



A Methods-Based Approach Model to Improve Blended Learning to Underpin Teaching and Learning in Higher Education at the Undergraduate Level

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ABSTRACT

Blended learning is currently popular in higher education institutions worldwide. The blended learning paradigm employed in higher education teaching and learning is still up for debate, despite the increased interest in the subject. This study's primary objective is to create a systematic methodology for identifying a successful blended learning model for higher education institution. In this study Khan Octagonal Framework is used as a grounded theory coupled with qualitative positivist and phenomenological investigations. To determine the best strategies for integrating blended learning in higher education, the researcher intends to investigate the viewpoints and experiences of both teachers and students. This study makes use of a theoretical framework and a variety of qualitative research methods in an effort to provide insightful information to institutions looking to improve their blended learning strategies for teaching and learning. The researcher proposed the establishment of a Demarcated Learning Management System in order to create a well-designed and effective blended learning teaching and learning model. A clear technique for identifying a blended learning (BL) model to enhance teaching and

learning in higher education is established through the processes of the Evaluation, Implementation, Determination, and Analysis (EIDA). It improves comprehension of pedagogies, broadens the body of knowledge about BL, and raises student satisfaction with BL in higher education. Six strategic elements result from this process Pedagogy; Learning technology support and resources; Components of e-learning; Infrastructure facilities; Institutional culture and Ethics. In light of these measurements, a methods-based approach can be adopted in higher education institutions to achieve an effective and efficient blended learning model for their courses at the level of students, lecturers, and administrators.

Keywords: *blended learning, learning management systems, higher education, information and communication technology, pedagogy*

1. INTRODUCTION

A new trend in technology has emerged in this century of globalization. All stages of schooling are altered by it. The improvement of ICT has the potential to improve teaching and learning, particularly in higher education. The promise of improved living quality for individuals from various cultural backgrounds is what makes higher education valuable. "Technology breakthroughs have held the promise to improve life, and ICT is often seen as a 'catalyst for change', that impacts teaching styles and learning approaches" (Chew, 2009, Bonk, 2012, and Graham, 2012).

To improve the caliber of instruction and learning, recent frameworks highlight how design clarity and LMS strategy significantly influence success in BL environments (Boelens, Van Laer, & Tondeur, 2023; Tawafak, Alsadoon, & Malik, 2023). These

days, they use both conventional in-person methods and cutting-edge learning management system techniques to conduct courses.

However, using instructional technologies to supplement teaching in higher education courses presents a challenge for instructors and tutors (Boggs & Pirani, 2003). The general education system in Sri Lanka can serve as a starting point for the adoption of ICT culture. ICT education is developed through research activities carried out by individuals and groups in universities and research intuitions. Such findings are rarely used. There is no incentive from the government or other pertinent authorities to do research and establish ICT education-related projects. (Fernando, M., & Fernando, Noel, 2017).

Recent studies examining the academic and social benefits of this teaching technique have highlighted the usage of blended learning. Blended learning, which combines traditional and online teaching modalities, holds promise for both types of instruction. (Albiladi and Alshareef, 2019). Lecturers take advantage of this to provide a learning atmosphere that fosters generational learning experiences, student reflection, analysis, and cooperation as the teacher acts as a mentor to the students. The learning management system supports this effort. Driscoll (2002) defines blended learning as an effective delivery strategy for undergraduate education that blends traditional classroom techniques with online digital media. Together with some student autonomy over time, location, path, or pace, it necessitates the actual presence of both teachers and students.

In order to improve learning accomplishment and boost student engagement, blended learning is a modern learning approach that combines e-learning in its many models with traditional learning in its various forms (Alsalhi et al., 2019). The application of technology in teaching and educational institutions like universities and schools stands to gain from technology and the internet (Boe, 2018). In today's collaborative blended learning environments, knowledge is shared, and blended learning has gained more acceptance in teaching and learning contexts (Kavitha and Jaisingh, 2018). The real query is this: How can universities identify and apply the most appropriate and successful technological and pedagogical approaches in their instruction?

Information communications technology (ICT) does not threaten the university's function; rather, the necessity for a new pedagogy centered on interactivity, customization, and the development to learn and think independently. The researcher in this study made the assumption that, first, ICT presents a chance for teaching and learning in higher education, and, second, that teaching and learning models and techniques should be innovative and diverse.

2. REVIEW OF LITERATURE

Blended learning was created before the advent of modern instructional technologies, and as these technologies imitate some characteristics of human brain processes, they will play a crucial role in shaping blended learning's future development (Dziuban et al., 2013). No matter how advanced the technology in a school, the readiness of e-

learning implementation was crucial in enhancing the educational process during the COVID-19 pandemic (Alqahtaniy and Rajkhan, 2020).

Since blended learning is still a relatively new and developing field, researchers continue to devote a great deal of time to defining the term and determining which theories and models should guide their work. In educational environments, blended learning has gained widespread use. The design and implementation of blended learning may vary depending on the environment; therefore, all HEIs may need to strategically plan and take a systematic approach to blended learning inside their institution's transformations in teaching and learning practices (Lim et al., 2016). Researchers and practitioners need to know the current issues and lines of inquiry prominent in blended learning to direct them to cutting-edge research and enable them to identify the most pressing problems. In Sri Lanka, researchers have insufficient assessment and evaluation of blended learning adoption in universities. The main focus of this research has been to address higher education's lack of knowledge about how to use proper methods and technology in their teaching using blended learning (BL) delivery.

Education is one of the main beneficiaries' disciplines with the advent of new technologies in information and communication technology (ICT). Blended learning, which combines classroom and online activities through institutional technology platforms and/or open-source use by teachers and students, is a powerful combination of the quality of traditional face-to-face (classroom) with online, internet, web-based, or e-learning. However, IT tools alone will not automatically change teaching

methodologies. This platform supports higher education by providing non-contact activities in addition to course development or classroom instruction. In addition to monitoring a large number of college students, it may also offer information and assess their work (self-assessment tests, peer evaluation, continuous assessment, personalized monitoring, and accreditation of knowledge).

Blended learning (BL) has become a transformative force in Sri Lanka's higher education system, particularly after the pandemic revealed infrastructure and pedagogical gaps. According to Esham et al. (2025), Sri Lankan universities are increasingly adopting hybrid instruction models not only for flexibility but to promote sustainability and cross-disciplinary learning in fields like climate change education. Similarly, Damiththrika et al. (2025) demonstrated how the Open University of Sri Lanka implemented a five-month blended Legal English course that balanced online and in-person learning, supporting both language acquisition and digital literacy. Ketheeswaran and Mukunthan (2025) found that hybrid formats enhanced student satisfaction, especially when instructional strategies were adapted to student preferences and learning needs. Moreover, Wijebandara and Adhikari (2025) underscored that while BL offers opportunities, students in Sri Lanka continue to face challenges like access disparities and the need for improved teacher support systems. These findings underscore the relevance of structured implementation models such as the EIDA framework, tailored to local technological, cultural, and institutional realities.

3. STATEMENT OF THE PROBLEM

Since BL uses information and communication technology to give a more time-effective and pedagogically helpful model, higher education institutions in Sri Lanka support its use in teaching and learning. The University Grant Commission has approved big enrollments in higher education institutions. Higher education has a number of obstacles to overcome, such as a shortage of qualified instructors, a lack of computer labs, libraries, and textbooks, the need to rebuild university ICT infrastructures, the expansion of learner-centered instruction from traditional face-to-face methods, and the absence of a system to handle student-related issues like absences and cultural differences.

Academic staff and administrators in higher education must tackle this difficult issue and create an efficient blended learning design in order to maintain instructional effectiveness and efficiency without compromising quality. According to Graham, Henrie, and Gibbons (2014), researchers in less developed scholarly fields find it difficult to define terms and develop pertinent models, whereas those in well-established domains have standard vocabulary and well accepted models and theories that direct inquiry and practice. However, post-pandemic shifts show a need for regional adaptation and stronger institutional support, especially in developing countries (Yulianto & Nugroho, 2023; Alrasheedi & Capretz, 2022). By combining online and traditional classroom instruction, blended learning has the potential to be a useful tool for improving learning. In order to address the situation, a blended design is preferable. This may involve developing tasks that address challenging subjects, coming up with extension activities for a portion of the learner population, offering more opportunities for feedback, assisting students with their practical work,

fostering opportunities for discussion in small groups, and encouraging student participation in the classroom (Sharpe et al., 2006).

Higher education needs to employ ICT in its surroundings and be logical and pedagogically sound. Studies have indicated that academicians are reluctant to use blended learning, even if it has several advantages for students (Brooks, 2008). Those who wish to implement blended solutions confront some obstacles, particularly in addressing their relative complexity (The Oxford Group, 2013). Scholars continue to have difficulties in determining the best approaches to apply blended learning, even in spite of the overwhelming evidence in the literature supporting its broad adoption (Maarop and Embi, 2016). According to Bersin and Howard (2003), selecting the component or media package that would yield the most efficiency at the lowest cost is the ideal method to properly integrate blended learning. All pedagogies for teaching and learning in the real world lack a framework to model blended learning. In higher education, blended learning participants believed that fewer courses meant less work, that their time management abilities were insufficient, and that they had difficulty taking ownership of their own education (Vaughan, 2007).

Using more advanced technology might sometimes be challenging when adopting blended learning. For instance, students can be forced to rely on sluggish Internet connections (like dialup). It has been noted that inadequate Internet access prevents students from participating in online forums, which can cause them a great deal of irritation and hinder their capacity to study. The time commitment is the problem in implementing blended learning in higher education. According to Johnson's (2002)

estimations, creating a blended learning course for a large number of students often takes two to three times as long as creating a course with a similar structure in a traditional format. Technical support for course design may be lacking. This results from the insufficient interrelationship between the ICT experts and faculty members offering blended learning courses. University support for course redesign is necessary to guarantee students have a successful blended learning experience. This support may include determining which course objectives are best met by online learning activities, which portions of the course are best completed in-person, and how to best integrate these two learning environments. To assist teaching and learning in higher education, a delimited learning management system (LMS) must be found. This will allow for the establishment of a clear technique for locating BL models. The new contribution to knowledge is the reflection on the literature review and the findings from the study based on Khan's octagonal framework.

4. THE NEED FOR THE STUDY

Higher education institutions are currently using blended learning techniques for both teaching and learning. In higher education, a learning management system is a standard feature that universities are currently pushing. Nevertheless, there isn't much research being done on tracking, directing, outlining, or putting blended learning courses into practice. The following is a list of the research gaps that have been determined.

- While many educators are aware of blended learning, very few are proficient in its use in higher education.

- Through their own endeavors, educators employ a variety of ICT practices and activities; nevertheless, these practices and activities are not integrated into cohesive approaches.
- Research on the theoretical underpinnings of BL uptake and implementation strategies for HE teaching and learning is scarce. Current literature stresses that post-COVID blended learning must prioritize institutional readiness, policy clarity, and robust evaluation (González-González, Infante-Moro, & Infante-Moro, 2022; Kebritchi, Lipschuetz, & Santiago, 2023).
- There are BE versions that are specifically made for wealthy nations. Finding an efficient BL model for the setting of developing nations is therefore necessary.

These issues require an answer, which must be found. According to this study, teaching and learning are improved to get the best possible outcomes with the defined learning management system created by the Evaluation, Implementation, Determination, and Analysis Process (EIDA process).

5. OBJECTIVES OF THE STUDY

Finding the procedures for improving successful blended learning in the setting of higher education was the objective of this study. This involved investigating and evaluating the blended learning model in order to develop a way to establish a well-defined methodology for finding a blended learning model that would enhance teaching and learning in higher education. Different design methods have evolved along with differing understandings of the term among higher education teachers. For

many higher education instructors, especially those who are unfamiliar with blended learning, choosing the best design approach for a blended course can be a substantial difficulty (Alammary et al., 2014).

Lack of time, support, and resources for course redesign, learning new teaching and technological techniques, and the hazards of delivering a course in a mixed style are some of the difficulties in creating a course. The difficulties include coordinating blended learning with institutional priorities and goals, dealing with organizational change resistance, and lacking organizational structure, cooperation, and partnership experience. (Vaughan, 2007). Evaluate how well a blended learning model in higher education impacts students' perceptions of learning and their level of pleasure using technology as a tool for learning.

Administrators, instructors, and students in higher education are aware that we need to modify the way we design educational experiences. There are difficulties in implementing it in higher education (Owston, 2013; Porter & Graham, 2015; Sayed & Baker, 2014). There are differences in the expected level of engagement in blended learning activities and the capacity of the teaching staff to support mixed learning (Fishman, 2005). The effectiveness of blended learning is highly dependent on the setting in which it is implemented and how it is carried out (Garrison & Kanuka, 2004).

There are difficulties in implementing it in higher education (Owston, 2013; Porter & Graham, 2015; Sayed & Baker, 2014). The expected degree of participation in blended learning activities and the teaching staff's ability for mixed learning differ

(Fishman, 2005). The environment in which blended learning is used and how it is executed have a significant impact on its efficacy (Garrison & Kanuka, 2004).

Higher education institutions in Sri Lanka likewise encountered the previously mentioned difficulties when implementing blended learning. The implementation of mandatory online activities at the university was found to be significantly hampered by a number of factors, including low computer literacy, lack of infrastructure, lack of access to computers and the internet, lack of local language content, and a lack of formal student support services (Liyanagunawardena et al., 2014).

Together with the researcher's experience in Sri Lankan higher education, teachers' lack of enthusiasm and expertise contributes to the LMS's poor or nonexistent design. As a result, we worked with students to discuss the efficacy of their courses and received candid comments from the undergraduates.

For online and blended learning, Sri Lanka's higher education institutions must review their curricula, pedagogy, and evaluation procedures. It is also crucial to alter the attitudes and mindsets of both staff and students (Hayashi et al., 2020). Blended learning approaches were first implemented by Sri Lankan universities in 2009. After halting its higher education institutions in response to the coronavirus illness (COVID-19), Sri Lanka has accomplished a remarkable transition to online tertiary education, although institutions only partially implemented their plans at first (Hayashi et al., 2020). However, the higher education institutions are facing enormous challenges for their implementation and effectiveness. There is a need to find solutions to their problems.

6. RESEARCH QUESTIONS

There are three main research questions.

1. What are the main challenges in higher education institutions when practicing blended learning (BL) courses?
2. How do I find the procedure to enhance an effective blended learning model in higher education?
3. How a demarcated learning management system can address and reinforce the need for HE institutions to implement the BL courses.

7. RESEARCH METHODOLOGY

This study examines the effectiveness of a blended learning approach, combining in-person and online sessions, to facilitate student learning. This study adopted a mixed-methods approach to evaluate the effectiveness of the blended learning strategy as an instructional approach to support undergraduate teaching and learning in higher education institutions. It was conducted in the Faculty of Management Studies and Commerce, University of Jaffna, during a five-year period from 2014 to 2018. The goal of this study was to see if face-to-face learning with teaching presence and studying with online learning through the Moodle Learning Management System (LMS) could improve the learning experience and achievement of the students. It also investigated whether the components of blended learning design together with learner characteristics and educational background predict learning effectiveness. Cluster sampling was used because students are already divided into naturally occurring clusters for subject groups and courses. Therefore, cluster sampling was

appropriate for the context of a university because the researcher was able to select intact groups of students without disturbing the course and academic environment of the university. The study population was made up of 500 undergraduate students selected from the Faculty, five lecturers and four administrative staff members to make a total of 509. For the purpose of the study, 100 second year, first semester students were selected out of the 500 as participants in the experimental group, they were selected from three different subjects to see whether such a blended approach could be suitable for different subjects of study.

Therefore, this quasi-experimental study utilized a qualitative research method to compare the effect of blended learning and conventional instruction. For the experimental group, the study applied blended learning with a specific framework concerning the combination of face-to-face instruction and online instruction via Moodle, while the control group received conventional instruction with customary classroom lectures. The students were provided with e-resources, online learning materials, assessments and self-testing as well as technology which could ease non-classroom based interaction. The control group received customary teaching, with three hours of face-to-face lectures weekly, and further instruction in printed material. The materials prepared for the study included the lesson objectives, introduction to the lesson, the lesson, self-assessments, tutor marked assignments, lesson summary, lesson conclusion, and reference or further readings. Each year, the control group consisted of 10 students, two lecturers, and one administrative staff member. The researcher replicated this study through several study years; however, the instruction was five weeks long and while the same curriculum was taught, the

difference between the two class types was the delivery method of the instruction and the amount of technology used in the lesson.

Furthermore, the pre-test and post-test were used as the instruments of assessment to measure the students' learning achievement. The pre-test was given at the beginning of the experimentation to measure the knowledge of the subjects before the teaching approaches were conducted. In the study, the post test would be administered at the end of the study that is after five weeks of the treatment to measure the learning achievement of the students. The comparative data collected from the two set of test scores would provide a quantitative platform to evaluate the effectiveness of blended learning over the face to face instruction. In addition, a very strong qualitative design was used to explore in depth participants' perception and experience, and their struggles. In total, 109 people were interviewed as part of the focus groups; one super group (one group) of eleven participants, one group of ten subgroups, and one group of thirteen participants (representing the school administrators) explored students', lecturers' and administrators' perceptions of blended learning. Observation was also used as a method of gathering data and was used to observe student engagement both within the customary classroom context and the LMS environment. Other factors contributing to the data gathered included activities completed within Moodle, learner engagement and interaction and engagement with the online materials. Multiple measures of testing, interviews, observation, and LMS-based evidence were used to assess the overall effectiveness of blended learning in the selected higher education program.

DATA COLLECTION

Two types of data were gathered and classified for this investigation. There were two different types of information: secondary data and primary data. The learning management system was used to gather the preliminary data, which was based on observation, focus group interviews, a review of the literature, and a prototype. The three main categories of data collection methods identified by Bassey (1999) are as follows: "asking questions (and tuning in eagerly to the appropriate responses), observing events, taking notes, and reading documents." Each of the three methods was applied in this study: documents were read to learn about the analyses of other analysts, questions were posed (through surveys and conversations), and students were watched (in the study zone and the LMS).

Since many data collection methods collected comprehensive and in-depth accounts of students' experiences, they were employed. Focus group talks aid in determining the pertinent and useful topics that underpin the study questions. When he states that there is no one best way to gather data, Bassey (1999) refers to this as "eclectic" since researchers prepare case studies using whichever techniques, they deem relevant and workable. For this reason, "multiple methods of data gathering" were used.

Data that currently appears in other studies and was gathered from publications, enrolled courses, scientific journals, and other university-affiliated sources is known as secondary data.

8. RESULTS AND DISCUSSION

This study looked at three questions, and the results are explained below. The conclusions in the three research questions were based on the data analysis of 500 second-year faculty members of management studies and commerce students.

Question 1

What are the main challenges for higher education institutions when they are practicing BL courses?

With regard to the first research question, the findings for the main challenges in higher education institutions were summarized from three different perspectives: students, lecturers, and administrators.

Students: refers to learners' perspectives

The main challenges faced by students at BL depend on the institutional environment, interactions, and learning technology support and resources.

With only a few computers in the e-lab, there aren't many internet resources available on the HE campus. Students, therefore, don't get many opportunities to use those machines. Students are unable to access free internet connections from their devices, despite the fact that the facility should have internet connections available for instructional purposes (Anthony et al. 2019). Particularly for first-year students who require additional technical support to use the learning management system, students must constantly acquire new technologies.

Communication between students is crucial in the online system. According to Padilla-Melendez et al. (2013), communication gives students the chance to improve

their learning outcomes by providing feedback that may come from their interactions with classmates in a blended learning environment. However, during the focus group discussion, they brought out the lack of possibilities for their LMS group discussions; while they occasionally have a student forum, not all of the students participate actively in it. Nobody keeps an eye on their exchanges. A system is required to motivate students to take part in forum discussions.

Online learning is more effective when it makes use of learning resources and technology. Students are having difficulty managing resources and utilizing technology. Students are accessing their e-learning courses through mobile devices. Over 95% of students use their smartphones for their online coursework. The download of lecture notes and other pertinent information is giving them trouble.

Lecturers refer to academic staff, teachers, mentors, or instructors' perspectives.

Teachers must always learn new technologies. They struggle with a lack of technological design expertise as well as a lack of ideas for incorporating online instruction into their pedagogy.

They are also having trouble keeping tabs on the development and pace of a pupil. For instance, instructors can provide marks or post-assessments to students who upload their finished assignments. There are no useful methods in the system that allow the instructor to assess a student's development over the duration of the lesson. The platform for assignments is not consistent.

Even though the lecturers are interested in incorporating e-learning technologies into their teaching practices, they are unaware of the proper blended learning paradigm. To acquire the skills necessary for BL teaching in an LMS environment, there are no specialized specialists or courses (such as staff development courses for probationary personnel) available.

Curriculums for higher education are specifically created for in-person instruction. To understand how to create mixed learning activities in a blended format, lecturers for various courses (including practical components) do not have access to best practices. The primary issues arising from the conversation with the teaching staff are outlined; based on their knowledge and expertise, they are presently implementing the blended approach. Therefore, more research is needed to figure out how to creatively create a blended model that works for various course materials and subjects.

Administrators: perspectives

Administrators must provide pedagogical support by assigning specialists who advise lecturers on how to create blended course materials. The findings indicate that the LMS's developed BL courses do not have a review procedure. Higher education thus needs professionals to assess the course design and offer additional suggestions on how instructors might enhance their pedagogies. To encourage and recompense instructors who embrace BL, tenure and promotion plans must to be reassessed (Bokolo Jr. et al. 2020). Institutions of higher learning are struggling with a lack of desire to create and apply successful models. Administrators stated that motivating

employees to work better is crucial to staff design. The issue of institutional collaboration is also covered. There is no practical way for teaching staff and students to learn each other's practices, share their experiences, and mutually solve their problems.

Question 2

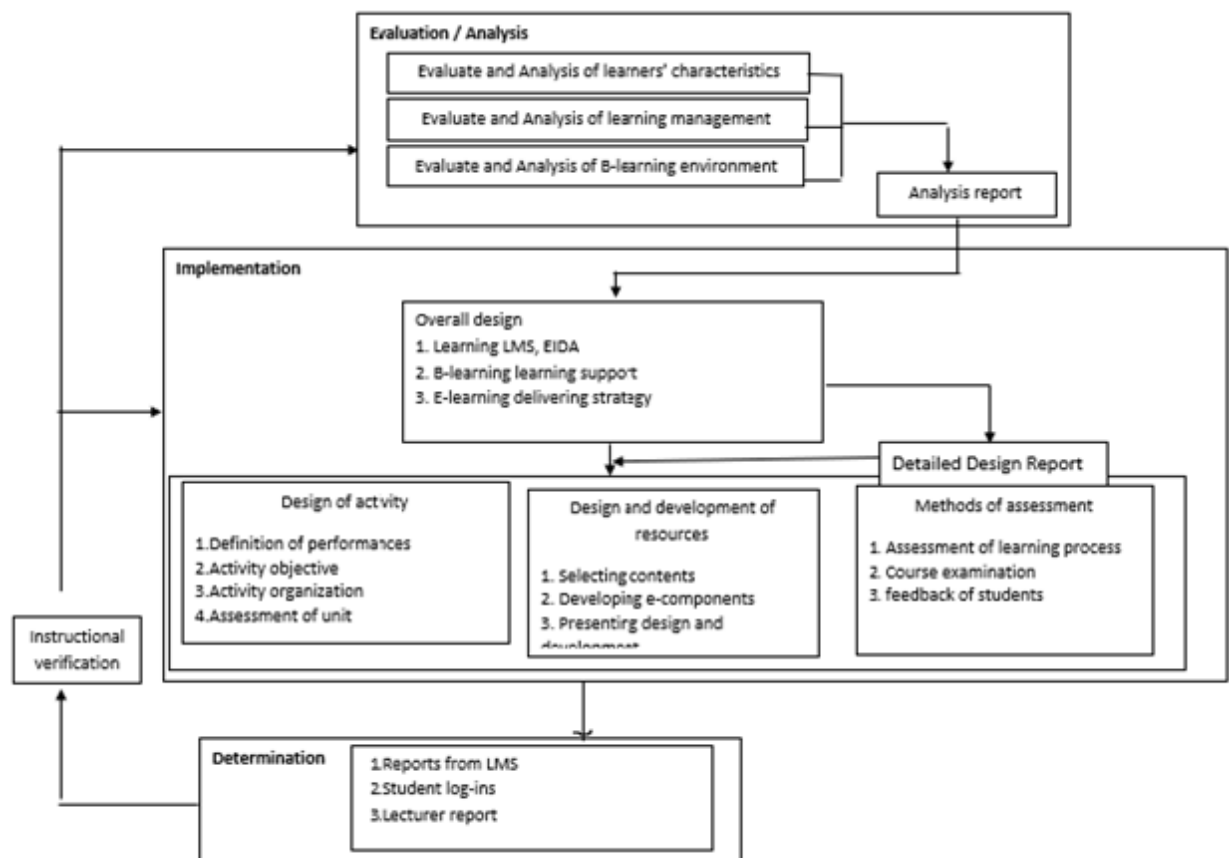
How do I find the procedure to enhance an effective blended learning model in higher education institutions?

Through the use of a learning management system and information technology, higher education institutions are introducing blended learning courses. Both teachers and students are not very satisfied when they practice BL courses. Utilizing some of the blended learning components in a way that supports pedagogical implementation is the primary problem. In order to establish an efficient method for teaching and learning, the researcher looked at various combinations of blended learning components. Before blended learning is put into practice, it is meant to give instructors a conceptual framework and useful design assistance.

Developing a course from scratch increases the likelihood of success and optimizes the advantages of both traditional and online teaching modalities. Instructors can reevaluate which delivery technique best suits each course aim in light of the demands of their students. It is recommended that educators who are new to blended learning begin with the low-impact blend. Once they have increased their knowledge,

self-assurance, and experience, they ought to switch to the medium-impact strategy. Use the medium-impact blend as directed.

The researcher uses an EIDA approach (Figure 1) with a modified Khan Octagonal framework and learning management system to create a clear and efficient blended learning model. The structured modeling aligns with recent best practices in BL design frameworks (Boelens et al., 2023) and supports learning impact across multiple domains (Adekola, Dale, & Gardiner, 2022). These procedures choose a well-thought-out BL model with capability-level-organized process categories.



learning and teaching at all levels. These levels facilitate process comprehension,

provide a foundation for BL instruction, and direct BL development until optimal practices are achieved.

9. CONCLUSION

The process of enhancing teaching and learning through blended learning in higher education requires selecting a model that is appropriate for the specific institution. This research has established an EIDA model and presented a defined learning management system for higher education institutions to improve their teaching and learning in order to maintain their blended learning practices, taking into account the current issues that these institutions confront.

The research made three main contributions:

1. Increasing the corpus of information about BL. A deeper comprehension of the positive and negative attitudes that students and lecturers have toward big learning (BL) as well as the difficulties that educators, learners, and administrators encounter when implementing BL was attained.
2. Found a broad answer to the issues faced by lecturers and the ignorance of students about the use of technology in the classroom. Educational institutions may find it easier to create a successful BL model using a modified Khan octagonal framework if they use the proposed EIDA model.
3. Developed the suggested remedy through a BL course with a prototype LMS built on Moodle. In addition to the several LMS functions and practices to support their pedagogy and didactics for BL at the tertiary level, the demonstration demonstrates how such a solution aids in teaching and learning. This aligns with current research

on how LMS quality and teacher satisfaction drive successful blended models (Tawafak et al., 2023).

In conclusion, the researcher found that the conceptual solution that was suggested, EIDA, is a useful way to address the research problem that, this study tackled and is important in an academic setting, particularly in higher education. This conclusion was reached after utilizing a variety of validation strategies.

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