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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
RECTOR
UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

MicroCoI: A SYNERGISTIC APPROACH TO CLASSROOM LEARNING

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ABSTRACT

In the quest to enhance classroom learning experiences, educators and researchers continually seek innovative pedagogical strategies that foster engagement, collaboration, and deep understanding among students. This conceptual research paper introduces “MicroCoI”, a pioneering approach that combines the strengths of microlearning and the Community of Inquiry (CoI) framework to create a transformative and synergistic learning environment. Microlearning, characterized by bite-sized, focused content delivery, addresses the challenges of attention span and knowledge retention in the digital age. By providing short, targeted learning modules, students can engage with learning materials efficiently, making it conducive to today’s fast-paced educational landscape. The Community of Inquiry framework emphasizes the importance of social presence, cognitive presence, and teaching presence in fostering meaningful online interactions and promoting a sense of community in distance education. By integrating social interactions, critical thinking, and effective teaching methods, the CoI framework enriches the learning process. This conceptual research proposes an innovative integration of microlearning principles within the Community of Inquiry framework, giving rise to MicroCoI. This approach aims to harness the strengths of both microlearning’s targeted content delivery and the CoI framework’s focus on meaningful social and cognitive interactions. Through MicroCoI, learners engage in microlearning activities that support specific learning objectives. These experiences are complemented by dynamic online discussions, collaborative projects, and reflective exercises facilitated by skilled educators who foster a strong teaching presence. MicroCoI is designed to be versatile and applicable across diverse educational settings, from traditional classrooms to blended and fully online learning environments. By integrating microlearning and the CoI framework, it fosters a deeper sense of community, enhances information retention, and cultivates critical thinking skills among learners. In conclusion, MicroCoI offers a promising avenue for transforming classroom learning experiences. By capitalizing on the synergy between microlearning and the Community of Inquiry framework, this innovative approach has the potential to revolutionize pedagogy, promote student engagement, and pave the way for a more effective and enriching learning journey. Future research and implementation studies will further explore the efficacy of MicroCoI, leading to a learner-centered, collaborative, and technology-driven educational landscape.

Keywords: Classroom learning, microlearning, community of inquiry, synergistic approach

INTRODUCTION

In the pursuit of enriching classroom learning experiences, the field of education continuously seeks innovative pedagogical approaches. This conceptual research introduces “MicroCoI”, a conceptual framework that seamlessly integrates microlearning principles with the Community of Inquiry (CoI) framework, offering a promising and transformative approach to education. MicroCoI addresses the challenges of attention span and knowledge retention in the digital age while fostering a collaborative and engaging learning environment. In the digital era, traditional educational practices grapple with diminishing attention spans and diverse learning preferences. MicroCoI emerges as a powerful solution to revitalize the educational experience. By delivering targeted microlearning content and fostering a strong sense of community, MicroCoI optimizes cognitive load, promotes efficient knowledge retention, and nurtures engaged, collaborative, and meaningful learning experiences. MicroCoI holds the potential to revolutionize classroom dynamics and enhance the overall educational experience. By seamlessly integrating microlearning principles with the CoI framework, MicroCoI empowers learners to engage with concise and focused content while actively participating in a collaborative learning community. This approach cultivates deeper understanding, critical thinking skills, and knowledge construction through shared experiences.

LITERATURE REVIEW

The Evolution of Microlearning and Community of Inquiry (CoI)

Microlearning has emerged as a promising solution to cater to the needs of modern learners who seek on-demand, bite-sized learning experiences (Wang et al., 2021). This approach recognizes the cognitive limitations of information retention and advocates for concise, targeted content delivery, enabling learners to focus on specific learning objectives efficiently. Research on microlearning across different educational settings has consistently demonstrated its favorable effects on learner involvement (Kossen & Ooi, 2021), self-regulated learning abilities (Hosseini et al., 2020), and retention of knowledge (Shail, 2019). As a result, incorporating microlearning within the CoI framework has the potential to enhance these aspects of classroom learning.

Meanwhile, the Community of Inquiry framework, pioneered by Garrison, Anderson, and Archer (2001), has garnered significant attention in online and blended learning environments. CoI emphasizes the critical interplay of three essential presences: social presence, cognitive presence, and teaching presence. Social presence establishes a sense of belonging and interaction among learners, while cognitive presence fosters higher-order thinking through reflection and discourse. Teaching presence, facilitated by educators, supports and guides students’ learning experiences.

Recent studies have highlighted the potential of microlearning to promote efficient learning through bite-sized content delivery. Scholars like Fidan (2023) have demonstrated that microlearning interventions resulted in higher knowledge retention and learner satisfaction compared to traditional learning methods. Concurrently, the Community of Inquiry framework, as explored by Garrison et al. (2001), has shown its efficacy in fostering meaningful online interactions and creating a sense of community among students. Studies show that higher levels of cognitive presence, social presence, and teaching presence positively impact learning outcomes (Li, 2022).

The Theoretical Underpinnings of MicroCoI

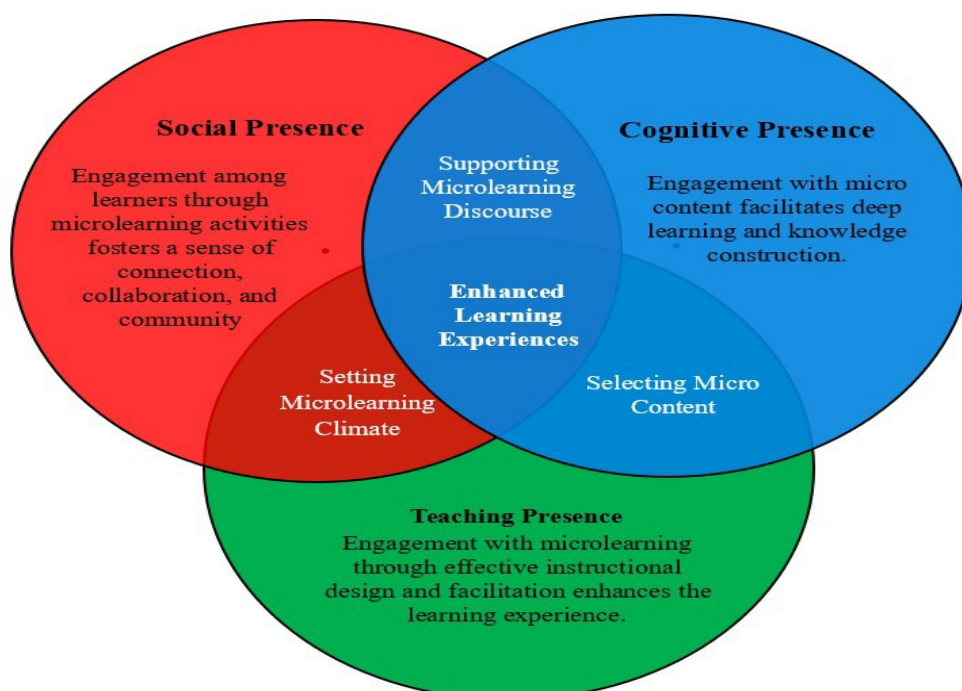
MicroCoI draws on the robust theoretical foundations of both microlearning and the Community of Inquiry framework. Microlearning, rooted in cognitive load theory, emphasizes the delivery of concise, targeted content to optimize learners' cognitive processing and knowledge retention (Sweller et al., 2019). On the other hand, the Community of Inquiry framework accentuates the interconnectedness of social presence, cognitive presence, and teaching presence to create a meaningful and collaborative learning environment (Garrison, Anderson, and Archer, 2009). By unifying these theoretical constructs, MicroCoI stands at the forefront of innovative educational practices, promising a holistic and efficient approach to classroom learning.

The MicroCoI Framework

The MicroCoI framework is designed to integrate microlearning principles into the three key presences of the CoI framework: social presence, cognitive presence, and teaching presence. By providing short, focused microlearning modules, MicroCoI facilitates efficient content delivery, enabling learners to engage with targeted materials and concepts. Within the MicroCoI environment, social presence is fostered through dynamic discussions and collaborative projects, while teaching presence is maintained by skilled educators who facilitate and guide learning experiences. By leveraging microlearning to support cognitive presence, learners delve deeper into subjects through reflective exercises and active discussions. The synergistic nature of MicroCoI fosters a dynamic and participatory learning community, where students are encouraged to co-create knowledge and construct meaning collaboratively. Figure 1 below illustrates the synergistic relationship between microlearning and the community of inquiry.

Figure 1

Conceptual Framework of the Synergistic Integration between the Community of Inquiry (CoI) and Microlearning (MicroCoI)



- i. The CoI framework underscores social presence, wherein participants project themselves socially and emotionally within a community (Garrison, Anderson, Archer, 2001). Microlearning's interactive nature fosters peer engagement, idea sharing, and group activities, creating a supportive and inclusive learning environment. Collaborative microlearning activities like group projects, online discussions, and virtual simulations encourage active interaction, exchange of perspectives, and social relationship-building, enhancing learner engagement.
- ii. Cognitive presence in the CoI framework involves reflective discourse practices, facilitating meaning construction (Garrison & Arbaugh, 2007). Microlearning effectively supports cognitive engagement by promoting reflective thinking, problem-solving, and knowledge application. Bite-sized and focused learning materials enable active information processing, connecting concepts, and constructing meaning. Microlearning activities such as concept mapping, problem-solving exercises, and case studies stimulate critical thinking, fostering deeper understanding and complex knowledge structures.
- iii. Teaching presence encompasses designing, facilitating, and guiding educational experiences (Garrison, Anderson, & Archer, 2001). Instructors optimize teaching presence by incorporating clear microlearning objectives, scaffolded microlearning activities, and timely feedback. Multimedia resources, interactive assessments, and adaptive technologies further support teaching presence, empowering learners to engage effectively with micro content.

POTENTIAL BENEFITS AND FUTURE IMPLICATIONS

MicroCoI represents a novel and promising conceptual framework that seamlessly integrates microlearning principles into the CoI framework, transcending the boundaries of physical and virtual classrooms. By thoughtfully incorporating microlearning, MicroCoI effectively addresses challenges such as information overload and learner disengagement. Through the delivery of succinct, focused content aligned with specific learning outcomes, MicroCoI optimizes learners' cognitive load and promotes efficient knowledge retention. The adaptability of MicroCoI extends across diverse educational settings, including traditional classrooms, blended learning, and fully online environments. By capitalizing on the synergy between microlearning's efficiency and the CoI framework's emphasis on cognitive, social and teaching presence, MicroCoI has the potential to transform classroom learning experiences significantly. It fosters a dynamic and participatory learning community, nurturing deeper understanding and promoting critical thinking skills among students.

CONCLUSION

In conclusion, MicroCoI represents a transformative approach to classroom learning that capitalizes on the synergy between microlearning principles and the Community of Inquiry framework. By addressing the challenges of attention span and knowledge retention while fostering a strong sense of community and collaborative learning, MicroCoI offers a promising solution to create engaging and effective learning environments. Future research and implementation studies will further explore MicroCoI's impact on student engagement, knowledge acquisition, and critical thinking, paving the way for a learner-centered, collaborative, and technology-driven educational landscape.

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