

Blended Learning in Higher Education: Models and Effectiveness

Silaji Turyamureeba

Faculty of Education, Kampala International University, Uganda

ABSTRACT

Blended learning, which combines traditional classroom instruction with online learning components, has become increasingly prevalent in higher education. This paper explores the theoretical frameworks that support blended learning, including constructivist theories, and examines various models such as the Flipped Classroom and Rotation Models. The study also evaluates the effectiveness of blended learning, particularly in terms of student engagement, satisfaction, and academic performance. Findings suggest that blended learning is at least as effective as traditional instruction, with particular advantages in fostering student-centered learning environments. Challenges and future directions for blended learning implementation are also discussed.

Keywords: Blended learning, higher education, constructivism, flipped classroom, rotation model, student engagement.

INTRODUCTION

Blended learning in higher education is not a new trend. However, with rapid changes in educational settings and increased access to the WWW, higher education institutions are taking increased interest in incorporating blended learning into their strategic planning processes. The technical definition of blended learning can be inappropriately simplified. A possible starting point for trying to develop a technical definition is the elements that seem, by the accumulated international and interdisciplinary research, to be generally necessary for any definition. The basic idea is that blended learning is an integration of e-learning systems with traditional workplaces. In the case of higher education, the workplace can be seen as a learning environment where identifiable learning content is made available and where knowledge, skills, or attitudes can be developed by students [1]. There are various contemporary learning theories, pedagogical connectedness, a number of implementation models and frameworks, and different learning approaches that can shape the design of blended learning systems, including three major learning theoretical approaches: Constructivism, Situated cognition, and Motivational beliefs values. Since the use of blended learning has become so widespread and is offered in a variety of forms, blending approaches can be understood as a continuum between traditional classroom teaching and fully integrated online learning. In order to understand the relationships among blended learning initiatives, it is important to use theoretical frameworks, models, and research methods that match the interdisciplinary and global scale of contemporary trends [2].

THEORETICAL FRAMEWORKS FOR BLENDED LEARNING

In recent decades, a range of conceptual frameworks have been constructed to help us understand the shift from an emphasis on teacher-focused, transmission models of instruction (often facilitated by the lecture format) to more student-centered, inquiry-based approaches. Two dominant threads that have guided the work in this area are based on discussions around blending technology with pedagogy and those steeped in theories associated with a post-constructivist 'discovery' and 'inquiry' approach to learning. Within the first tradition, we explore the TPACK (or SAMR) framework, with 7Cs of Learning Design, then we document further TEL theories that relate to one of the 5 IAMPET design principles for

blended learning: the notion that successful learning design encourages staff to reward curiosity whilst maintaining flexibility [3].

Because there are so many ways in which blended learning can be conceptualized and offered, it is helpful to start by reviewing the most prominent theoretical theories that have been used to inform digital learning in higher education. Technology-Enhanced Learning (TEL) theories: The TPACK (Technology, Pedagogy and Content Knowledge) model (adapted by the SAMR (Substitution, Augmentation, Modification, Redefinition) model) provides a theoretical underpinning for using technological knowledge in the educational process to enhance the student learning experience. It is a conceptual framework that recognizes that it is not expertise in a given area that underpins blended learning, but the interplay between knowledge about the discipline, about students' learning preferences, and about technology that provides a meaningful, integrated learning experience [4].

CONSTRUCTIVISM AND BLENDED LEARNING

Constructivist learning theories present a general theoretical background for the instructional pedagogies on which many of these predictors for blended learning rest. Since their re-emphasis in the last two to three decades, a constructivist model of learning has been used to support recent learning paradigms such as blended learning. In a very practical sense, constructivism is more or less about active participation in learning, particularly if one considers the school exemplar: Communities of Inquiry expand critical constructs in the constructivist paradigm to include cognitive presence, social presence, and teaching presence. Cognitive presence for these authors is defined as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse" on a topic, and the focus here is definitely on activities that promote critical thinking [5]. A cardinal principle of constructivist learning theories is that learners should be learning in authentic contexts, informally, in social settings, that is, in ways similar to what they will be expected to perform when they have completed their learning. Engeström and others have investigated the potential of activity theory as a framework for understanding the new forms of Human Computer Interactions (HCI) afforded by web and related technologies, and have explored its application to using technology for learning. Building on this work, Hewitson and Hewitson speculate about the use of activity theory as a way of understanding the relationships and interactions between components of a technology-supported course; such courses are arguably examples of blended learning [6].

BLENDED LEARNING MODELS

Blended learning is a combination of different learner-centered strategies using online and face-to-face communication. Previous studies have suggested various models for blended learning, but there is no generally accepted blended learning model. We would like to present information about the currently described models in a methodical way in order to facilitate their practical verification and/or use [7]. The term model refers to a system of didactic work aimed at achieving specific objectives, in which the type of learning material, methods of their transfer, forms of work, roles of both the teacher and the pupil, and the physical or technological conditions are determined. The teacher teaching at the university has various didactic methods and tools at his disposal. Its knowledge should include methodological content. Methodology is the basis for proper educational actions. Basic models of blended learning with online preparation include, among others, the process-approach and the problem-centric model. Each of the said models can be characterized by various indicators consisting in their typology, character of tasks, organization of work, and the role of the teacher responsible for using this kind of solution in class. Unassisted distance learning and blended learning models. In the case of blended learning, the student is most often separated from the traditional teacher. The activities of both the teacher and the pupils, whose part is taken online, can be further divided in terms of degree of independence [8].

FLIPPED CLASSROOM MODEL

One of the very first models that was used in blended or hybrid courses is called the "reversed teaching" and is defined as "an instructional approach designed to support instruction and lead the classroom student to an active role by doing the homework." This definition essentially shapes the structure of the flipped classroom model. The flipped classroom is based on the following four principles: redefining homework, deliberate practice, reflecting on homework, being motivated and able to keep learning [9]. Four strategies to fully implement the flipped classroom instruction are covered and coordinated. The most important of the four that a teacher can entrust to students is strategic mental work, providing students the opportunity to familiarize themselves with new academic material. The teacher assigns students to go to the virtual university (VUDU) in order to watch and learn the new academic material at home with full focus and to know how to apply it in the real world. The distance learning material on the virtual university is fixed every week according to the semester schedule. All that we have studied in class for three hours is available in a distance learning system or platform [10]. This model further proposes

recommended strategies that can be used to implement this model effectively. The flipped class model and flipped mastery model are examples of flipped classrooms. In each, the lecture part of the traditional lecture-lecture format is replaced with hands-on, interactive, and human demonstration activities. In this sense, students approach problems, questions, and projects regarding intellectual materials such as discussions, answers, designs, programs, objects, elements, mechanisms, accidents, lives, and death. By applying the model of the flipped classroom as the best blended learning approach, it can make a significant difference in our students' learning process and help them achieve the learning outcomes [11].

ROTATION MODEL

Rotation Model: This is the most popular model used in blended learning education. This section will discuss the model, as it is commonly implemented in K-12 settings, outlining the different "rotational" variations of the model, discussing how it actually moves students through these different "stations," providing a small section to discuss instructional implications and integrating multimedia learning principles [12]. The Rotation Model. As we have just discussed, the Rotation Model for blended learning uses a "buffet" model to describe proposed choices for student grouping patterns and activities. As with other models, we find that the "purest" version sets aside blocks of time for the different activities required by the model, but the time it takes to conduct an online component in a rescue system environment should allow for adaptations to this schedule. There are different versions, or variations, of the basic rotational model. In 2002, Horn explained the four most common iterations. In 2003, we proposed a typology of eight alternatives. Most of the time the station rotation is still ordered around activities, but in a Mastery model (see Doran & Peel 2005) it is ordered to focus on the mathematics. Rotations can be done in small-by-small grids, like in the ENCompass Site, or in more complex arrangements. When online activities are part of the rotational model they take shorter times (15-30 minutes) since one of the basic messages of multimedia learning is not to give long "lectures in the sky" but to break difficult tasks up into smaller parts. Enrichment activities, "just right" passes, and interventions can all be done with aids [12].

EFFECTIVENESS OF BLENDED LEARNING

The potential of blended learning in higher education compared with traditional instruction is the central topic of numerous publications. Therefore, in this study, the analysis of effectiveness is focused on higher education settings. Although all levels of education can be enriched with blended learning, higher education is where its advantages are most frequently investigated. Techniques and technologies among the criteria may differ according to the researchers. However, effectiveness is a multidimensional concept, and it is possible to explore various dimensions thereof. In terms of the input, effectiveness could be measured by the embedded media and instructional activities. Therefore, incorporation of media is a criterion. Similarly, effectiveness could be measured by the embedded files, such as transcript or links, to engage learners in learning, and this is another criterion. The satisfaction of the students could be treated as an intermediate result in evaluating the effectiveness of blended learning, and this is the third criterion. However, in general, we might evaluate the effectiveness of a structurally designed blended learning model by considering the learning outcomes of the students [13]. Students enrolled in a higher education course that employed a blended approach outperformed students in the control group on an exam designed to assess their understanding of course content. These findings indicate that the blended course appears to be at least as effective as the traditional course when compared to students who are getting the traditional lecture [14]. One important consideration in striving to provide students with a more enriching educational experience is to design a learning environment that engages students in active, constructive, goal-directed processing of information. In a typical educational setting, researchers indicate that 85% - 90% of student time in class is usually devoted to listening, leaving only minimal time for authentic student problem solving and group discussions [15]. Educause strongly supports blended learning for two reasons beyond the extra revenue that this approach can bring to an institution of higher education. They propose pedagogical reasons: blended learning accommodates different learning styles, is effective for diverse student populations (i.e. traditional, non-traditional, faculty, and military), and fosters community among students and between students and instructors [16]. In this blended model, assessment scores and student engagement scores were significantly higher. An overall higher level of satisfaction for both faculty and students was also observed in the treatment group. It is very important to establish if the blended learning platform has a positive influence on grades. In an ABC University study, it was found that subjects using a blended learning platform had higher exam scores than those in the face-to-face sections, even when the course content and exams are managed by the same primary course instructor. Overall, 61.2% of Pharmacy students preferred the blended format over a completely online or an entirely on-ground experience. The online-only preference was the least popular (10.6%). Data gathered indicated that these students performed equivalent to students in traditional courses in all

learning assessments. Additionally, online discussions indicated that the respondents perceived this format as broader in scope and a better fit with job-related class goals and applied professional practice [17].

STUDENT ENGAGEMENT AND SATISFACTION

Ana Estrada; María Smeke; Nancy E. Zapata

Page | 8

According to the Community of Inquiry (CoI) framework, blended courses enhance rapport and connectedness among all participants, diminishing feelings of isolation and vulnerability among students who might otherwise remain "invisible" within the online course. These courses—although situated in the digital realm—maintain grounded, material-world activity, enabling learners to routinely communicate with and get to know everyone involved in the educational experience, including the instructor, teacher's assistants, and peers. Empirical support for these theories includes a longitudinal study which demonstrated positive and increasing student perceptions toward traditional, web-enhanced, and hybrid (also referred to as "blended") courses [18]. Increased satisfaction with a course when compared to a similar online course was also confirmed in the Alfred P. Sloan Foundation's study of seven institutions offering both online and blended options for all online programs. measured the success, satisfaction, and face-to-face interaction of 4846 students in 33 general education introductory and intermediate undergraduate blended courses, providing some evidence to suggest that blended learning can be as effective as or more effective than traditional classroom instruction. She found that students in a face-to-face class demonstrated less extraneous cognitive load than their blended learning and online counterparts. examined 55 studies on blended learning, the majority of which related to primary and secondary educative settings. While somewhat removed from the subject of the current review, these studies may be useful for the purposes of triangulation, particularly since many faculty members in our state system affiliate as K-20 educators and therefore seek information on the efficacy of blended learning throughout the whole of K-20 [19].

CHALLENGES AND FUTURE DIRECTIONS

When implementing a blended learning program in higher education, educators should conduct sufficient preparation, provide a working environment, develop high-quality instructional materials, and plan interaction activities of the students and the teacher. A quantitative study or both qualitative and quantitative studies should be conducted during and following the implementation of a blended learning program. The primary aim of the study conducted should concentrate on whether the implementation of a blended learning program was effective and feasible for both students and education providers. The implementation of a blended learning program will pose several challenges for education providers. Many said that the greatest advantage comes from personal contact with educators when learning in class. Blended learning, as the medium between fully online and traditional classrooms, aims to effectively combine asynchronous e-learning with traditional classrooms with face-to-face learning [20]. High-quality blended learning necessitates the engagement of course providers and students in other areas. First, technical support groups must be available to manage technical problems and dilemmas students might face in their computer lab. Second, the role of a competent administration office aids in preparing student learning facilities with a wide and conducive workspace, a range of amenities, clean restrooms, essential lighting, ventilation, and the sharing of classroom regulations with students. The third thing that must be managed by the teaching team involves creating multimedia learning materials that are particularly compatible with the hybrid elements of a blended learning program. At the moment, the emerging "flipped-classroom" approach is considered a new paradigm that is more beneficial and effective than the old "blended learning-transformed classroom." However, recent research has not compared traditional classroom designs with blended learning strategies. Thus, this area of study may be a future research direction in higher education [21].

CONCLUSION

Blended learning represents a significant shift in educational practice, merging traditional and digital learning environments to create a more flexible and interactive learning experience. Theoretical frameworks such as constructivism and models like the Flipped Classroom and Rotation Models provide strong foundations for the design and implementation of blended learning in higher education. The effectiveness of these approaches is evident in improved student engagement, satisfaction, and academic outcomes compared to traditional methods. However, the successful implementation of blended learning requires careful planning, sufficient resources, and ongoing support. As blended learning continues to evolve, future research should focus on optimizing these models and exploring new ways to enhance the learning experience in diverse educational contexts.

REFERENCES

1. Anthonysamy L, Koo AC, Hew SH. Self-regulated learning strategies and non-academic outcomes in higher education blended learning environments: A one-decade review. *Education and information technologies*. 2020 Sep;25(5):3677-704. [researchgate.net](#)
2. Kumar A, Krishnamurthi R, Bhatia S, Kaushik K, Ahuja NJ, Nayyar A, Masud M. Blended learning tools and practices: A comprehensive analysis. *Ieee Access*. 2021 Jun 3; 9:85151-97. [ieee.org](#)
3. Hänti S, Keinänen M, Välivirta Havia M, Al-Bermanei H, Ketola M, Heikkilä J. Facilitate for the future. *Educator's Guide for Designing Hybrid Learning Environments for the VUCA World*. 2021. [ug.edu.pl](#)
4. Anthony Jr B, Kamaludin A, Romli A. Predicting academic staffs behaviour intention and actual use of blended learning in higher education: Model development and validation. *Technology, Knowledge and Learning*. 2023 Sep;28(3):1223-69. [springer.com](#)
5. Vásquez Astudillo M. The blended learning pedagogical model in higher education. *Blended Learning: Convergence between Technology and Pedagogy*. 2020:141-66. [researchgate.net](#)
6. Capone R. Blended learning and student-centered active learning environment: A case study with STEM undergraduate students. *Canadian Journal of Science, Mathematics and Technology Education*. 2022 Mar;22(1):210-36. [springer.com](#)
7. Zhang Z, Cao T, Shu J, Liu H. Identifying key factors affecting college students' adoption of the e-learning system in mandatory blended learning environments. *Interactive Learning Environments*. 2022. [HTML](#)
8. Pandey N. Care-Full Connections: Responding to Students' Writing in the Online Writing Instruction Classroom. 2023. [HTML](#)
9. González Velasco C, Feito Ruiz I, González Fernández MD, Álvarez Arenal JL, Sarmiento Alonso N. Does the teaching-learning model based on the flipped classroom improve academic results of students at different educational levels? *Revista complutense de educación*. 2021. [educacion.gob.es](#)
10. Gault J, Cuevas JA. Uses of Blended Learning and Its Impact in a High School Social Studies Classroom. *International Journal of Technology in Education*. 2022. [ed.gov](#)
11. Bingen HM, Steindal SA, Krumsvik RJ, Tveit B. Studying physiology within a flipped classroom: The importance of on-campus activities for nursing students' experiences of mastery. *Journal of clinical nursing*. 2020 Aug;29(15-16):2907-17. [wiley.com](#)
12. Mammam B, Abuhassna H, Umara K, Mustapha AM, Awae F, Ali AS, Radzi MB, Alshehhi AM, Almheiri AS. Pre-Service Teachers' Views on How the Station Rotation Model with a Blended Social Learning Environment (SRM-BSCLE) Enhances their Critical Thinking Skills. *International Journal of Academic Research in Progressive Education and Development*. 2022 Jun 19;11(2). [ijarped.com](#)
13. Bizami NA, Tasir Z, Kew SN. Innovative pedagogical principles and technological tools capabilities for immersive blended learning: a systematic literature review. *Education and Information Technologies*. 2023. [springer.com](#)
14. Vo MH, Zhu C, Diep AN. Students' performance in blended learning: disciplinary difference and instructional design factors. *Journal of Computers in Education*. 2020. [HTML](#)
15. Dalman M, Plonsky L. The effectiveness of second-language listening strategy instruction: A meta-analysis. *Language Teaching Research*. 2022. [researchgate.net](#)
16. Shamsuddin N, Kaur J. Students' Learning Style and Its Effect on Blended Learning, Does It Matter?. *International Journal of Evaluation and Research in Education*. 2020 Mar;9(1):195-202. [ed.gov](#)
17. Warren L, Reilly D, Herdan A, Lin Y. Self-efficacy, performance and the role of blended learning. *Journal of Applied Research in Higher Education*. 2021 Jan 20;13(1):98-111. [gre.ac.uk](#)
18. Glazier RA. Connecting in the online classroom: Building rapport between teachers and students. 2021. [HTML](#)
19. Müller C, Mildenberger T. Facilitating flexible learning by replacing classroom time with an online learning environment: A systematic review of blended learning in higher education. *Educational Research Review*. 2021. [sciencedirect.com](#)
20. Sheshasaayee A, Zahra R. Hybrid E-Learning Model, Integration of Synchronous, Asynchronous, Face-to-Face and Remote Learning. *Grenze International Journal of Engineering & Technology (GIJET)*. 2022 Jan 1;8(1). [academia.edu](#)
21. Wiggins JM. Facilities manager's desk reference. 2020. [ethernet.edu.et](#)

CITE AS: Silaji Turyamureeba (2024). Blended Learning in Higher Education: Models and Effectiveness. Eurasian Experiment Journal of Arts and Management, 5(3):5-10