

Towards Enhancing Collaborative Learning in Online Flexible Distance Learning Higher Education Institutions: A Conceptual Framework

¹Zahir Osman, ²Liana Mohamad, ³S. Sugilar, ⁴Suci Nurhayati
^{1,2}Faculty of Business and Management, Open University Malaysia, ^{3,4}Faculty of Teacher Training and Education, Universitas Terbuka Indonesia

To Link this Article: <http://dx.doi.org/10.6007/IJARBS/v15-i2/24613> DOI:10.6007/IJARBS/v15-i2/24613

Published Date: 12 February 2025

Abstract

This conceptual paper explores the enhancement of collaborative learning in Online Flexible Distance Learning Higher Education Institutions (OFDLHEI) in Malaysia and Indonesia. With the rapid growth of online education, these institutions face unique challenges, such as limited integration of collaborative learning strategies, technological constraints, and students' diverse cultural backgrounds. This paper examines key factors that influence collaborative learning, including interactions with peers, social presence, social media usage, and tutor engagement, while emphasising the mediating role of learning self-efficacy. The proposed framework addresses barriers to meaningful collaboration in virtual environments by providing strategies to foster a supportive learning community, enhance intercultural competence, and improve students' problem-solving skills. The insights from this paper have significant implications for educators, institutional leaders, and policymakers, guiding the development of pedagogical approaches and support systems that align with the evolving needs of online learners. Ultimately, this conceptual exploration seeks to contribute to a deeper understanding of effective collaborative learning in OFDLHEI, thereby enhancing educational outcomes and preparing students for the demands of the digital workforce.

Keywords: Interaction with Tutors, Social Media Usage, Learners' Self-Efficacy, Collaborative Learning, Online Flexible Distance Learning

Introduction

In online distance learning, collaborative learning provides students with diverse perspectives and enriches the educational experience (Wieser & Seeler, 2018). It improves problem-solving and communication skills by promoting cultural competence and preparing students for an interactive workforce (Haugland et al., 2022). The diverse backgrounds of the participants promote cross-cultural understanding, and teamwork in a virtual environment sharpens collaborative skills (Strauß & Rummel, 2020). Resource sharing and global networking come to the fore. At the same time, encouragement and peer support in a virtual community further

enrich the experience (Mustakim et al., 2021). Collaborative learning provides students with skills and perspectives that are important in the globalised digital age and shape the future of education (Dewi & Muhid, 2021). Malaysia and Indonesia have a dynamic approach to education that capitalises on the diverse cultural backgrounds of their countries. It encourages exchanging ideas and experiences between students from different regions and backgrounds. It promotes a rich learning environment (Ravana et al., 2023). This collaborative model improves problem-solving skills and cross-cultural competence by promoting teamwork in a virtual environment. Together, students can respond to global challenges, prepare for the digital workforce, and access a global network (Hisham et al., 2023). In addition, it creates a sense of community and support among online students. It fosters motivation and peer bonding in the Malaysian and Indonesian contexts, where the online education world is rapidly evolving to embrace these collaborative learning opportunities (Hashim et al., 2023). A significant problem in both countries' online distance learning contexts is the limited integration and effective implementation of collaborative learning strategies (Ismail, 2023). Students learning online often find it challenging to collaborate meaningfully due to, for example, different time zones, irregular internet connections, and cultural diversity (Ravana et al., 2023). This hinders the development of critical multicultural competencies and problem-solving skills essential in Malaysia's and Indonesia's diverse societies and globalised labour market (Hashim et al., 2023). In addition, the lack of structured teaching and resources for teachers and students is a significant challenge to the effective use of collaborative learning (Jamalai & Krish, 2023). Addressing these issues is critical to realising the full potential of collaborative learning in an online distance learning environment and fostering a more inclusive and effective learning environment (Hamzah et al., 2023). Investigating the collaborative learning of online distance learners in the Malaysian and Indonesian contexts is of utmost importance in several vital dimensions. It addresses the urgent need to improve intercultural competence and problem-solving skills, adapt to Malaysia's and Indonesia's multicultural society, and prepare students for the global workforce. It also facilitates the optimisation of online education by providing information on effective collaborative strategies that can bridge geographic and cultural gaps and provide more inclusive and interactive learning. In addition, the findings of this study can guide educators and policymakers to develop tailored pedagogical approaches, resource allocation, and support structures to foster a robust online education ecosystem that aligns with Malaysia's and Indonesia's efforts to achieve educational excellence and innovation in the digital age. This study assesses the direct and indirect relationship between interaction with the tutor, interaction with peers, social presence, and social media usage with collaborative learning and the role of digital learning self-efficacy as a mediator.

Problem Statement

The rapid growth of online flexibility distance learning in higher education institutions in Malaysia and Indonesia has introduced many challenges, particularly in fostering effective collaborative learning among students. This study addresses the issue of suboptimal collaboration among online learners by investigating the factors hindering successful collaborative learning experiences (Hashim et al., 2023). The lack of face-to-face interaction, technological constraints, and varying levels of digital literacy significantly hinder students' meaningful engagement and knowledge exchange (Hisham et al., 2023). Furthermore, the existing pedagogical approaches may not fully align with the needs and dynamics of online flexible distance learning environments (Mustakim et al., 2021). This study seeks to identify

these challenges and propose innovative strategies and interventions to enhance collaborative learning, eventually improving the overall educational experience for students in Malaysia's and Indonesia's online distance-learning higher education institutions.

Research Questions

Based on the above problem statement and proposed research framework, the following research questions are proposed for this study:

1. Does interaction with peers relate to learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
2. Does interaction with peers have a relationship with collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
3. Does learning self-efficacy mediate the relationship between interaction with peers and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
4. Does social presence relate to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
5. Does social presence relate to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
6. Does learning self-efficacy mediate the relationship between social presence and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
7. Does social media usage relate to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
8. Does social media usage relate to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
9. Does learning self-efficacy mediate the relationship between social media usage and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
10. Does interaction with tutors relate to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
11. Does interaction with tutors have a relationship with collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
12. Does learning self-efficacy relate to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?
13. Does learning self-efficacy mediate the relationship between interaction with tutors and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions?

Research Objectives

The following are the research objectives for this study:

1. To determine whether interaction with peers relates to learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

2. To confirm whether interaction with peers has a relationship with collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
3. To verify whether learning self-efficacy mediates the relationship between interaction with peers and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
4. To assess whether social presence relates to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
5. To evaluate whether social presence relates to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
6. To determine whether learning self-efficacy mediates the relationship between social presence and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
7. To confirm whether social media usage relates to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
8. To assess whether social media usage relate to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
9. To evaluate whether learning self-efficacy mediates the relationship between social media usage and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
10. To determine whether interaction with tutors relates to learning self-efficacy on collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
11. To evaluate whether interaction with tutors has a relationship with collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
12. To determine whether learning self-efficacy relates to collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.
13. To verify whether learning self-efficacy mediates the relationship between interaction with tutors and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

Significance of the Study

This conceptual paper explores online education's growing importance in Malaysia, focusing on optimising collaborative learning experiences in the evolving educational landscape. In transitioning from face-to-face classrooms to virtual environments, understanding how to facilitate effective collaboration has become increasingly critical to ensuring educational success. Collaborative learning is a fundamental element of holistic education as it promotes knowledge sharing, critical thinking, and the development of interpersonal skills. However, in the context of Online Flexible Distance Higher Education Institutions (OFDLHEI) in Malaysia, there are specific challenges due to the lack of face-to-face physical interaction, which requires a deep understanding of how to enhance collaborative learning in this environment. This study aims to identify the key barriers that hinder the effectiveness of collaborative learning in OFDLHEI and propose strategies to overcome them. This study will contribute valuable insights to educators, institutional leaders, and policymakers in Malaysia's online

education by focusing on these issues. Enhanced collaborative learning experiences can improve student engagement, satisfaction, and overall academic performance. In addition, the findings of this study can guide the development of tailored pedagogical practices and support frameworks, ensuring that online education prepares students for the 21st-century workforce and meets the changing needs of students. This study was motivated by the need to address the unique challenges online higher education institutions face, particularly in ensuring the effectiveness of collaborative learning among students who cannot interact physically. In an era where online education is increasingly becoming the norm, this study aims to guide the improvement of teaching and learning approaches and support Malaysia's aspirations to become a competitive regional education hub.

Through this study, the researchers hope to improve online education quality by presenting practical strategies that educators can use to overcome barriers to collaborative learning. This study will benefit students, lecturers, institutional administrators, and policymakers by providing comprehensive guidance to increase student engagement, academic effectiveness, and learning satisfaction.

The main contribution of this study lies in its potential to trigger change in the implementation of collaborative learning, ensuring that the education system is better prepared to meet the needs of 21st-century skills such as leadership, innovation, and teamwork. By relating the findings of this study to the future needs of the digital workforce, it also strengthens the connection between higher education and industry needs. Therefore, this study is relevant and significant in national education and economic development.

Literature Review

Relationship between Interaction with Peers, Learning Self-Efficacy, and Collaborative Learning

In the realm of Open Online Flexible Distance Learning Higher Education Institutions (ODLHEIs), the intricate interplay between interaction with peers, learning self-efficacy, and collaborative learning becomes a pivotal aspect shaping the educational landscape. The nature of online learning often demands proactive engagement with course content and collaborative endeavours, underscoring the significance of peer interaction (Talosa et al., 2021). Peer-to-peer interactions in virtual environments are central to cultivating a supportive learning community and fostering the exchange of ideas, perspectives, and knowledge. Learning self-efficacy, defined as an individual's belief in their capability to execute tasks and achieve goals, plays an important role in the success of collaborative learning endeavours (Baba Rahim, 2022). The level of self-efficacy influences students' willingness to contribute, collaborate, and navigate the challenges inherent in online learning. Positive interactions with peers contribute to developing learning self-efficacy, creating a positive feedback loop where increased confidence propels more active participation in collaborative learning activities (Vezne et al., 2023).

Conversely, challenges in peer interaction, such as communication barriers or a lack of opportunities for meaningful engagement, can adversely impact both learning self-efficacy and collaborative learning outcomes (Dlamini, 2023). Therefore, understanding the intricate dynamics between these elements is crucial for designing effective pedagogical strategies and

support systems within ODLHEIs (Yildiz Durak, 2023). Given the above hypotheses development, the following hypotheses are proposed for this study:

H1: There is a relationship between interaction with peers and learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H2: There is a relationship between interaction with peers and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H3: There is a mediating effect of learning self-efficacy on the relationship between peer interaction and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

Relationship between Social Presence, Learning Self-Efficacy, and Collaborative Learning

Social presence, learning self-efficacy, and collaborative learning constitute a vital nexus in Open Online Flexible Distance Learning Higher Education Institutions (OFDLHEI) (Lim et al., 2021). Social presence, referring to the degree of perceived connection and interaction among participants in an online learning environment, substantially influences the effectiveness of collaborative learning experiences. In ODLHEIs, where physical presence is absent, fostering a sense of social presence becomes paramount for creating a supportive learning community (Amoozegar et al., 2022). The strength of social presence correlates with learning self-efficacy, the learners' belief in their ability to succeed in academic tasks. Meaningful interactions with peers and instructors contribute to developing a positive online social environment, thereby enhancing students' confidence in their capabilities (Mary Grace et al., 2023). When students perceive a strong social presence, they are more likely to engage actively in collaborative learning activities, resulting in a reciprocal relationship between social presence and learning self-efficacy.

Furthermore, the quality of collaborative learning experiences is intricately tied to the degree of social presence and learning self-efficacy (Zhong et al., 2022). A robust social presence fosters effective communication, shared understanding, and a supportive learning environment, promoting collaborative learning outcomes. Conversely, low social presence and diminished learning self-efficacy may hinder active participation and the overall effectiveness of collaborative learning initiatives in ODLHEIs (Nungu et al., 2023). Therefore, the following hypotheses are proposed for this study:

H4: There is a relationship between social presence and learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H5: There is a relationship between social presence and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H6: There is a mediating effect of learning self-efficacy on the relationship between social presence and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

Relationship between Social Media Usage, Learning Self-Efficacy, and Collaborative Learning

The intricate dynamics between social media usage, learning self-efficacy, and collaborative learning form a compelling triad in the context of Open Online Flexible Distance Learning Higher Education Institutions (ODLHEIs) (Sabah, 2023). In the digital era, social media platforms have become pervasive tools for communication and interaction. Students in

ODLHEIs often utilise these platforms for informal communication, resource sharing, and collaborative learning initiatives (Yildiz Durak, 2023). The frequency and nature of social media usage can significantly impact the learning experience. Social media usage contributes to the establishment of virtual communities, fostering a sense of social presence and engagement among students (Wang et al., 2023). The connectivity facilitated by these platforms can positively influence learning self-efficacy by providing avenues for information exchange, support, and collaborative problem-solving. Active participation in online discussions, group projects, and knowledge sharing on social media may enhance students' confidence in navigating the academic challenges of open and flexible distance learning (Qureshi et al., 2023). Collaborative learning, in turn, benefits from the social connectivity fostered by social media. These platforms offer accessible channels for communication, facilitating group collaboration, and promoting collective learning experiences (Sharma et al., 2022). Conversely, challenges such as information overload, distractions, or the potential for misinformation may pose obstacles to practical social media usage, impacting both learning self-efficacy and collaborative learning outcomes (Dlamini, 2023). Hence, the following hypotheses are proposed for this study:

H7: There is a relationship between social media usage and learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H8: There is a relationship between social media usage and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H9: There is a mediating effect of learning self-efficacy on the relationship between social media usage and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

Relationship between Interaction with Tutors, Learning Self-Efficacy, and Collaborative Learning

In the landscape of Open Online Flexible Distance Learning Higher Education Institutions (ODLHEIs), the interplay between interaction with tutors, learning self-efficacy, and collaborative learning is pivotal for student success (Turan et al., 2022). Tutors play a crucial role in guiding and supporting students without physical classrooms. The quality and frequency of interactions between students and tutors can significantly influence the learning experience (Dlamini, 2023). Regular and meaningful interactions with tutors contribute to the development of learning self-efficacy, the belief in one's ability to succeed in academic tasks. Constructive feedback, personalised guidance, and mentorship provided by tutors contribute to students' confidence and competence, positively impacting their perception of their learning capabilities (Wang et al., 2023). This, in turn, influences their readiness to engage in collaborative learning activities. Collaborative learning thrives when students have a strong sense of learning self-efficacy and when tutors actively facilitate and participate in collaborative initiatives (Alemayehu et al., 2022). Tutors can act as catalysts for effective group dynamics, encouraging communication, knowledge sharing, and collaborative problem-solving among students. On the other hand, the absence of adequate interaction with tutors may impede collaborative learning by creating uncertainties and inhibiting active participation (Wong et al., 2023). Therefore, the following hypotheses are proposed for this study:

H10: There is a relationship between interaction with tutors and learning self-efficacy in collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H11: There is a relationship between interaction with tutors and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H12: There is a relationship between learning self-efficacy and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

H13: There is a mediating effect of learning self-efficacy on the relationship between interaction with tutors and collaborative learning among students of online flexible distance learning (OFDL) higher education institutions.

Methodology

This study approach will involve a systematic primary data collection, utilising a survey questionnaire as the main data-gathering tool. The questionnaire will be adapted from established and validated studies to ensure robustness in data quality, thus enhancing the reliability of the findings. Respondents will be selected using a snowball sampling technique, a non-probability sampling method suitable for this study's exploratory nature.

Following data collection, a rigorous screening and cleaning process will be implemented to enhance data reliability for subsequent analysis. Structural Equation Modeling (SEM) will be employed as the primary data analysis technique, with an expected sample size of 400 participants. This approach will facilitate a detailed evaluation of the measurement and structural models, allowing for an assessment of construct reliability and validity. Metrics such as composite reliability, Cronbach's alpha, and average variance extracted (AVE) will be scrutinised to confirm the presence of convergent and discriminant validity.

Further, the structural model will be assessed by evaluating path coefficients, t-values, and p-values, providing empirical support for testing the proposed hypotheses. The analysis will be conducted using SmartPLS4, which is chosen for its effectiveness in evaluating measurement and structural models (Hair et al., 2010). This methodological framework, grounded in best practices, aims to generate insightful findings that contribute to a broader understanding of the factors influencing collaborative learning in open, online, flexible distance learning higher education institutions, ultimately informing pedagogical and institutional strategies to enhance educational outcomes.

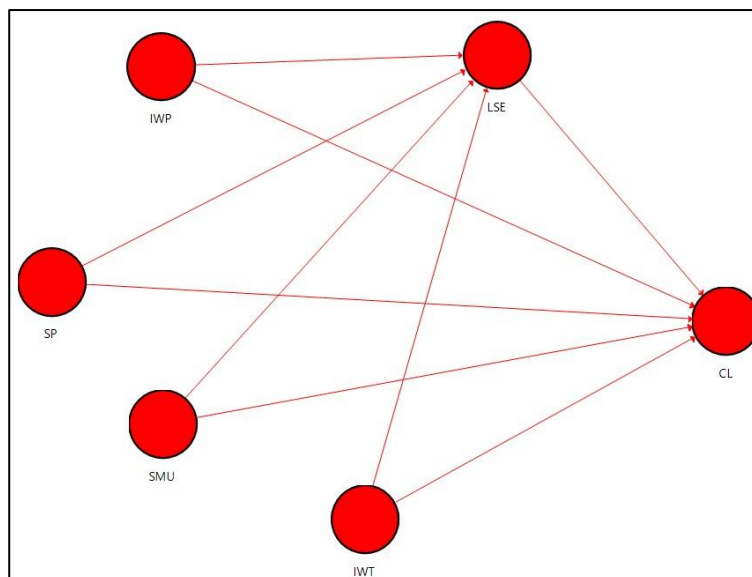


Figure 1: Research Model

Note: IWP=Interaction with Peers; SP=Social Presence; SMU=Social Media Usage; IWT=Interaction with Tutors

Discussion and Conclusion

The present conceptual exploration underscores the critical role of collaborative learning in the rapidly evolving landscape of Open Online Flexible Distance Learning Higher Education Institutions (OFDLHEI), particularly in contexts such as Malaysia and Indonesia. The absence of physical interaction, which traditionally facilitated collaborative activities, presents unique challenges to the virtual learning environment, necessitating the development of robust strategies to foster collaboration and student engagement. This paper addresses these challenges by identifying key factors such as peer interaction, social presence, social media usage, and tutor engagement, which directly or indirectly impact students' collaborative learning experiences.

One of the core insights from this study is the importance of interaction with peers in promoting collaborative learning. In online environments, students must navigate various barriers, including communication delays and the absence of non-verbal cues, which can hinder meaningful engagement. The findings indicate that fostering positive peer interactions can significantly enhance learning self-efficacy, encouraging active participation in collaborative learning initiatives. Thus, educators should prioritise creating structured opportunities for peer interaction, such as group projects or discussion forums, to strengthen the learning community within OFDLHEI.

Social presence also emerges as a critical factor influencing both learning self-efficacy and collaborative learning. As social presence diminishes in online settings, students may feel disconnected, impacting their confidence in their abilities and reducing their participation in collaborative efforts. The study suggests that increasing social presence through well-designed online interactions, such as video conferencing and active instructor involvement, can foster community and improve collaboration outcomes. This highlights the need for OFDLHEI to incorporate tools and platforms that promote rich, real-time interactions to maintain a supportive and engaging learning environment.

Furthermore, the increasing reliance on social media for informal learning and interaction has profound implications for collaborative learning. The findings suggest that social media usage can positively influence learning self-efficacy by providing information exchange, resource sharing, and collective problem-solving platforms. However, the potential for distractions or misinformation on these platforms underscores the need for educators to guide students in using social media effectively. Tailoring social media engagement strategies to complement formal learning processes can enhance the collaborative learning experience in OFDLHEI.

Another significant factor is the interaction with tutors, which directly impacts students' learning self-efficacy and collaborative learning success. In the absence of traditional face-to-face instruction, the role of tutors becomes pivotal in guiding, motivating, and providing feedback to students. The study reveals regular, meaningful interactions with tutors are crucial for developing student confidence and engagement in collaborative activities. Therefore, OFDLHEI must ensure that tutors are equipped with the necessary tools and training to facilitate virtual interactions effectively, enhancing their ability to support students in collaborative learning environments.

Ultimately, this conceptual paper contributes to understanding how various factors shape the collaborative learning experiences of students in OFDLHEI. By identifying the interplay between peer interaction, social presence, social media usage, and tutor engagement, this study offers a comprehensive framework for enhancing collaborative learning in virtual environments. The implications for educators, institutions, and policymakers are clear: to foster effective collaborative learning, it is essential to design learning environments that actively promote interaction, engagement, and support. These strategies will improve educational outcomes and prepare students to meet the challenges of the global workforce by equipping them with essential collaborative and problem-solving skills.

In conclusion, this study provides a foundation for further empirical research to test the proposed hypotheses and validate the conceptual framework. The insights derived from this paper will serve as a valuable guide for the ongoing development of pedagogical practices and institutional policies that support collaborative learning in the context of open, online, and flexible distance education. OFDLHEI can significantly improve the quality and effectiveness of their educational offerings, ensuring that they meet the needs of students in the digital age by identifying the challenges and implementing the proposed strategies.

References

- Alemayehu, L., & Chen, H. L. (2023). The Influence of Motivation on Learning Engagement: The Mediating Role of Learning Self-Efficacy and Self-Monitoring in Online Learning Environments. *Interactive Learning Environments*, 31(7), 4605-4618. <http://dx.doi.org/10.1080/10494820.2021.1977962>
- Amoozegar, A., Abdelmagid, M., & Anjum, T. (2022). Course Satisfaction and Perceived Learning Among Distance Learners in Malaysian Research Universities: The Impact of Motivation, Self-Efficacy, Self-Regulated Learning, and Instructor Immediacy Behaviour. *Open Learning: The Journal of Open, Distance and e-Learning*, 1-27. <http://dx.doi.org/10.1080/02680513.2022.2102417>
- Baba Rahim, N. (2022). The Interaction Between Teaching Competencies and Self-Efficacy in Fostering Engagement Amongst Distance Learners: A Path Analysis Approach. *Malaysian Journal of Learning and Instruction*, 19(1), 31-57. <http://dx.doi.org/10.32890/mjli2022.19.1.2>
- Dewi, P., & Muhid, A. (2021). Students' Attitudes Towards Collaborative Learning Through e-Learning During COVID-19: Male and Female Students. *English Teaching Journal: A Journal of English Literature, Linguistics, and Education*. <http://dx.doi.org/10.25273/etj.v9i1.9046>
- Dlamini, R. (2023). Interactivity, The Heart and Soul of Effective Learning: The Interlink Between Internet Self-Efficacy and The Creation of an Inclusive Learning Experience. *South African Journal of Higher Education*, 37(2), 77-92. <http://dx.doi.org/10.20853/37-2-5105>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th Ed.): Pearson. New Jersey.
- Hamzah, N., Ahmad, M. F., Ariffin, A., Zakaria, N., & Rubani, S. N. K. (2023, April). Web-Based Collaborative Learning for Improving Students' Cognitive Thinking Levels. In *AIP Conference Proceedings* (Vol. 2544, No. 1). AIP Publishing. <http://dx.doi.org/10.1063/5.0117370>
- Hashim, S., Masek, A., Zahir, N. Z. M., & Khamis, N. (2023). The Efficacy of Students' Knowledge Construction Process in Computer-Supported Collaborative Learning (CSCL) Environment: A Malaysian View. *International Journal of Information and Education Technology*, 13(9). <http://dx.doi.org/10.18178/ijiet.2023.13.9.1949>
- Haugland, M.J., Rosenberg, I. & Aasekjær, K. (2022). Collaborative Learning in Small Groups in an Online Course – A Case Study. *BMC Medical Education*, 22. <https://doi.org/10.1186/s12909-022-03232-x>
- Hisham, N. F. S. M., & Salim, S. A. (2023). Study on the Adoption of Online Collaborative Learning from the Perspective of Sociability Quality. *Research in Management of Technology and Business*, 4(1), 600-612.
- Ismail, R. (2023, August). Student Involvement in The Collaborative Learning Environment: A Study in The Faculty of Law, University Kebangsaan Malaysia. In *International Scientific and Current Research Conferences*, 46-49.
- Lim, J. R. N., Rosenthal, S., Sim, Y. J. M., Lim, Z. Y., & Oh, K. R. (2021). Making Online Learning More Satisfying: The Effects of Online-Learning Self-Efficacy, Social Presence and Content Structure. *Technology, Pedagogy and Education*, 30(4), 543-556. <http://dx.doi.org/10.1080/1475939X.2021.1934102>

- Jamalai, M., & Krish, P. (2023). Augmenting Communicative and Collaborative Skills in an ESP Online Group Project. *e-BANGI*, 20(1), 177-186. <http://dx.doi.org/10.17576/ebangi.2023.2001.15>
- Mary Grace, I., Cruz, Artemus G. Cruz (2023). The Online Learning Environment and Its Relationship to The Self, Efficacy, Social Presence and Satisfaction of The Freshman University Students. *Journal for Educators, Teachers and Trainers*, 14(3). 165-174. <https://doi.org/10.47750/jett.2023.14.03.020>
- Mustakim, M., Trisnaningsih, T., & Adha, M. M. (2021). The Effectiveness of Online Collaborative Learning During Covid-19 Pandemic. In *Advances in Social Science, Education and Humanities Research, Volume 513 4th Sriwijaya University Learning and Education International Conference (SULE-IC 2020)*, 513, 256-262). Atlantis Press SARL. <http://dx.doi.org/10.2991/assehr.k.201230.115>
- Nungu, L., Mukama, E., & Nsabayeze, E. (2023). Online Collaborative Learning and Cognitive Presence in Mathematics and Science Education. Case study of University of Rwanda, College of Education. *Education and Information Technologies*, 1-20. <https://doi.org/10.1007/s10639-023-11607-w>
- Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Yousufi, S. Q. (2023). Factors Affecting Students' Learning Performance Through Collaborative Learning and Engagement. *Interactive Learning Environments*, 31(4), 2371-2391. <http://dx.doi.org/10.1080/10494820.2021.1884886>
- Ravana, V., Wong, S. Y., Chua, K. H., & Palpanadan, S. T. (2023). Conceptualising an Integrated Collaborative Learning Model for Lower Secondary Science Teaching-Learning in Malaysia. *International Journal of Education and Pedagogy*, 5(2), 15-26.
- Sabah, N. M. (2023). The Impact of Social Media-Based Collaborative Learning Environments on Students' Use Outcomes in Higher Education. *International Journal of Human-Computer Interaction*, 39(3), 667-689. <http://dx.doi.org/10.1080/10447318.2022.2046921>
- Sharma, S., & Saini, J. R. (2022). On the Role of Teachers' Acceptance, Continuance Intention and Self-Efficacy in The Use of Digital Technologies in Teaching Practices. *Journal of Further and Higher Education*, 46(6), 721-736. <http://dx.doi.org/10.1080/0309877X.2021.1998395>
- Strauß, S., & Rummel, N. (2020). Promoting Interaction in Online Distance Education: Designing, Implementing and Supporting Collaborative Learning. *Information and learning sciences*, 121(5/6), 251-260. <http://dx.doi.org/10.1108/ILS-04-2020-0090>
- Talosa, A. D., Javier, B. S., & Dirain, E. L. (2021). The Flexible-Learning Journey: Phenomenological Investigation of Self-Efficacy Influencing Factors Among Higher Education Students. *Linguistics and Culture Review*, 5(S3), 422-434. <http://dx.doi.org/10.21744/lingcure.v5nS3.1590>
- Turan, Z., Kucuk, S., & Cilligol Karabey, S. (2022). The University Students' Self-Regulated Effort, Flexibility and Satisfaction in Distance Education. *International Journal of Educational Technology in Higher Education*, 19(1), 1-19. <http://dx.doi.org/10.1186/s41239-022-00342-w>
- Vezne, R., Yildiz Durak, H., & Atman Uslu, N. (2023). Online Learning in Higher Education: Examining the Predictors of Students' Online Engagement. *Education and Information Technologies*, 28(2), 1865-1889. <http://dx.doi.org/10.1007/s10639-022-11171-9>
- Wang, S., Sun, Z., & Chen, Y. (2023). Effects of Higher Education Institutes' Artificial Intelligence Capability on Students' Self-Efficacy, Creativity and Learning

- Performance. *Education and Information Technologies*, 28(5), 4919-4939.
<http://dx.doi.org/10.1007/s10639-022-11338-4>
- Wieser, D., & Seeler, J. M. (2018). Online, Not Distance Education: The Merits of Collaborative Learning in Online Education. *The Disruptive Power of Online Education*, 125-146. Emerald Publishing Limited. <http://dx.doi.org/10.1108/978-1-78754-325-620181008>
- Wong, J. T., Bui, N. N., Fields, D. T., & Hughes, B. S. (2023). A Learning Experience Design Approach to Online Professional Development for Teaching Science Through the Arts: Evaluation of Teacher Content Knowledge, Self-Efficacy and STEAM Perceptions. *Journal of Science Teacher Education*, 34(6), 593-623.
<http://dx.doi.org/10.1080/1046560X.2022.2112552>
- Yildiz Durak, H. (2023). Examining Various Variables Related to Authentic Learning Self-Efficacy of University Students in Educational Online Social Networks: Creative Self-Efficacy, Rational, Experiential Thinking, and Cognitive Flexibility. *Current Psychology*, 42(25), 22093-22102. <http://dx.doi.org/10.1007/s12144-022-03211-x>
- Zhong, Q., Wang, Y., Lv, W., Xu, J., & Zhang, Y. (2022). Self-Regulation, Teaching Presence, And Social Presence: Predictors of Students' Learning Engagement and Persistence In Blended Synchronous Learning. *Sustainability*, 14(9), 5619.
<https://doi.org/10.3390/su14095619>