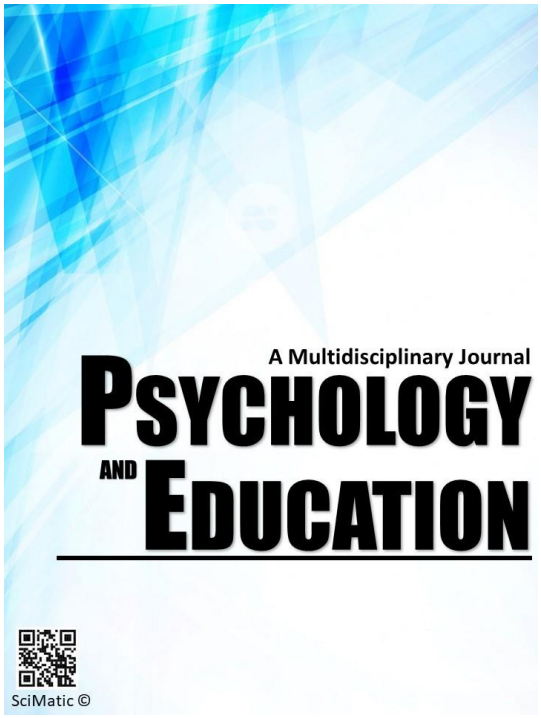
BLENDED LEARNING EDUCATION: THE EFFECTIVENESS OF NEW WAYS OF TEACHING AND LEARNING IN ENHANCING STUDENTS' ACADEMIC ACHIEVEMENT



PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

2022
Volume: 5
Issue: 1
Pages: 348-355
Document ID: 2022PEMJ325
DOI: 10.5281/zenodo.7273062
Manuscript Accepted: 2022-02-11

Psych Educ, 2022, **5**(1): 348-355, Document ID: 2022PEMJ325, doi: 10.5281/zenodo.7273062, ISSN 2822-4353

Research Article

Blended Learning Education: The Effectiveness of New Ways of Teaching and Learning in Enhancing Students' Academic Achievement

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Abstract

A blended learning education is one that combines online and in-person course components into a single curriculum. This study aimed to investigate and determine the effectiveness of blended learning in the context of new ways in teaching and learning to enhance students' academic achievement. The study applied a quantitative research design where descriptive statistics were used for the respondents' responses on the effectiveness of new ways of teaching and learning in enhancing students' academic achievement during blended learning education. The researcher tabulated and processed the data for the statistical analysis after retrieving the questionnaire. Furthermore, this study used a statistical method by calculating the data from the mean value and standard deviations and utilizing a one-way ANOVA. Based on the findings, the mean value, standard deviation, and descriptive interpretation of innovative teaching techniques and developing teaching methods or new ways of teaching in the context of blended learning education were determined. Based on the findings, the average value of the indicators under Table 1 shows (mean = 3.97; SD = 0.27), which means it has been competent. The teachers at San Luis National High School have been developing teaching methods that are appropriate for teaching and learning. The findings show a statistically significant difference at the level of statistical significance (0.05) between the means of the three (3) sources of variation, which are the teaching method, teaching technique, and technological advancements used in the classroom. Therefore, the teaching method, technique, and advancement of technology demonstrations to lay the groundwork for why and how to conduct the class and help set expectations for students at school.

Keywords: *technology, blended learning, techniques, teaching methods, advancement*

Introduction

The COVID-19 implications for educational institutions have been catastrophic, resulting in school closures or non-operation, leaving teachers trapped at home with little to no access to digital platforms. The fast transition from conventional to ICT-integrated systems as the primary tool for carrying out the teaching-learning process has presented a number of challenges for students and teachers, particularly those who lack technological literacy. In the Philippines, a sudden shift to online education sparked a divisive discussion since it radically changed how students were educated. Due to the impossibility of face-to-face instruction in a classroom, students switch to online learning to finish their degree (Indrawati, 2020; Saro et al., 2022).

The use of computers in education has undergone a significant revolution in the last ten years. Starting with the use of computers in education and moving on to the use of the Internet in education, blended learning is a concept that depends on technology to deliver educational content to the learner in a good and efficient way. There is disagreement over the kind and scope of the curricular changes that are necessary to stay current with the age of computers and information technology, despite the fact that many educators stress their relevance (Khader, 2016). The majority of parents, students, and educators agree that the best approach to educating future generations so they can adapt to the changing environment is to prepare them with the fundamentals of computer science and then use them. The prevailing belief in industrialized nations is that schools must transform into the information age because doing so is essential to their existence and advancement (Bani Hamad, 2011; Khader, 2016).

In the context of distance learning, blended learning is one of the most cutting-edge approaches to education, helping to address issues such as the knowledge explosion, the rise in educational demand, and the problem of crammed lectures. Blended learning also enables workers to be trained, educated, and rehabilitated without having to leave their jobs, as well as housewives, helping to increase literacy rates and eradicate illiteracy. By allowing for live interviews and discussions on the network, providing updated information suited to learners' needs, and providing simulations, animations, practical events and exercises as well as practical applications, blended learning significantly improves learning effectiveness (Al-shunaq et al., 2010; Llego, 2021).

There are various definitions of blended learning; (Ismail, 2009) defined it as the use of technological innovations in blending the two methods of education, face-to-face and distance education, to bring about a

face-to-face interaction between the faculty member, who is a teacher or a mentor, and learners through these innovations. These innovations are not required to have specific electronic tools or specific quality with the availability of learning resources linked with Hassan (2010). Furthermore, the approaches and practices of the new normal learning perspective provide teachers with the tools they require to create the pedagogy, transition, and instruction for online classes. It offers knowledge and practical advice on how to raise the pedagogical effectiveness of online education. It innovates evaluation structures and procedures while preserving the formation of significant bonds through learners' meaningful experiences. In the new normal of learning, the innovative structure in teaching trends, techniques, and strategies used in online learning must be student-centered. In order to enhance teaching and learning, it makes use of the new normal design principles. On the other hand, teachers adapt the materials, methods, and suggestions to the needs of their individual classrooms and the growth of the new standard online context (Itow, 2020; Saro et al., 2022).

In several studies, face-to-face interaction, which increases interaction between students and the educator (teacher) and students, students among themselves, and students and content, are some of the features and characteristics that distinguish blended learning. Other features and characteristics include meeting each learner's needs in accordance with his abilities; integrating the structural and final evaluations; and reducing teaching costs. Blended learning is also advantageous in the use of technological development in the design, implementation, and use of appropriate interactive learning; supporting traditional teaching methods used by faculty staff in appropriate interactive learning; providing members with training in the work or study environment with the least amount of effort and resources to achieve the greatest results; and finally enabling people to continuously apply skills to become more productive (Al-Faqqi, 2011; Al-Rimawi, 2014; Khader, 2016; Vital, 2021). In addition, a variety of innovations are being used in the teaching and learning environment, and blended learning is one of them. Although it takes time to adopt, this novel instructional technique has received a lot of support. One of these breakthroughs is the introduction of blended learning initiatives, which combine face-to-face and online teaching and learning. However, the adoption of this innovation, particularly in poor nations, is difficult. There are a lot of underlying elements that make blended learning ineffective. How users can effectively employ technology and assure participants' commitment in light of unique learner characteristics and technological experiences is one major difficulty (Hofmann, 2014).

This study seeks to investigate and determine the effectiveness of blended learning education in enhancing students' academic achievement when compared to traditional teaching and learning modalities. Several research studies have also looked into the impact of student and instructional characteristics on blended learning results. The study found that the purpose of innovative pedagogy, including the use of technology in education, is to construct the set of blended learning education. In order to move toward innovative pedagogy using technology in teaching and learning, it is crucial in this study to identify the many types of learner characteristics and how they relate to the success of blended learning (Morris and Lim, 2009).

Research Objectives

This study was conducted to investigate and determine the effectiveness of blended learning in the context of new ways of teaching and learning to enhance students' academic achievement. Specifically, this study was administered to accomplish the following objectives:

1. To determine and identify the innovative teaching techniques and developing teaching methods in the context of blended learning education;
2. To evaluate and attest to the effectiveness of blended learning education in the educational process and in teaching and learning in enhancing students' academic achievement.

Literature Review

This review presents research about blended learning effectiveness from the perspective of learner characteristics and background, design features, and learning outcomes. It also examines the effectiveness of new ways of teaching and learning to improve students' academic achievement. It also identifies the factors that are considered to be significant for blended learning effectiveness.

Blended Learning Education

Shahin (2008) sought to assess the impact of blended learning on student achievement, the development of science operations, and student trends among fifth graders at Al-Naser Experimental School in Tanta. The

most significant findings of the study demonstrated the value of blended learning as a method for delivering educational materials in a variety of ways by demonstrating a statistically significant difference in a number of ways between the mean scores of the experimental group, which studied using blended learning, and the control group, which studied using traditional methods, following the administration of the achievement test in second choice. The means of the students' grades in the experimental group and the post-application for the trend scale towards blended learning in favor of the experimental group also showed statistically significant differences.

Studies reveal that student attributes like gender have a substantial impact on academic success (Oxford Group, 2013), but no research has looked at how well males and females succeed in blended learning environments. It has been said repeatedly that prior knowledge of the internet and computer programs is crucial for the success of e-learning and blended learning (Picciano & Seaman, 2007). The thorough identification of these competencies can ultimately confirm the great likelihood of constructing blended learning. According to research, students' and teachers' abilities to participate in blended learning can greatly influence the success of e-learning and other types of learning (Hadad, 2007).

Blended Learning and its Effectiveness

According to Shraim and Khlaif's (2010) research, 75% of students and 72% of teachers lacked the knowledge and experience necessary to effectively use ICT-based learning components, which could cause e-learning and blended learning to fail. In light of the fact that blended learning involves extensive computer use, it is important to note that computer proficiency is required to successfully implement technology in education for improved learning outcomes (Abubakar & Adetimirin, 2015). Rovai (2003) noticed the importance of students' computer literacy and time management in distance learning situations and came to the conclusion that these qualities matter in online courses. Selim (2007), who argues that learners need to have time management skills in addition to computer abilities in order to be effective in e-learning and blended learning, supports this claim.

Individuals are formed with particular social identities, which cause them to perform particular roles in society. These roles are frequently uneven, which inevitably results in the oppression of one group and the supremacy of another (Harro, 2013). The credentials of subordinates in a community are determined by dominant groups, who establish and then uphold their rules (Kirk & Okazawa-Rey, 2013; Tatum, 2013). Therefore, it is not always true to say that public education is provided equally to everyone and that all students have equal opportunities to succeed. It makes sense that education has never been equally available to all pupils enrolled given the historical underpinnings of public education in the United States. There are some very real obstacles to change when attempting to equalize the educational environment for all students in public schools, whether it be the quality of the teacher, the socio-economic status, or the unclear educational focus of the child, the teacher, the school or school system, their access to technology, students' diverse backgrounds, or other roadblocks to change.

The Design and Features of Blended Learning Education

As per research (Willging & Johnson, 2009), the absence of learner interaction in online courses results in failure and ultimate drop-out, and a lack of learner connectedness was identified as an internal element contributing to learner drop-out in online courses (Zielinski, 2000). Additionally, it was mentioned that students may stop participating in online and blended learning if they are unable to make friends, become disengaged, and experience emotions of loneliness (Willging & Johnson, 2009). Blended learning can be effective when students interact with teachers and their classmates because their withdrawal occurs in their absence (Astleitner, 2000). According to Loukis, Georgious, and Pazalo's 2007 study, learners' evaluations of a system's usability, dependability, and quality influence how effective the learning process is and can be in blended learning. System functioning may have a significant impact on learner success in blended learning (Pituch & Lee, 2006), which could result in the failure of such learning projects (Shrain, 2012). Therefore, it's crucial to assess technology quality to make sure blended learning is effective. After investigating learner perceptions following the use of a learning management system, Tselios, Daskalakis, and Papadopoulou (2011) discovered that the actual system use determines the usefulness among users. It is reiterated that a system with a slow response time cannot be deemed suitable for blended learning or e-learning, especially in situations when bandwidth is at a premium (Anderson, 2004). The utilization of Moodle and its tools is examined in this study in relation to the possible efficacy of blended learning.

Face-to-face interactions are a key component of

blended learning arrangements, and learners' favorable sentiments toward these interactions may indicate the success of the latter. A study by Marriott, Marriott, and Selwyn (2004) revealed that students preferred face-to-face instruction because it promoted social interaction and the development of communication skills learned in the classroom. The only way they preferred the online course was as a supplement to traditional face-to-face instruction.

Students' Achievement and Outcomes

This study examines performance, motivation, satisfaction, and knowledge construction as outcomes. As much as cognitive elements, like course grades, are used to measure learning results, affective factors, like intrinsic motivation, may also be used to indicate learning outcomes. This is why motivation is viewed here as an outcome (Kuo, Walker, Belland, & Schroder, 2013). According to research, motivated online students are more likely to stick with their courses (Menager-Beeley, 2004). According to Sankaran and Bui (2001), learners who were less motivated did poorly on knowledge examinations, whereas those who were very motivated to study performed well in school (Green, Nelson, Martin, & Marsh, 2006). According to Lim and Kim (2003), learner interest serves as a motivational component that encourages student involvement in learning, which may result in improved learning effectiveness in blended learning.

Studies contrasting blended learning with conventional face-to-face classes have found that learners perform as well in mixed learning and that the delivery modality has no influence on their performance (Kwak, Menezes, & Sherwood, 2013). According to a different study, when online learning is combined with traditional course delivery, learning outcomes both increase (Stacey & Gerbic, 2007). As previously mentioned, this improvement might be a sign of how effective blended learning is. To establish the possibility of blended learning effectiveness, our study explores enhanced performance while taking grades from a blended learning experience into account. In the context of this study, a score of 50 or more is regarded as passing, so students who achieve that mark or higher will be regarded as passing. This will have an impact on our assessments of blended learning's potential.

According to a study by Rahman, Yasin, and Jusoff (2011), students were able to employ specific processes to create meaning as a result of assigned assignments in an online discussion process. The writers found that students learn by writing what they comprehend while giving and receiving among themselves. This can be seen as a success in the knowledge construction process from this angle. Their research also demonstrates that students create meaning on their own from assignments; this process is known as pre-construction and, for the sake of our study, it is a step in the discovery stage of the knowledge construction process. Although the researchers also noted that descriptive statistics to the tune of 75% and time management (62% impact on the success of online learning), technical problems with regard to instructional design were a challenge to online learners, thus not indicating effectiveness (Song et al., 2004). Arbaugh (2000) and Swan (2001) indicated that high levels of learner-instructor interaction are associated with high levels of user satisfaction and learning outcomes. According to research by Naaj et al. (2012), learner satisfaction in blended learning was influenced by a variety of factors, including technology and learner interactions.

Methodology

Research Design and Respondents

The study applied a quantitative research design where descriptive statistics were used for the respondents' responses on the effectiveness of new ways of teaching and learning in enhancing students' academic achievement during blended learning education. The study population consisted of all (52) teachers at San Luis National High School in the academic years of 2021 to 2022, to investigate and determine the effectiveness of new methods and approaches in teaching in the context of blended learning.

Research Instruments

The study questionnaire was made with the aim of heavily depending on the thorough reading that the researcher did of several studies, works of literature, and other samples of questionnaires. The researchers developed the initial draft of the questionnaire with help from the subject matter experts and a research associate on the main objective of knowing the effectiveness of new ways of teaching to improve students' academic achievement in the context of blended learning education. Following editing for content, organization, and format, the document was distributed to three experts in education and research for reliability and validation. The questionnaire was also modified somewhat after it was submitted for content validation. By calculating the survey's internal

consistency using Cronbach's alpha statistics, the researcher was able to evaluate the validity of the questionnaire. The survey questionnaire readily accepted an alpha coefficient of 0.95, demonstrating the reliability and applicability of the items.

Data Gathering Procedure and Statistical Treatment

The study was conducted according to the following procedures: (1) preparing for a letter that was addressed to the school principal in the aforementioned school in order to conduct the study and take some necessary actions. (2) Upon approval, the researchers must inform the teachers or respondents of the study about the study and the main reason for doing this research project so that they have the idea and knowledge to answer the survey questions. (3) The researchers distributed the survey questionnaires to the respondents of the study and explained to them what to do with them. Also, the researchers gave 30 minutes or more for the participants to focus on the questions in the survey questionnaire. (4) After answering, the researchers must collect the questionnaire from all participants. (5) The researcher tabulated and processed the data for the statistical analysis after retrieving the questionnaire. Furthermore, this study used a statistical method by calculating the data from the mean value and standard deviations. Also, a one-way ANOVA has been utilized as well between subjects to test the effectiveness of new ways of teaching and learning in enhancing the student's academic performance during blended learning education.

Results and Discussion

This study presented the results, findings, and significant impacts based on the data gathered by the respondents on the effectiveness of new ways of teaching and learning to enhance students' academic achievement in the context of blended learning education. The study was conducted at San Luis National High School during the academic year 2021 to 2022.

Table 1. *The Mean Value, Standard Deviation, and Descriptive Interpretation of Innovative Teaching Techniques and Developing Teaching Methods or New Ways of Teaching in the Context of Blended Learning Education were Calculated*

Indicators	*Weighted Mean*	*Standard Deviation*	*Descriptive Interpretation*	*Rank*
1. By integrating technology and its advancement into teaching and learning, blended learning actively engages students in the use of multimedia software and other cutting-edge technologies in the classroom.	3.78	0.26	Competent	5
2. In the midst of a pandemic, it helps students build critical thinking abilities as well as efficient learning methods and techniques that will enable them to analyze, contextualize, relate, and justify their way to knowledge and information and enhance their academic achievement.	3.99	0.12	Competent	3
3. Involves the use of games in the learning strategy and reward to teach students and become active in the lesson. Learning games such as these are available at home for the purpose of allowing them to perform the activity using the locally available materials or resources and for the students to attain the necessary outcome.	4.15	0.48	Competent	1
4. Through the use of blended learning, teachers can focus their lessons on more specific student activities that will improve their academic achievement.	4.06	0.33	Competent	2
5. The most recent digital learning, information, and communication technologies include teaching methods. The students introduce pedagogical strategies and contemporary technologies for instructional materials.	3.85	0.15	Competent	4
Average	3.97	0.27	Competent	***

Legend: 1.00-1.79 = Not Competent; 1.80-2.59 = Slightly Competent; 2.60-3.39 = Moderately Competent; 3.40-4.19 = Competent; 4.20-5.00 = Highly Competent

Table 1 shows the mean value, standard deviation, and descriptive interpretation of innovative teaching techniques and developing teaching methods or new ways of teaching in the context of blended learning education. Based on the findings, the average value of the indicators under Table 1 shows (mean = 3.97; SD = 0.27), which means it has been competent. The teachers at San Luis National High School have been developing teaching methods that are certainly appropriate for the teaching and learning process. As an overall result, the first indicator, "By integrating technology and its advancement into teaching and learning, blended learning actively engages students in the use of multimedia software and other cutting-edge technologies in the classroom," was obtained with (mean = 3.78; SD = 0.26) The second indicator, "In the midst of a pandemic, it helps students build critical thinking abilities as well as efficient learning methods and techniques that will enable them to analyze, contextualize, relate, and justify their way to knowledge and information and enhance their academic achievement," came up with the result of (mean = 3.99; SD = 0.12), a competent outcome. The third indicator, "Involves the use of games in the learning strategy and reward to teach students and become active in the lesson. Learning games such as these are available at home for the purpose of allowing them to perform the activity using the locally available materials or resources and for the students to attain the necessary outcome ", with a mean of (mean = 4.15; SD = 0.48), the fourth indicator, "Through the use of blended learning, teachers can focus their lessons on more specific student activities that will improve their academic achievement," with a mean of (mean = 4.06; SD =0.33). Lastly, the "most recent digital learning, information, and communication technologies include teaching methods. The students introduce pedagogical

strategies and contemporary technologies for instructional materials, "getting a mean value of 3.85 and a standard deviation of 0.15.

The blended learning format has been modified in response to the findings in order to increase student participation. Over the years, blended learning patterns have centered on using visual representations, flexible teaching models, and threaded discussion forums (Caverly & Macdonald, 1999), as well as allocating additional time to professional development for teachers who intend to transition to blended learning (van Raalte & Boulay, 2012). The three components of active discussion forums, video recordings, and a flexible learning environment should be further investigated, and more time should be devoted to professional development on how to successfully implement blended learning from the sources of (Caverly & Macdonald, 1999), (Bergmann & Sams, 2012), and (van Raalte & Boulay, 2012). Choosing a class structure is the first and most crucial step in developing a successful blended learning environment. The school district, in particular the teachers and administration, should specify how much of each lesson will be conducted online as opposed to in-person and how much time each student should spend online on a daily basis (Watson, 2008). As the length of instruction time in each modality will determine the type of materials, this should happen even before the course materials are prepared. Therefore, the teaching method, technique, and advancement of technology demonstrate to lay the groundwork for why and how to conduct the class and help set expectations for students at school. They also establish a common classroom culture where students take more responsibility and understanding of their participation in class.

Table 2. *The Effectiveness of Blended Learning Education in the Educational Process and In Teaching and Learning in Enhancing Students' Academic Achievement*

Source of Variations	*SS*	*df*	*AS*	P_{value}	*Statistical Sig.*	*Size Effect*
Teaching Method	133.39	1	133.39	17.004	0.000*	0.128
Teaching Technique	141.10	1	141.10	20.012	0.000*	0.178
Advancement of technology used at school	136.12	1	136.12	19.479	0.000*	0.122
Error	827.11	49	16.88	-	-	-
Total	1,237.72	52	427.49			

Legend: SS-Sum of Squares; df-Degrees of Freedom; AS-Average Squares; Ss-Statistical Significance; Statistically significant at the level of statistical significance (0.05)

Table 2 presents the effectiveness of blended learning education in the educational process and in teaching and learning in enhancing students' academic achievement. The findings show that there is a statistically significant difference at the level of of statistical significance (= 0.05) between the means of the three (3) sources of variation, which are the teaching method, teaching technique, and technological advancements used in the classroom. The teaching method has a P value of 17.004 (0.000) and is statistically significant. The teaching technique (P_{value} = 20.012; 0.000) also results in being statistically significant based on the gathered study by the respondents, whereas the advancement of technology used at school (P_{value} = 19.479; 0.000) still has an equivalent result of statistically significant based on the tables that were calculated.

Conclusion

Blended learning is one of the most innovative pedagogical strategies available in the context of remote learning, helping to handle problems like the knowledge explosion, the increase in educational demand, and the issue of crammed lectures. Blended learning also enables housewives to receive training, education, and rehabilitation while maintaining their current position, assisting in the rise of literacy rates and the eradication of illiteracy. This study was conducted to investigate and determine the effectiveness of blended learning in the context of new ways in teaching and learning to enhance students' academic achievement. The study applied a quantitative research design where descriptive statistics were used for the respondents' responses on the effectiveness of new ways of teaching and learning in enhancing students' academic achievement during blended learning education. Based on the findings, the mean value, standard deviation, and descriptive interpretation of innovative teaching techniques and developing teaching methods or new ways of teaching in the context of blended learning education were determined. Based on the findings, the average value of the indicators under Table 1 shows (mean = 3.97; SD = 0.27), which means it has been competent. The teachers at San Luis National High School have been developing teaching methods that are certainly appropriate for the teaching and learning process. Furthermore, the effectiveness of blended learning education in the educational process and in teaching and learning is enhanced when students' academic achievement is enhanced. The findings show that there is a statistically significant difference at the level of statistical significance (= 0.05) between the means of the three (3) sources of variation, which are the teaching method, teaching technique, and technological advancements used in the classroom. Therefore, the teaching method, technique, and

advancement of technology demonstrate to lay the groundwork for why and how to conduct the class and help set expectations for students at school. They also establish a common classroom culture where students take more responsibility and understanding of their participation in class.

Future studies should be done to take the longitudinal effectiveness of this study into account. This study should be finished where student assessment data from non-blended learning teaching methods is compared with student assessment data from the blended learning teaching method with the help of their teachers, since this study only focused on the teachers' perspective on the new ways of teaching and learning in the context of blended learning to help students improve academic achievement.

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