more holistic approach in designing and implementing microlearning. The difficulty in adapting microlearning to corporate contexts also underscores the need for a more tailored approach, supporting Bahrami's findings about microlearning improving information retention and employee performance [39].

Thus, the integration of findings from Leong, Giurgiu, and Skalka & Drlík strengthens a conclusion about the effectiveness and adaptability of microlearning in education, demonstrating the breadth of application and benefits of this method in different educational contexts [33], [35], [37].

## VI. CONCLUSION

Preliminary findings suggest that although microlearning offers many potential benefits, such as increased retention of information and flexibility in learning, there are a number of barriers that need to be overcome for its effective implementation. These barriers include a lack of materials adapted to the context of teaching Buddhism, resistance from educators who prefer traditional methods, and challenges in integrating technology into teaching. This research also found that a better understanding of learners' needs and how they best learn with microlearning is critical to successful implementation.

Based on these findings, this research proposes several innovative solutions to overcome the identified barriers. These include the development of more relevant and engaging microlearning resources designed specifically for the teaching of Buddhism, training for educators to equip them with the skills and knowledge necessary to use microlearning effectively, and further research into how technology can be used to support more interactive and interesting teaching. This research emphasizes the importance of a collaborative, evidence-based approach in developing and implementing these solutions, by involving educators, learners, and technologists in the process.

In conclusion, this research offers an important contribution to the literature on microlearning and the teaching of Buddhism, provides valuable insights for educators and policymakers, and highlights the potential and challenges of integrating this innovative learning method into religious education. By overcoming the barriers encountered and utilizing microlearning effectively, there is a huge opportunity to improve the quality and effectiveness of teaching Buddhism, making it more relevant and engaging for modern learners.

## REFERENCES

- [1] Kapp, K. M., & Defelice, R. A. (2019). *Microlearning: Short and Sweet*. Association for Talent Development. ISBN-10: 1949036731; ISBN-13: 978-1949036732.
- [2] Corbeil, J. R., Khan, B. H., & [Additional Editor]. (Eds.). (2021). *Microlearning in the Digital Age: The Design and Delivery of Learning in Snippets* (1st ed.). Routledge. ISBN-10: 0367420805; ISBN-13: 978-0367420802.

- [3] Booth, A., Sutton, A., Clowes, M., & Martyn-St James, M. (2016). *Systematic approaches to a successful literature review* (3rd ed.). Sage Publications.
- [4] Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* (2nd ed.). Sage Publications.
- [5] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- [6] Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage Publications.
- [7] Maxwell, J. A. (2012). *Qualitative research design: An interactive approach* (3rd ed.). Sage Publications.
- [8] Patton. M. Q. (2014). *Qualitative research and evaluation methods* (4rd ed.). Thousand Oaks, CA: Sage Publications.
- [9] Bruck, P. A., & Foerster, F. (2012). Mobile Learning with Micro-content : A Framework and Evaluation. *Turkish Online Journal of Distance Education*, 527–543.
- [10] Göschlberger, B., & Bruck, P. A. (2017). Gamification in mobile and workplace integrated MicroLearning. *ACM International Conference Proceeding Series*, October, 545–552. <https://doi.org/10.1145/3151759.3151795>
- [11] Fox, A. (2016). Why Training Fails and What to Change: A Case for Microlearning and Ongoing Management. *Employment Relations Today*, 43(1), 41–45. <https://doi.org/10.1002/ert.21549>
- [12] Callisen, L. (2016). Microlearning: It is the future of workplace training? 4. Retrieved from <https://elearningindustry.com/micro-learning-future-of-training-workplace>
- [13] Pandey, S., & Chawla, D. (2018). Online customer experience (OCE) in clothing e-retail: Exploring OCE dimensions and their impact on satisfaction and loyalty – Does gender matter? *International Journal of Retail & Distribution Management*, 46(3), 323–346. <https://doi.org/10.1108/IJRDM-01-2017-0005>
- [14] Defelice, K. K. & R. (2018). Elephant size impact. (July), 2 26-3. <https://doi.org/Association for talent development>
- [15] Abel, M., & Lenne, D. (2006). Learning organizational memory and microlearning (semantics for microlearning). *Semantics for Microlearning*, September, 273–287.
- [16] Seel, N. M., Lehmann, T., Blumschein, P., & Podolskiy, O. A. (2017). *Instructional Design for Learning*. In *Instructional Design for Learning*. Sense Publishers. <https://doi.org/10.1007/978-94-6300-941-6>
- [17] Hug, T. (2005). *Microlearning: Emerging Concepts, Practices and Technologies after E-learning: Proceedings of Microlearning Conference*. Innsbruck: Innsbruck University Press.
- [18] Pandey, A. (2018). Why you should adopt microlearning based training. Retrieved January 20, 2020, from eiDesain websites: <https://www.eidesing.net/eBooks/MicroLearning/Why-you-should-adopt-microlearning-based-training.pdf>
- [19] Hug, T. (2005). *Microlearning: A new pedagogical challenge*. In *Introduction to microlearning* (pp. 5-9). Innsbruck University Press, Innsbruck, Austria.
- [20] Gavrilova, T., Andreeva, S., & Bystrova, N. (2020). Microlearning for Macro-outcomes: Students’ perceptions of Telegram as a microlearning tool. In *Digital Turn in Schools—Research, Policy, Practice*. [https://doi.org/10.1007/978-981-13-7361-9\\_13](https://doi.org/10.1007/978-981-13-7361-9_13)
- [21] Bahrami, M. (2018). The impact of microlearning on human resource management in healthcare organizations. *BMC Health Services Research*, 19(1), 268. <https://doi.org/10.1186/s12913-019-4068-3>
- [22] Aldosemani, T. I. (2019). Microlearning for Macro-outcomes: Students’ Perceptions of Telegram as a Microlearning Tool. In *Digital Turn in Schools—Research, Policy, Practice*. [https://doi.org/10.1007/978-981-13-7361-9\\_13](https://doi.org/10.1007/978-981-13-7361-9_13)
- [23] Diaz Redondo, R.P., Caeiro Rodriguez, M., Lopez Escobar, J., & Fernandez Vilas, A. (2021). Integrating micro-learning content into traditional e-learning platforms. *Multimedia Tools and Applications*, 80, 3121–3151. <https://doi.org/10.1007/s11042-020-09523-z>
- [24] Beste, T. (2023). Knowledge transfer in a project-based organization through microlearning on cost-efficiency. *Journal of Applied Behavioral Science*, 59(2), 288-313. <https://doi.org/10.1177/00218863211033096>
- [25] Cheng, B., Wang, M., Mørch, A. I., Chen, N.-S., Kinshuk, & Spector, J. M. (2014). Research on e-learning in the workplace 2000–2012: A bibliometric analysis of the literature. *Educational Research Review*. <https://doi.org/10.1016/j.edurev.2014.01.001>
- [26] Hesse, A., Ospina, P., Wieland, M., Leal ya, F. A., Nguyen, B., & Heuwieser, W. (2019). Short communication: Microlearning courses are effective at increasing the feelings of confidence and accuracy in the work of dairy personnel. *Journal of Dairy Science*, 102(10). <https://doi.org/10.3168/jds.2018-15927>
- [27] Leong, K., Sung, A., Au, D., & Blanchard, C. (2020). A review of the trend of microlearning. *Journal of Work-Applied Management*. <https://doi.org/10.1108/JWAM-10-2020-0044>
- [28] Mujica, A., Villanueva, E., & Lodeiros, M. L. (2021). Micro-learning Platforms Brand Awareness Using Social media Marketing and Customer Brand Engagement. *International Journal of Emerging Technologies in Learning (iJET)*, 16(17):19. <https://doi.org/10.3991/ijet.v16i17.23339>
- [29] Sankaranarayanan, R., Leung, J., Abramenska-Lachheb, V., et al. (2023). Microlearning in Diverse Contexts: A Bibliometric Analysis. *Tech Trends*, 67, 260–276. <https://doi.org/10.1007/s11528-022-00794-x>
- [30] Clark, R. C., & Mayer, R. E. (2016). *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. <https://doi.org/10.1002/9781119239086>
- [31] Gassler, G., Hug, T., & Glahn, C. (2004). *Integrated Micro Learning – An outline of the basic method and first results*. In *Interactive Computer Aided Learning*.
- [32] Hug, T. (2005). *Microlearning: A new pedagogical challenge*. LIT Verlag.

- [33] Leong, K., Sung, A., Au, D., & Blanchard, C. (2017). Microlearning: An evolving eLearning trend. *Scientific Bulletin*, 22(1). <https://doi.org/10.1515/bsaft-2017-0003>
- [34] Cedefop. (2018). Insights into skill shortages and skill mismatch: learning from Cedefop's European Skills and Jobs Survey. Luxembourg: Publications Office. Cedefop reference series; No. 106. [21.03.2021] Available at: <http://data.europa.eu/doi/10.2801/645011>.
- [35] Giurgiu, L. (2023). Microlearning as a new method of teaching soft skills to university students. *Frontiers in Education*, 8. <https://doi.org/10.3389/educ.2023.1177516>
- [36] Leong, K., Sung, A., Au, D., & Blanchard, C. (2020). A review of the trend of microlearning. *Journal of Work-Applied Management*, Vol. ahead-of-print No. ahead-of-print. DOI: 10.1108/JWAM-10-2020-0044.
- [37] Skalka, J., & Drlík, M. (2018). Conceptual framework of microlearning-based training mobile application for improving programming skills. In M. E. Auer & T. Tsiatsos (Eds.), *Interactive Mobile Communication Technologies and Learning* (pp. 213–224). Springer International Publishing. [https://doi.org/10.1007/978-3-319-75175-7\\_22](https://doi.org/10.1007/978-3-319-75175-7_22)
- [38] Park, Y., & Kim, Y. (2018). A Design and Development of micro-Learning Content in e-Learning System. *International Journal on Advanced Science, Engineering and Information Technology*, 8(1), 56. DOI: 10.18517/ijaseit.8.1.2698.
- [39] Emerson, L. C., & Berge, Z. L. (2018). Microlearning: Knowledge management applications and competency-based training in the workplace. *Knowledge Management & E-Learning*, 10(2), 125–132.