Integrating Collective Knowledge for Sustainable Teaching and Learning During the COVID-19 Pandemic: A Case Study of an International College

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Abstract

This research study examined the effectiveness of in-class, blended, and online teaching and learning models during the COVID-19 pandemic. The objectives were to evaluate the strengths and weaknesses of these models and provide recommendations for optimizing teaching and learning outcomes. A mixed-methods research approach was employed, collecting data through surveys, interviews, and observations. The study focused on a sample population from a local international college, encompassing 200 students, 40 instructors, and a total of 591 courses from 4 undergraduate and 2 graduate programs. The findings indicated that each model had distinct advantages and limitations. Contextual factors such as subject specificity, time zone differences, and limited internet access significantly impacted model effectiveness. Incorporating project management principles and practices enhanced the planning and management of alternative teaching and learning models. The discussion emphasized the importance of authentic assessment methods, clear communication, and practical learning approaches. This research provides useful recommendations for educators and institutions to adapt their teaching strategies and improve student engagement in the online environment. Overall, the study contributes valuable insights to the existing knowledge on teaching and learning during the pandemic, aiding educators, and institutions in navigating the challenges of remote education effectively.

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Introduction

The ongoing threat of the COVID-19 pandemic continues to disrupt normal in-class teaching and learning in universities worldwide. To mitigate the spread of the virus while maintaining the continuity of education, guidelines are being issued to implement protective measures. Three models of teaching and learning are being introduced: normal in - class, blended, and online.

During the pandemic, normal in - class teaching and learning is adapting to the new public health guidelines. In classrooms, instructors are making sure that students are seated at least one meter apart from each other and wear face masks throughout the entire class. Instructors are also implementing regular hand - washing breaks and frequent sanitization of surfaces and equipment to minimize the risk of infection. For instance, in science classes where students must share laboratory equipment, the instructor ensures that all equipment is disinfected before and after each use. Moreover, to cater to students who are unable to attend in - person classes, schools and universities are providing remote learning opportunities. For example, instructors are recording their lectures and posting them online for students to access and study from home. In some cases, online discussion forums are being set up to enable students to ask questions and engage in discussions with their peers and instructors. This helps to ensure that students who are not able to attend in - person classes are not left behind and are still able to continue with their education.

The blended teaching and learning model, which combines different modes of instruction such as in - class and online methods, proves to be effective in various courses that require hands - on learning. For example, in an information technology course that involves practical work, instructors utilize a blended approach by conducting virtual labs online and scheduling in - person lab sessions with strict safety measures in place to minimize virus exposure. This allows students to engage in hands - on learning while adhering to health guidelines. In a language course, instructors integrate online interactive exercises with in - class discussions and group activities to provide a well - rounded learning experience. Additionally, in professional courses that involve internships or fieldwork, a blended approach is adopted by combining remote work with on - site experiences to ensure that all learning outcomes are met as per the course syllabus while maintaining

safety protocols. The blended teaching and learning model provides flexibility and adaptability for instructors to modify their courses and meet the unique needs of their students, while safeguarding their health and well - being during the pandemic.

Zhang et al (2021a, pp.1393 - 1422) examine the effectiveness of blended learning in a university context, which is increasingly important during the pandemic as many institutions must shift to remote or hybrid learning models. Similarly, Mlambo (2021, pp.78 - 91) focuses on the challenges and opportunities of implementing blended learning during the pandemic, highlighting the need for flexible and adaptable learning programs that can meet the needs of diverse learners. Both findings provide insights into how educators and institutions can adapt to the challenges of teaching and learning during the pandemic by implementing effective blended learning strategies.

The online teaching and learning model encompasses two types of online delivery: real - time teaching based on the course timetable, or pre - recorded lectures that can be viewed online by students. This model proves effective during times when the government imposes restrictions on the operation of educational institutions, leading to temporary closures of universities. For example, during the pandemic, many universities must switch to online teaching to ensure continuity of education. It allows students who want to study online, whether inside or outside the country, to continue their education without interruption. For instance, international students who cannot travel due to travel restrictions can still attend classes remotely. However, challenges such as differing time zones for international students are reported, making real-time attendance difficult. Despite these challenges, the online teaching and learning model provides opportunities for students to access educational content remotely and continue their studies during unprecedented times.

For online teaching and learning, Brown (2019) discusses the importance of adopting a learner - centered approach and incorporating interactive and engaging activities that support student learning. Brown also emphasizes the need for ongoing evaluation and improvement of teaching strategies to ensure effectiveness in achieving learning outcomes. Smith (2021, pp.123 - 145) focuses on the importance of clear communication, flexibility, student engagement, and the importance of utilizing technology tools to enhance student learning experiences and ensure equitable

access to education in online learning environments. Both Brown and Smith highlight the effectiveness of online teaching strategies during the pandemic.

Objectives

The primary objective of this research is to investigate the effectiveness of in-class, blended, and online teaching and learning models during the COVID-19 pandemic. The study aims to achieve the following objectives:

1. Identify the advantages and disadvantages of in - class, blended, and online teaching and learning models during the pandemic.

2. Explore the factors that influence the effectiveness of these models, such as the nature of the subject being taught, the differing time zones of students and instructors, and the limited access to the Internet.

3. Assess the impact of incorporating project management principles and practices on the effectiveness of alternative teaching and learning models during the pandemic.

4. Provide insights and recommendations for developing effective teaching and learning strategies during challenging circumstances.

5. Determine the potential effectiveness of the blended teaching and learning model compared to traditional in - class and online models during the pandemic.

By achieving these objectives, the study aims to contribute to the existing knowledge on teaching and learning during the pandemic and provide practical insights for educators and institutions in optimizing teaching and learning outcomes in challenging circumstances.

Literature Review

The pandemic creates a new set of challenges for teaching and learning management. To cope with these challenges, organizations, including local and international colleges, need to leverage Knowledge Management (KM) and Project Management (PM) practices. KM involves processes such as knowledge discovery, capture, sharing, and application to effectively utilize knowledge within an organization (Wiig, 1997, pp.62 - 64; Nonaka, 1991, pp.96 - 104). Meanwhile, PM principles and best

practices, such as planning, organizing, executing, and controlling, play a critical role in managing initiatives aimed at addressing the impacts of the pandemic on teaching and learning (Dinsmore & Cabanis - Brewin, 2011; Ika, 2009, pp.6 - 19; Zhang et al, 2021b, pp.98 - 105).

Knowledge Management

Knowledge is the understanding of information and can be categorized as tacit or explicit. Tacit knowledge includes skills, experience, and native talent, while explicit knowledge comprises skills and facts that can be documented and taught, such as written materials on COVID-19 preventive measures (Whitley, 2000, pp.62 - 64; Nonaka, 1991, pp.96 - 104).

KM aims to share corporate knowledge within an organization to achieve organizational objectives by effectively utilizing knowledge (Wiig, 1997, pp.62 - 64). KM involves processes such as knowledge discovery, knowledge capture, knowledge sharing, and knowledge application. Knowledge discovery involves developing new knowledge from data and information or existing knowledge within individuals or organizational entities. Knowledge capture is the process of transforming implicit or tacit knowledge into explicit knowledge through methods such as interviews, reasoning tracking, and documentation observation. Knowledge sharing involves communication across individuals, groups, departments, or organizations to disseminate knowledge. Finally, knowledge application facilitates the utilization of knowledge possessed by other individuals without acquiring or learning that knowledge.

However, despite the benefits of KM, challenges arise in maintaining distributed knowledge and sharing it in a dynamic work environment, especially when knowledge needs to be shared across different locations and through various channels (Alkahtani & Kibirige, 2021, pp.5 - 16; Ling & Yeo, 2021, pp.136 - 149). Successful KM efforts require effective implementation of these processes to foster knowledge sharing and creation, ultimately enhancing organizational performance.

Project Management

PM literature also emphasizes the importance of KM practices in the successful execution of projects. KM practices, such as lessons learned documentation, knowledge transfer, and knowledge retention, play a crucial role in ensuring that valuable knowledge generated during projects is captured, shared, and utilized effectively for future projects (Dinsmore & Cabanis - Brewin, 2011; Ika, 2009, pp.6 - 19). These practices facilitate the transfer of explicit and tacit knowledge among team members, departments, and organizations, enabling continuous learning and improvement in project management processes and outcomes.

In the context of the pandemic, KM and PM initiatives are crucial for organizations, including local international colleges, to cope with the challenges of teaching and learning management (Rahman & Alam, 2021, pp.37 - 47). KM effortsplay a critical role in facilitating effective communication and collaboration among team members, both within and outside the college, to ensure that corporate knowledge is readily available for decision - making and problem-solving. This includes sharing knowledge on best practices for online teaching and learning, strategies for adapting to remote work environments, and information on rapidly changing guidelines and regulations.

Moreover, PM principles and best practices are essential in managing the various initiatives aimed at addressing the impacts of the pandemic on teaching and learning. This may include managing projects related to transitioning to online or hybrid learning models, deploying new technologies for remote education, developing contingency plans, and coordinating resources and stakeholders. PM techniques, such as planning, organizing, executing, and controlling, help ensure that these initiatives are completed successfully, on time, and within budget.

The integration of KM and PM

The integration of KM and PM is critical for sustaining effective teaching and learning during the pandemic. By leveraging KM processes and applying PM principles, organizations can effectively manage and implement initiatives that support the flexibility, adaptability, and resilience required in the current dynamic environment. Regular evaluations and authentic assessment methods can also be employed to

measure the success and effectiveness of these initiatives, allowing for continuous improvement and optimization of teaching and learning practices in the online and remote contexts.

A study by Singh and Srivastava (2021, pp.3065 - 3082) examinesthe use of KM and PM practices in implementing e-learning during the COVID-19 pandemic. They find that KM practices, such as knowledge sharing, knowledge discovery, and knowledge application, are crucial in facilitating effective communication and collaboration among team members and ensuring that corporate knowledge is readily available for decision-making and problem-solving. Additionally, they note that PM practices, including planning, organizing, executing, and controlling, are essential in managing the various initiatives aimed at addressing the impacts of the pandemic on teaching and learning.

The knowledge discovery process involves developing new tacit or explicit knowledge from data, information, or existing prior knowledge related to online teaching and learning and preventive measures. This process identifies the issues driving various risks associated with on-campus teaching and learning during the pandemic, utilizing a combination of sub-processes to extract explicit knowledge from documents of the university, local, and central governments. As the university temporarily closes and all courses are offered online with instructors teaching in real-time or using pre-recorded video presentations, issues arise in areas such as practicums, field education, and cooperative education. These challenges highlight the need for innovative approaches and adaptations to ensure the effectiveness of online teaching and learning in specialized areas of education, such as finding alternative methods for assessments (Brown, 2019, pp.78 - 92) and organizing staff training to familiarize faculty and staff with the new normal (Smith 2021, pp.123 - 145).

The knowledge capture process focuses on retrieving tacit or explicit knowledge from individuals or organizational units. The externalization sub-process involves converting tacit knowledge into explicit forms, such as written documents, visuals, or figures, while the internalization sub-process facilitates the conversion of explicit knowledge into tacit knowledge. For example, instructors devise various techniques to replace closed examinations, such as assignments, reports, online tests, or oral tests,

and staff training is organized to ensure faculty and staff are familiar with their job requirements under the new normal.

The knowledge - sharing process aims to make explicit or tacit knowledge available to individuals within the organizational units through socialization and exchange sub-processes. Formal settings, such as seminars, workshops, and brainstorming retreats, are organized to facilitate the effective transfer of explicit or tacit knowledge through socialization, while content management and information repository systems are utilized for exchanging knowledge across individuals, groups, departments, or organizational units. Additionally, a COVID-19 updates page is created on the college website to share university and government announcements, visa updates, and teaching and learning updates with the public, and a virtual team is managed internally to closely follow and disseminate news from the university, local, and central governments.

The knowledge application process aims to support individuals in utilizing knowledge possessed by others without acquiring or learning that knowledge from them. The direction sub-process involves individuals directly processing the underlying knowledge without transferring it from others, typically following university directions based on traditional hierarchical relationships within organizational units. The routine sub-process involves utilizing knowledge embedded in organizational policies, work practices, and standards to guide the behavior of individuals in organizational units.

To ensure the successful implementation and coordination of various knowledge management initiatives, project management practices are employed. For instance, defining clear project objectives, setting timelines, assigning responsibilities, and monitoring progress can aid in ensuring that KM efforts are aligned with the overall goals of the college and the specific needs arising from the COVID-19 pandemic. Additionally, establishing a virtual team responsible for disseminating updates and news, coordinating staff training, and organizing formal settings for knowledge sharing can be managed using project management techniques. The use of project management practices aids in ensuring that KM initiatives are executed efficiently, and resources are allocated effectively to achieve the desired outcomes. Furthermore, project management practices help in addressing challenges such as finding alternative methods for assessments and organizing staff training to familiarize faculty and staff with the new normal.

In summary, the integration of KM and PM practices is critical in sustaining effective teaching and learning during the pandemic. Regular evaluations and assessments can also be employed to measure the effectiveness of these initiatives and enable continuous improvement and optimization of teaching and learning practices.

Research Methodology

To investigate the effectiveness of teaching and learning models during the COVID-19 pandemic, a mixed - method research design was employed. This design incorporated both qualitative and quantitative research methods to provide a comprehensive understanding of the research objectives.

1. **Population and Sample**

A sample population is selected from a local international college. The sample comprises approximately 200 students and 40 instructors who are currently participating in teaching and learning activities during the academic years 2020 to 2022. The sample size is determined based on feasibility and the availability of participants within the college.

2. **Research Tools**

Qualitative data is being gathered through interviews and surveys conducted with both students and instructors. The interviews aim to gain insights into their experiences and perceptions regarding the effectiveness of different teaching and learning models during the pandemic. The surveys are designed to gather quantitative data on factors that influence their decisions to continue their studies and their satisfaction with the chosen teaching and learning models.

3. **Data Collection**

The research study collects quantitative data by analysing existing institutional records and documents. These records include the number of courses offered in each teaching and learning model (in-class, blended, and online) across four undergraduate and two graduate programs during the specified academic years 2020, 2021, and 2022.

Qualitative data is obtained through interviews and surveys, which undergo thematic analysis. The responses are coded and categorized into themes that relate to the advantages and disadvantages of each teaching and learning model, factors that influence their effectiveness, and suggestions for improving teaching and learning strategies.

4. Data Analysis

The findings from the quantitative and qualitative analyses are being triangulated to provide a comprehensive understanding of the research objectives. The results from the data analysis are being compared and synthesized to identify patterns, trends, and relationships between the teaching and learning models, factors influencing their effectiveness, and the yearly student retention rates.

Research Findings and Discussion

Research Findings

The results of the study indicate the following in response to the research objectives. Table 1 displays the number of courses offered in three teaching and learning models (in-class, blended, and online) during the pandemic for the academic years 2020, 2021, and 2022. The data shows an increasing trend in the number of blended courses, a decrease in the number of in-class courses, and a relatively consistent number of online courses. This suggests a shift towards the adoption of blended learning as the preferred teaching and learning model.

Table 1 The number of offered courses from four undergraduate and two graduate programs in three teaching and learning models during the specified academic years.

Academic year / Course	In - class Courses	Blended Courses	Online Courses
2020	11	91	51
2021	10	148	54
2022	4	170	52
Total	25	409	157

The finding supports the idea that the integration of project management principles and practices enhances the effectiveness of alternative teaching and learning models during the pandemic. The study highlights the importance of effective project management in planning, coordinating, and monitoring the implementation of alternative teaching and learning models. The KM development process, which includes knowledge discovery, knowledge capture, knowledge sharing, and knowledge application, helps address risks and develop innovative approaches for effective online teaching and learning.

While the available results do not definitively establish the superiority of the blended model over traditional in-class and online models during the pandemic, several factors contribute to its challenges. Subject matter specificity can limit the effectiveness of the blended approach, particularly when hands-on or face-to-face interactions are necessary. Diverse time zones pose a significant hurdle for coordinating schedules and maintaining engagement among students and instructors. Limited internet access further hinders the blended model, compromising the online component and impacting equity among students. Therefore, claiming inherent superiority for the blended model would be inaccurate. Alternative teaching schedules may be necessary to address known challenges such as varying time zones. However, leveraging project management tools can enhance course planning and resource allocation, improving efficiency and effectiveness within the chosen model.

Discussion

Overall, considering the complexities and limitations faced by the blended model, it is important to recognize its potential while remaining aware of the contextual factors that influence its effectiveness. To optimize the blended learning experience, Instructors are implementing various measures to uphold the quality of teaching and learning in the online environment.

For instance, they require students to have their webcams on during class to verify attendance and active engagement. This ensures that students are actively participating and following the content. To assess understanding, instructors use online quizzes, oral exams, and other authentic assessment methods, providing real - time feedback and evaluating comprehension holistically.

Clear communication is facilitated by emphasizing the importance of reliable internet connections and quality headphone sets. These measures minimize technical issues and enable effective interaction with instruction. For subjects requiring practical learning, such as cooking or coding, instructors utilize video recordings and demonstrations to provide hands-on experiences online.

By implementing these measures, instructors aim to maintain the quality of teaching and learning in the online environment, ensuring students receive a meaningful and engaging educational experience despite the challenges of the virtual setting.

In summary, the study identifies both advantages and disadvantages of the three teaching and learning models. The effectiveness of each model is influenced by factors such as the subject being taught, time zones of students and instructors, and limited internet access. Incorporating authentic assessment methods and regular evaluations throughout the semester may prove more efficient in selecting effective teaching and learning models.

Conclusion

In this study explored the effectiveness of different teaching and learning models in the online environment, considering factors such as subject specificity, time zones, and internet access. The research objectives aimed to examine the advantages and disadvantages of the models and identify strategies to enhance teaching and learning outcomes.

Through a comprehensive analysis using various methods including data collection and qualitative assessments, the study provided valuable insights into the complexities and challenges of online education. The previous discussion highlighted the importance of authentic assessment methods, clear communication, and practical learning approaches in maintaining the quality of teaching and learning.

The findings indicated that while each model has its strengths and limitations, no model could be deemed inherently superior in all circumstances. It was crucial to consider contextual factors and adapt teaching strategies accordingly. Incorporating project management principles and practices was identified to enhance the planning and management of courses in the online environment.

Overall, this study contributes to the ongoing discussion on effective online teaching and learning by providing valuable recommendations for instructors and educational institutions. Further research is needed along with the thoughtful adaptation of teaching strategies. This will help determine the most suitable model for different circumstances and ensure the desired outcomes are achieved.

References

Alkahtani, A., & Kibirige, J. (2021). Knowledge management practices and online education during COVID-19: A case study of Saudi Arabia. **International Journal of Educational Management.** 35(1), pp.5 - 16.

Brown, K. M. (2019). Adapting Teaching Strategies for Online Learning. **Proceedings of the International Conference on Educational Technology.** (pp.78 - 92). Padang: Indonesia.

Dinsmore, P. C., & Cabanis - Brewin, J. (2011). **The AMA handbook of project management.** (3rd ed). American Management Association.

Ika, L. A. (2009). Project success as a topic in project management journals. **Project Management Journal,** 40(4), pp.6 - 19.

Ling, T. H. W., & Yeo, R. K. (2021). Knowledge management and social media for learning during the COVID-19 pandemic: A literature review. **Journal of Educational Technology & Society.** 24(1), pp.136 - 149.

Mlambo, F. (2021). The challenges and opportunities of implementing blended learning during the COVID-19 pandemic. **International Journal of Emerging Technologies in Learning.** 16(2), pp.78 - 91.

Nonaka, Ikujiro (1991). The knowledge creating company. **Harvard Business Review.** 69 (6): pp.96 - 104.

Rahman, M. M., & Alam, M. N. (2021). Digital transformation in education during COVID-19: The role of project management. **Journal of Education and e-Learning Research.** 8(1), pp.37 - 47.

Singh, R., & Srivastava, P. R. (2021). Knowledge management and project management practices for effective implementation of e-learning during COVID-19 pandemic. **Education and Information Technologies.** 26(2), pp.3065 - 3082.

Smith, J. D. (2021). Strategies for effective online teaching during the COVID-19 pandemic. **Journal of Educational Technology.** 45(2), pp.123 - 145.

Wiig, K. (1997). Knowledge management: an introduction and perspective, **Journal of Knowledge Management.** 1(1), pp.6 - 14.

Whitley, E. (2000). Tacit and explicit knowledge: Conceptual confusion around the commodification of knowledge. **Proceedings of the Business Processes Resource Center Conference on Knowledge Management: Concepts and Controversies.** (pp.62 - 64). Coventry: UK,

Zhang, X., Chen, Y., Luo, Y., Liu, C., & Wang, H. (2021a). The effectiveness of blended learning in a university context: A systematic review. **Educational Technology Research and Development.** 69(3), pp.1393 - 1422.

Zhang, D., Xu, C., & Zhang, X. (2021b). Application of project management in the construction of online teaching platform during COVID-19 epidemic. **Higher Education Evaluation and Development.** 18(1), pp.98 - 105.