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Empowering Leaders: A Work in Progress on Promoting Leadership Roles in Online Learning through Project-Based Learning (PBL)

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ABSTRACT

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This article explores the evolving landscape of online learning and the pivotal role of project-based learning (PBL) in fostering leadership skills among student teachers. As education continues to transition to virtual platforms, there is a growing need to cultivate leadership qualities in student teachers to prepare them for the dynamic challenges of the digital age. Student teachers need to develop proficiency in digital pedagogy, which includes not only using technology for teaching but also understanding how to engage students in meaningful ways in an online setting. Therefore, this work in progress aims to shed light on ongoing initiatives, strategies, and best practices in integrating PBL to promote and develop leadership roles within the online learning environment. By engaging in projects, student teachers learn to facilitate active, inquiry-based learning experiences for their future students.

1. Introduction

The rise of online learning has significantly impacted education in various ways, bringing about transformative changes and presenting both challenges and opportunities. Several studies conducted by Almahasees *et al.*, [1]; Hodges *et al.*, [2]; and Mukhtar *et al.*, [3] have explored the multifaceted impact of online learning on education, shedding light on its implications for students, educators, and education. Online learning has democratized access to education, breaking down geographical barriers. Students from diverse backgrounds, locations, and circumstances can now access educational resources and courses, promoting inclusivity and expanding educational opportunities. Consequently, online learning has emerged as a powerful tool for promoting social equity and narrowing the digital divide, empowering learners from all walks of life to pursue their educational aspirations and unlock their full potential. With the proliferation of online learning platforms and tools, educators have gained greater flexibility and autonomy in designing and delivering engaging learning experiences that cater to diverse learning styles and preferences.

Furthermore, in online learning, learners can access materials at their own pace and schedule, accommodating work, family, or other commitments. This flexibility is particularly beneficial for adult learners and those pursuing education while working. Celik [4]; Furqon *et al.*, [5]; and Kumari *et al.*, [6] stated that learning management systems, video conferencing, interactive simulations, and other digital tools have become essential components of the educational experience. This shift has led to

innovative teaching methods and a more dynamic learning environment. The integration of digital tools has spurred a wave of innovation in teaching methodologies, giving rise to dynamic and interactive learning environments that transcend the limitations of traditional classroom settings. Educators now have access to a wealth of resources and instructional techniques that promote active learning, critical thinking, and knowledge retention among students. According to Jie and Ali [7], for the success of online education, it is important to improve the teaching method and utilize the Learning Management System (LMS).

Online learning facilitates continuous learning throughout one's life. Professionals can upskill or reskill without taking significant breaks from their careers. The availability of short courses, micro-credentials, and online certifications supports the development of specific skills relevant to evolving industries. Research conducted by Dhawan [8]; Dillo Justin Ramoshaba & Frank [9]; and Ogbonnaya *et al.*, [10] stated that online platforms offer flexibility in terms of timing and pace. This is particularly beneficial for professionals seeking leadership development while managing work responsibilities. Leaders can engage in online courses during non-working hours, enabling them to balance their professional and educational commitments.

Furthermore, Hoe *et al.*, [11] confirmed the integration of project-based learning (PBL) in online learning offers a dynamic and transformative approach to engage learners in meaningful and authentic experiences. Project-based learning in an online environment transcends traditional pedagogical boundaries, leveraging digital tools, collaboration platforms, and multimedia resources to empower learners in pursuing inquiry-driven projects that mirror real-world challenges and contexts. Taskiran [12] also stated that by immersing learners in hands-on, experiential learning opportunities, project-based learning fosters the development of critical thinking, problem-solving, communication, and collaboration skills while nurturing a sense of ownership, autonomy, and intrinsic motivation in their learning journey.

In the context of online leadership education, McCarron and Yamanaka [13] stated that there is a need to focus on creating equitable and inclusive learning environments. However, according to Matos and Kasztelnik [14] there is a particular gap exists in understanding specific leadership strategies to support online adjunct faculty participation. Additionally, research by Luo *et al.* [15] has shown that assigned leadership roles in online collaborative learning can significantly impact learning behaviors and outcomes.

Therefore, this study explores how Project-Based Learning (PBL) can be a catalyst for leadership development in an online learning environment.

2. Literature Review

2.1 Importance of Leadership in Online Learning

Leadership plays a crucial role in the success and effectiveness of online learning environments, serving as a guiding force that influences organizational culture, strategic direction, and instructional practices. Mouaziz *et al.*, [16] illuminate the evolving role of educators within virtual settings, stressing the imperative for teachers to cultivate digital competencies tailored to the evolving needs of students, thus embodying indispensable leadership qualities essential for fostering effective online education. Similarly, Uddin [17] underscores the indispensability of educators' technological prowess and pedagogical adeptness in enhancing students' academic achievements within the digital realm, thereby accentuating the pivotal role of proficient leadership. Nurhayati *et al.* [18] advocate for the pivotal role of teachers in curating nurturing and conducive virtual learning environments that foster academic success for both learners and instructors, thereby magnifying the essence of teacher leadership. Moreover, Talimbekas and Arifani [19] explore the hurdles encountered by students in

virtual learning domains, advocating for a comprehensive exploration of students' perspectives to unravel the intricacies of virtual learning challenges, thereby underscoring the necessity of teacher leadership in mitigating these obstacles. Furthermore, Ibarra and Lu [20] investigate the complexities of sustaining student engagement in online learning milieus, accentuating the pivotal role of educators in crafting interactive and supportive digital learning ecosystems, thus magnifying the essence of teacher leadership in ensuring enriched educational experiences.

2.2 PBL and its Benefits: PBL Students Leadership in Online Learning

Various studies have shed light on the multifaceted applications of Project-Based Learning (PBL) across diverse educational contexts. Lasamahu *et al.*, [21], delve into the integration of PBL within the human performance technology course, offering valuable insights into its implementation within online educational environments. Furthermore, Ghosheh Wahbeh *et al.*, [22] examine the transformative potential of PBL in fostering students' life skills, particularly leadership skills, within language classrooms, underscoring the broader impact of PBL on holistic skill development. Fernandes *et al.*, [23] present compelling evidence on the efficacy of PBL as a pedagogical tool for not only enhancing leadership skills but also actively engaging students in the learning process, highlighting its pivotal role in skill enrichment. Moreover, Henkel *et al.*, [24] explore the intricate dynamics of project manager leadership behavior, offering valuable insights into the leadership competencies cultivated through project management endeavors, thus aligning with the leadership development facets inherent within the realm of PBL. Collectively, these studies contribute to a comprehensive understanding of PBL's efficacy in nurturing leadership skills and fostering active engagement in the learning process across various educational domains.

2.3 Promoting Leadership through PBL in Online Learning Environments

Leadership and Problem-Based Learning (PBL) intersect in online learning through various dimensions. Studies by Kim *et al.*, [25] have shown that in online PBL environments, students can emerge as learning leaders through the application of different leadership styles such as transformational and transactional leadership. These leadership styles are crucial in defining leadership roles within online learning groups, emphasizing the importance of effective leadership in facilitating group processes and learning outcomes. The interplay between these leadership styles within online PBL environments underscores the importance of effective leadership in facilitating group processes and enhancing learning outcomes. Leaders who can effectively balance transformational and transactional leadership approaches can create a conducive learning environment that fosters collaboration, critical thinking, and knowledge construction. Moreover, by empowering students to assume leadership roles within online learning groups, educators can cultivate essential leadership skills among learners, preparing them to navigate complex challenges and thrive in the digital age.

Moreover, Saqr, Fors, and Tedre [26] stated that the success of online PBL lies in creating a conducive environment for continuous interactions and engagement among students, which is essential for collaborative learning. Effective online PBL groups are characterized by high levels of interactivity and engagement, indicating the significance of leadership in fostering a supportive and participative learning culture. Effective leaders in online PBL environments employ various strategies to promote interaction and engagement among group members. They may facilitate discussions, pose thought-provoking questions, and encourage participation from all group members. By fostering a sense of inclusivity and belonging, these leaders create a supportive learning environment

where students feel valued and empowered to share their perspectives and insights. Moreover, effective leaders leverage technology to enhance communication and collaboration within online PBL groups, utilizing features such as video conferencing, instant messaging, and collaborative document editing to facilitate real-time interactions and knowledge sharing.

Furthermore, Caroni and Nikoulina [27] also explore the integration of PBL in online settings during the COVID-19 pandemic which highlighted the importance of sustaining collaboration and interactive group discussions to ensure the effectiveness of online PBL. This underscores the role of leadership in maintaining communication channels, promoting teamwork, and encouraging active participation in virtual PBL environments. Leaders may play a crucial role in clarifying expectations, providing feedback, and offering assistance to students as they work through problems and collaborate with their peers. By serving as mentors and facilitators, leaders can empower students to take ownership of their learning and develop the critical thinking and problem-solving skills necessary for success in online PBL environments.

Additionally, Chen and Liu [28] investigated the implementation of online PBL which has been found to enhance students' meta-learning skills, including independent learning, communication, collaboration, and reflection. This suggests that effective leadership in online PBL involves guiding students to develop not only subject-specific knowledge but also essential meta-cognitive and interpersonal skills crucial for their overall academic and professional growth. Effective leaders may encourage students to take ownership of their learning by setting clear learning objectives and encouraging independent inquiry and exploration. They may also facilitate communication and collaboration among students, fostering a culture of open dialogue, active listening, and constructive feedback exchange. Additionally, leaders may encourage students to engage in reflective practices, prompting them to critically evaluate their learning processes, identify areas for improvement, and set goals for future growth.

3. Theoretical Framework

3.1 Application of Distributed Leadership Theories in an Online Learning Context

According to Spillane *et al.*, [29], distributed leadership means that the practice of leadership moves between those in formal and informal leadership positions. Distributed leadership is a model that involves the sharing of leadership responsibilities and decision-making across various stakeholders within an organization. In the context of online learning, applying distributed leadership theories is essential for creating a collaborative and effective virtual learning environment. Spillane *et al.*, [29] also stated that this theory implies that the role of leadership is not only seen as an individual practice, ability, character, or cognition but it can also be practiced by distributing the leadership function through leader, follower, and situation. This involves empowering students to have a voice in decisions related to their online learning experiences, including course offerings, assessment methods, and the use of technology. By applying distributed leadership theories in an online learning context, educational institutions can create a more inclusive, collaborative, and effective virtual learning environment.

3.2 PBL as a Framework for Fostering Leadership Skills in the Online Learning Environment

Project-Based Learning (PBL) serves as an effective framework for fostering leadership skills in an online learning environment. Blumenfeld *et al.*, [30] describe PBL as involving students collaboratively engaging in real-world problem-solving tasks, emphasizing teamwork and collaboration. This method aligns with problem-based learning principles, where students construct

knowledge by addressing authentic challenges, refining questions, conducting investigations, analyzing data, and drawing conclusions. Through participation in online projects, students can develop collaborative leadership skills by navigating virtual platforms, coordinating tasks, and ensuring effective communication among team members. PBL projects often present complex problems that require critical thinking and decision-making, enabling students in leadership roles to analyze information, evaluate options, and make informed decisions, thereby enhancing their problem-solving abilities. Furthermore, Muslim *et al.*, [31] proved that project-based learning had been shown to enhance students' creativity, problem-solving skills, and motivation. By engaging in hands-on projects that demand innovative solutions, students are prompted to think critically, consider diverse viewpoints, and devise creative strategies to overcome obstacles. This not only enhances their academic performance but also bolsters their intrinsic motivation to learn and excel. Anderson [32] underscores the importance of project-based learning in empowering students to become proactive, self-reliant learners capable of applying their knowledge and skills in practical scenarios. This approach not only enriches students' comprehension of the subject matter but also equips them with vital competencies for success in academic and professional pursuits.

3.3 Synthesizing Leadership and PBL Theories for Effective Implementation

The conceptual framework set out in Figure 1 serves as a guide on how this research is conducted and the distribution of leadership roles in an online learning environment through PBL. This research focuses on the implementation of PBL via online platforms where students engage in project discussions to enhance their leadership roles and complete their projects.

Online discussions forum plays a vital role in providing a platform for students to discuss their project work. Through online discussions, students can exchange ideas, share insights, and seek feedback on their project endeavors, fostering a sense of community and collective learning. Moreover, these forums offer a space for students to pose questions, clarify doubts, and explore diverse perspectives, enriching their understanding of the subject matter and enhancing their critical thinking skills.

Building upon this collaborative environment, online problem-based learning (PBL) emerges as a powerful pedagogical approach that leverages the interactive nature of online discussion forums to promote active student engagement and deeper learning outcomes. Research by Elzainy, Sadik, and Abdulmonem [33] has demonstrated that PBL not only enhances metacognitive skills, problem-solving abilities, and teamwork but also cultivates a sense of autonomy and responsibility among learners. By immersing students in authentic, real-world scenarios, PBL challenges them to apply theoretical knowledge to practical situations, fostering a deeper understanding of course concepts and promoting transferable skills essential for success in academia and beyond. Furthermore, PBL catalyzes increased student engagement with research literature and course content, as highlighted by the findings of Randazzo, Priefer, and Khamis-dakwar [34]. Through collaborative problem-solving activities and inquiry-based learning approaches, students are encouraged to explore diverse sources of information, critically evaluate scholarly works, and synthesize complex ideas, thereby enhancing their confidence in their ability to navigate academic discourse and contribute meaningfully to scholarly discussions.

Moreover, the collaborative nature of PBL fosters a supportive online learning community where students feel empowered to actively participate in their learning journey and support their peers in achieving shared learning goals. This sense of community, coupled with the deep active learning experiences facilitated by PBL, contributes to a rich and immersive online learning environment conducive to student success and academic growth, as evidenced by the research conducted by Liu

and Yang [35]. In parallel, project-based learning is recognized for its role in strengthening student-centered inquiry processes and fostering independence in learning, as suggested by Lai [36]. By immersing students in hands-on, experiential learning experiences, project-based learning empowers them to take ownership of their learning, pursue their interests, and develop critical thinking skills through self-directed exploration and inquiry.

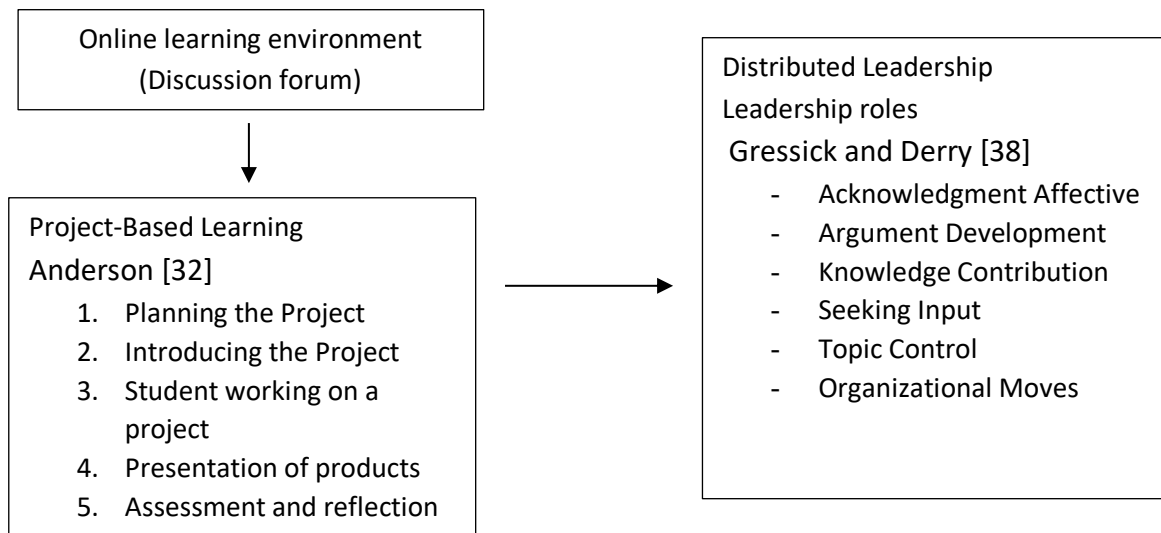


Fig. 1. The framework of Project Based Learning (PBL) to promote distributed leadership in an online learning environment.

Anderson [32] highlights project-based learning as a pedagogical approach that engages students in problem-solving activities, fostering autonomy and the creation of valuable student work products Paulus and Irsyadiah [37]. This method emphasizes hands-on, experiential learning through real-world projects that necessitate critical thinking, collaboration, and creativity, leading to a deeper understanding of the subject matter and the acquisition of transferable practical skills. Project-based learning not only facilitates knowledge acquisition but also cultivates essential skills like communication, teamwork, and leadership. Students are encouraged to take charge of their learning, make decisions, and tackle complex problems either independently or in groups. This active participation in the learning process nurtures responsibility and autonomy, preparing students for academic and professional challenges.

Gressick and Derry [38] argue that the success of an online group depends on the emergent leadership of members. They suggest that leadership roles can emerge in online collaborative learning as a social process where individuals without formal authority become leaders. The research emphasized the importance of distributed leadership in online groups, where leadership roles can emerge organically through participation and contributions. By recognizing and leveraging the diverse skills and strengths of group members, online learning environments can benefit from a collaborative leadership approach that enhances group dynamics and overall learning outcomes.

Both Anderson [32] and Gressick and Derry [38] underscore the significance of collaborative learning environments, albeit in different contexts. Anderson advocates for project-based learning, emphasizing its role in fostering autonomy and critical thinking through real-world problem-solving activities. This approach encourages students to take ownership of their learning and develop essential skills such as communication and teamwork. Conversely, Gressick and Derry focus on online collaborative learning and the emergence of leadership roles within groups. They argue that effective

online groups rely on distributed leadership, where individuals without formal authority can assume leadership roles based on their contributions and skills. Both perspectives highlight the importance of fostering autonomy and leveraging diverse skills within collaborative learning settings, whether in face-to-face project-based learning or online environments. Therefore, the framework was designed to ensure that Project-based learning conducted in online discussion forums can promote distributed leadership as well as students perform leadership roles while solving the project work.

4. Conclusions

Online learning environments serve as dynamic platforms that cater to diverse groups of learners with varying needs and learning styles. Within these environments, student teachers play a crucial role in creating inclusive and accessible educational experiences that effectively reach and support a broad spectrum of students. Leadership skills are instrumental in empowering student teachers to fulfill this role effectively. By cultivating leadership abilities, student teachers can navigate the complexities of online education, adapt to the evolving needs of their students, and foster an inclusive learning environment where all learners feel valued and supported.

Project-based learning (PBL) emerges as a powerful tool for developing leadership skills among student teachers. Through engaging in PBL activities, student teachers gain hands-on experience in managing projects, collaborating with peers, and problem-solving within the context of authentic educational challenges. These experiences not only enhance their understanding of effective teaching and learning practices but also equip them with the necessary tools to lead innovative teaching initiatives in the digital age. By integrating PBL into teacher education programs, institutions can empower student teachers to become proactive agents of change who are capable of driving meaningful improvements in educational practice.

This work-in-progress article aims to contribute to the ongoing discourse on the intersection of leadership development, online education, and project-based learning within the context of teacher education. By shedding light on current initiatives, challenges, and best practices, it seeks to provide a comprehensive roadmap for educators and institutions seeking to foster leadership roles among student teachers in the ever-evolving landscape of online learning. Through the exploration of innovative approaches to leadership development and the promotion of collaborative learning experiences, this article aims to inspire transformative change in teacher education programs, ultimately enhancing the educational experiences of future generations of students.

References

- [1] Almahasees, Zakaryia, Khaled Mohsen, and Mohammad Omar Amin. "Faculty's and students' perceptions of online learning during COVID-19." In *Frontiers in Education*, vol. 6, p. 638470. Frontiers Media SA, 2021. <https://doi.org/10.3389/feduc.2021.638470>
- [2] Hodges, Charles B., Stephanie Moore, Barbara B. Lockee, Torrey Trust, and Mark Aaron Bond. "The difference between emergency remote teaching and online learning." (2020).
- [3] Mukhtar, Khadijah, Kainat Javed, Mahwish Arooj, and Ahsan Sethi. "Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era." *Pakistan journal of medical sciences* 36, no. COVID19-S4 (2020): S27. <https://doi.org/10.12669/pjms.36.COVID19-S4.2785>
- [4] Çelik, Behçet. "The effects of computer simulations on students' science process skills: Literature review." *Canadian Journal of Educational and Social Studies* 2, no. 1 (2022): 16-28. <https://doi.org/10.53103/cjess.v2i1.17>
- [5] Furqon, Muhammad, Parlindungan Sinaga, Liliyasi Liliyasi, and Lala Septem Riza. "The Impact of Learning Management System (LMS) Usage on Students." *TEM Journal* 12, no. 2 (2023). <https://doi.org/10.18421/TEM12-54>
- [6] Kumari, Archita, Abhilash Ghadei, Suresh T., and Srividya A. 2020. "Comparison of Video Conferencing Services (Google Meet and Zoom) Based on Perception of Speech Language Pathologists on Tele-Rehabilitation.

- Chandrasekhar Institute of Speech and Hearing,"
- [7] Jie, C. Y., and N. Mat Ali. "COVID-19: What are the challenges of online learning? A literature review." *International Journal of Advanced Research in Future Ready Learning and Education* 23, no. 1 (2021): 23-29.
 - [8] Dhawan, Shivangi. "Online learning: A panacea in the time of COVID-19 crisis." *Journal of educational technology systems* 49, no. 1 (2020): 5-22. <https://doi.org/10.1177/0047239520934018>
 - [9] Ramoshaba, Dillo Justin, and Mathibedi Frank Kgarose. "Analysing coping strategies of students for online teaching and learning during the Covid-19 pandemic." *International Journal of Research in Business and Social Science (2147-4478)* 11, no. 9 (2022): 343-347. <https://doi.org/10.20525/ijrbs.v11i9.2192>
 - [10] Ogbonnaya, Ugorji I., Florence C. Awoniyi, and Mogalatjane E. Matabane. "Move to online learning during COVID 19 lockdown: Pre-service teachers' experiences in Ghana." *International Journal of Learning, Teaching and Educational Research* 19, no. 10 (2020): 286-303. <https://doi.org/10.26803/IJLTER.19.10.16>
 - [11] Hoe, Lim Seh, Tay Choo Chuan, Hanipah Hussin, and Pang Yee Jiea. "Enhancing Student Competencies Through Digital Video Production: A Project-based Learning Framework." *Journal of Business and Social Review in Emerging Economies* 5, no. 1 (2019): 51-62. <https://doi.org/10.26710/jbsee.v5i1.508>
 - [12] Taşkıran, Ayşe. "Project-based online learning experiences of pre-service teachers." *Journal of Educational Technology and Online Learning* 4, no. 3 (2021): 391-405. <https://doi.org/10.31681/jetol.977159>
 - [13] McCarron, Graziella Pagliarulo, and Aoi Yamanaka. "Reflecting back and going forward: Promising pedagogical practices for culturally relevant/sustaining and equitable online leadership education." *Journal of Leadership Education* 21, no. 4 (2022): 1-20. <https://doi.org/10.12806/v21/i4/a3>
 - [14] Matos, Lorraine, and Karina Kasztelnik. "United States of State Universities Share Leadership Theory and the Strategies Engaging Online Accounting Faculties During Cov19 in Higher Education." *Journal of Higher Education Theory & Practice* 23, no. 4 (2023). <https://doi.org/10.33423/jhetp.v23i4.5905>
 - [15] Luo, Heng, Xu Han, Ying Chen, and Yanjiao Nie. "Should you become a leader in online collaborative learning? Impact of assigned leadership on learning behaviors, outcomes, and perceptions." *Plos one* 17, no. 4 (2022): e0266653. <https://doi.org/10.1371/journal.pone.0266653>
 - [16] Mouaziz, Abdelkrim, Ismail El Byad, Souhayla Sraoui, Maha El Biadi, and Jaouad Mourni. "Distance Learning in Moroccan Higher Education during the Covid-19 Pandemic: The Case of Sidi Mohamed Ben Abdellah University Students." *Arab World English Journal* 13, no. 4 (2022). <https://doi.org/10.24093/awej/vol13no4.24>
 - [17] Uddin, Muhammad Sharif. 2022. "Like Walking Them to the Bus Stop, and Then They Still Miss the Bus." *Journal of Education and Training* 10 (1): 1. <https://doi.org/10.5296/jet.v10i1.19913>
 - [18] Nurhayati, Sri, Ahmad Wahyu Hidayat, Dwi Noviatul Zahra, Anggi Fitri, and Muhammad Iqbal Fasa. "The Effectiveness of Virtual Classroom Learning in Islamic Early Childhood Education." *KnE Social Sciences* (2023): 428-438. <https://doi.org/10.18502/kss.v8i4.12927>
 - [19] Talimbekas, Marianne Putri, and Yudhi Arifani. 2022. "Students Perspective on Online Learning During Covid -19 at Rural Area Thailand." *IDEAS: Journal on English Language Teaching and Learning, Linguistics and Literature* 10 (1): 249–59. <https://doi.org/10.24256/ideas.v10i1.2595>
 - [20] Ibarra, B., and P. Lu. "Maintaining middle school students' engagement in virtual learning environments." *Frontiers of Contemporary Education* 2, no. 2 (2021): p1. <https://doi.org/10.22158/fce.v2n2p1>
 - [21] Lasamahu, Beatriks, Eveline Siregar, and Moch Sukardjo. "Online Learning with Project Based Learning Approach in the Human Performance Technology Course." *Journal of Education Research and Evaluation* 5, no. 2 (2021): 208-215. <https://doi.org/10.23887/jere.v5i2.32387>
 - [22] Ghosheh Wahbeh, Dua, Eman A. Najjar, Adel F. Sartawi, Maysa Abuzant, and Wajeeh Daher. "The role of project-based language learning in developing students' life skills." *Sustainability* 13, no. 12 (2021): 6518. <https://doi.org/10.3390/su13126518>
 - [23] Fernandes, Sandra, A. Regueiro, Miguel Magalhães, José Dinis-Carvalho, and Cristina Costa-Lobo. "Developing transferrable skills through entrepreneurship projects: student's experiences and challenges." In *INTED2017 Proceedings*, pp. 935-945. IATED, 2017. <https://doi.org/10.21125/inted.2017.0375>
 - [24] Henkel, Tom, Jim Marion, and Debra Bourdeau. "PROJECTMANAGERLEADERSHIPBEHAVIOR: TASK-ORIENTED VERSUS RELATIONSHIP-ORIENTED." *Journal of leadership education* 18, no. 2 (2019): 1-14. <https://doi.org/10.12806/v18/i2/r8>
 - [25] Kim, Min Kyu, In Heok Lee, and Yinying Wang. "How students emerge as learning leaders in small group online discussions." *Journal of Computer Assisted Learning* 36, no. 5 (2020): 610-624. <https://doi.org/10.1111/jcal.12431>
 - [26] Saqr, Mohammed, Uno Fors, and Matti Tedre. "How the study of online collaborative learning can guide teachers and predict students' performance in a medical course." *BMC medical education* 18 (2018): 1-14. <https://doi.org/10.1186/s12909-018-1126-1>
 - [27] Caroni, Anna, and Anna Nikoulina. "Problem-based learning in online settings during Covid-19." *International Journal of Management, Knowledge and Learning* 10 (2021). <https://doi.org/10.53615/2232-5697.10.21-30>

- [28] Chen, Yajie, and Yilin Liu. "Exploring PBL Online Teaching to Enhance Students' Meta-Learning Skills." In *2021 4th International Conference on Humanities Education and Social Sciences (ICHESS 2021)*, pp. 2621-2625. Atlantis Press, 2021. <https://doi.org/10.2991/assehr.k.211220.452>
- [29] Spillane, James P., Richard Halverson, and John B. Diamond. 2004. *Towards a Theory of Leadership Practice: A Distributed Perspective*. *Journal of Curriculum Studies*. Vol. 36. <https://doi.org/10.1080/0022027032000106726>
- [30] Blumenfeld, Phyllis C., Elliot Soloway, Ronald W. Marx, Joseph S. Krajcik, Mark Guzdial, and Annemarie Palincsar. "Motivating project-based learning: Sustaining the doing, supporting the learning." *Educational psychologist* 26, no. 3-4 (1991): 369-398. https://doi.org/10.1207/s15326985ep2603&4_8
- [31] Muslim, Muslim, Hendra Dani Saputra, Muhammad Yasep Setiawan, Martias Martias, and Muhammad Nasir. "The influence of project based learning on student's intrinsic learning motivation." *INVOTEK: Jurnal Inovasi Vokasional dan Teknologi* 21, no. 2 (2021): 105-118. <https://doi.org/10.24036/invotek.v21i2.915>
- [32] Anderson, Jason. "A framework for project-based learning in TESOL." *Modern English Teacher* 30, no. 2 (2021): 45-49. <https://doi.org/10.4324/9781315069319>
- [33] Elzainy, Ahmed, Abir El Sadik, and Waleed Al Abdulmonem. "Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University." *Journal of Taibah University Medical Sciences* 15, no. 6 (2020): 456-462. <https://doi.org/10.1016/j.jtumed.2020.09.005>
- [34] Randazzo, Melissa, Ryan Priefer, and Reem Khamis-Dakwar. "Project-based learning and traditional online teaching of research methods during COVID-19: An investigation of research self-efficacy and student satisfaction." In *Frontiers in Education*, vol. 6, p. 662850. Frontiers Media SA, 2021. <https://doi.org/10.3389/educ.2021.662850>
- [35] Liu, Xunqian, Yi Yang, and Jessica Ws Ho. "Students sense of belonging and academic performance via online PBL: A case study of a university in Hong Kong during quarantine." *International Journal of Environmental Research and Public Health* 19, no. 3 (2022): 1495. <https://doi.org/10.3390/ijerph19031495>
- [36] Lai, Alice. "Creating project-based learning for online art classrooms." *Journal of Effective Teaching in Higher Education* 4, no. 1 (2021): 94-108. <https://doi.org/10.36021/jethe.v4i1.66>
- [37] Paulus, Kristo, and Nur Irsyadiah. "Development of Project Basic Learning (PBL) In Order To Improve Student Learning Outcomes In Science Currents." *Devotion: Journal of Research and Community Service* 3, no. 12 (2022): 1939-1948. <https://doi.org/10.36418/dev.v3i12.242>
- [38] Gressick, Julia, and Sharon Derry. "Leadership in small online collaborative learning groups: A distributed perspective." (2008).