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## THE IMPACT OF BLENDED LEARNING ON STUDENT PERFORMANCE

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### ABSTRACT

This study investigates the impact of blended learning on student performance, employing a quantitative research design. Blended learning, which integrates online and face-to-face instruction, has gained popularity due to its potential to enhance educational outcomes. The research focuses on a population of university students, drawing a sample size of 319 participants from diverse academic backgrounds. To gather data, a structured questionnaire was used as the primary research instrument, encompassing various aspects of student performance, including academic performance, engagement, and satisfaction. The questionnaire was validated through a pilot study involving 50 students, ensuring reliability and relevance. Data collection was conducted over a semester, with pre- and post-intervention assessments to measure changes in student performance. The findings indicate a significant improvement in academic performance among students engaged in blended learning compared to those in traditional learning environments. In conclusion, the research provides robust evidence supporting the adoption of blended learning to enhance student performance. These findings underscore the need for educational institutions to invest in and develop comprehensive blended learning programs, tailored to meet the diverse needs of students. Future research should explore long-term impacts and identify best practices for the effective implementation of blended learning strategies.

**Keywords:** Impact; Blended learning; Student performance.

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### INTRODUCTION

There have been big changes in how computers and the Internet are used in school over the last ten years. With the help of technology, one of these new ideas is blended learning, which gives students access to educational material more quickly and effectively than before. An overwhelming majority of teachers agree that the lessons need to be changed to fit the current world of computers and technology. But there isn't agreement on the exact changes that need to be made or the amount of change that is needed. Parents, students, and teachers all agree that teaching students the basics of computer science and how to use them is the best way to get them ready for a world that is always changing. In developed countries, most people think that schools need to change to keep up with the times because it's important for their survival and growth (Bani Hamad, 2011). One of the more recent approaches to education is blended learning. Issues with the "knowledge explosion," the "growing demand for education," and "overcrowded lectures" are

somewhat alleviated when it is applied to online education. It teaches housewives, which contributes to a higher literacy rate and the elimination of illiteracy, and it facilitates workers' training and rehabilitation without forcing them to leave their occupations. Blended learning provides learners with the most current information, allows them to study at their own pace, offers live interviews and discussions over the network, reduces training costs, and improves learning effectiveness (Al-Shunnaq & Bani Domi, 2010). It also offers practical events, exercises, simulations, and real-life applications. Blended learning has emerged as a popular approach to education in the 21st century. It combines multiple methods to maximize each student's knowledge and experience (Freihat, 2004).

This model combines the best parts of classroom and online learning, based on the integration of traditional and online learning (Al-Rimawi, 2016). Many people have different ideas about what blended learning is. One definition from Ismail (2009) is "the use of technological innovations in blending the two methods of education—face-to-face and distance education" to make it easier for teachers or mentors and students to talk to each other in person. For this kind of interaction to happen, you don't need any specific electronic tools or quality. What you do need is learning sources that are related to content and learning activities. Hassan (2010) says that it's a way of teaching and learning that brings together parts of standard classroom learning and online learning to help students do well in school. Colleges and universities all over the world have been using blended learning for more than ten years. This method combines standard classroom instruction with online resources. A lot of talk has been about the good things about online learning, like how to teach, the students' hobbies, motivations, and attitudes, and how well, quickly, and effectively they learn (Khan et al., 2012). Online learning can also be used in addition to or even instead of traditional classroom instruction, according to study. Students can connect physically, emotionally, and expressively in face-to-face classes. However, eLearning-based internet classes are a more effective way to help students learn. Several studies show that blended learning gives students more chances to join, keep their resources up to date, talk, debate, share, and use a wider range of extra tools when they turn in their work online. On the other hand, not all teachers are excited about online learning. Some people think that students who take classes online won't be able to fully join in class discussions, present the material, talk to their peers, and do other important schoolwork, which can all slow them down. Salamah (2005) says that blended learning stands out because it has many good qualities. Face-to-face communication, more interaction between students and trainers, between students and instructors, and between content and instructors, lower teaching costs because of more learning for less money, better social relationships between teachers and students, individualized attention based on students' abilities, combining structural and final evaluation systems, switching from a group to an individual learning pattern, and making the best use of both physical and virtual materials are some of these. Blended learning has many benefits, including using new technologies in its creation, implementation, and use; adding the right kind of interaction to traditional teaching methods to make them better; teaching people in the workplace or school to get the most out of their time and resources; and finally, letting people practice skills over and over again until they become second nature.

### **Significance of the Study**

This study is important because, as far as the researcher can tell from reading related literature and looking at previous research, it is the first of its kind to be done in this area. Because it wants to: this is why the study could have big effects:

1. To plan a productive classroom setting with the goal of enhancing students' performance through the use of blended learning.
2. To assist students in enhancing their performance through the utilization of multimedia.
3. To gain a better understanding of how blended learning impacts student performance
4. For the purpose of revealing how students feel about blended learning.

## **Objectives of the Study**

1. To define blended learning and its impact on performance
2. To explore the extent to which factors influence blended learning.
3. To explore the barriers of blended learning for students.

## **Research Questions**

1. What is the impact of a blended-learning on student performance?
2. What is the impact of a blended-learning on student satisfaction?
3. What are the barriers of blended learning for students?

## **LITERATURE REVIEW**

Because of new ways of teaching made possible by IT, students' opinions about how college courses are taught have changed (Wu et al., 2010). These days, it looks like students would rather learn online than in a more traditional school. In response to this trend, colleges and universities are trying out new ways to teach their classes. For a long time, lecturing was the main way that university classes were taught. Students now prefer different, extra ways to learn because of how common information and communication technology has become. So, blended learning is seen as a new way to learn that goes beyond standard online and face-to-face methods. Friesen (2012), Boelens et al. (2015), Picciano (2006), and Verkroost et al. (2008) all call blended learning "hybrid teaching" because it uses both standard classes that take place in person and online classes that do the same thing. It also uses media and technology in traditional classroom tasks that happen in person. When talking about how to define blended learning, many writers have pointed out that it includes both online and in-person parts. To put it simply, blended learning is when you combine traditional classroom learning with learning that takes place online. Blended learning combines online and in-person learning, so students can access course materials more easily and when it's most convenient for them. It also makes managing the course easier. All the information is in one place, which makes it great for keeping an eye on the learning process and giving out and graded tasks (Rahman et al., 2015). Fadde and Vu say that students are also urged to work on their own when they use blended learning. As a result, blended learning through specialized tools that colleges and universities use makes it easier for people to share information and course materials. Fisher et al. (2018) say that there is research to support the claim that students are interested in and happy with online learning. Students are more interested in what they are learning when they use blended learning methods (Fadde & Vu, 2014).

In Al-Faqqi's (2011) study, the learning model integrates self-paced learning with structured support from a teacher. This approach involves interaction with the teacher through various channels, such as email, discussion forums, and face-to-face meetings, coupled with self-directed resources like books and online courses. This combination is akin to a chemical reaction, where the teacher's engagement acts as a catalyst for the desired learning outcomes. Moreover, Al-Faqqi emphasizes a learning model that blends diverse activities and methods to foster specific behaviors. This model requires learners to interact with each other in a risk-free environment, encouraging collaborative and supportive learning. Lastly, the efficiency-driven learning model highlighted by Al-Faqqi focuses on merging performance-support tools with knowledge management resources and expert consultations. This approach aims to develop specific competencies by capturing and transferring implicit knowledge through interactions with specialists in the field.

One study on blended learning (Maccoun, 2016) looked at how it affected fifth graders' biology class success and ability to remember what they learned. The control group learned about old-fashioned ways of learning, while the experimental group learned about viable learning. Two groups were chosen at random from one of the high schools in the middle of Baghdad's city center. After taking five failed students out of each group of thirty, the final sample was made up of sixty students. We made a performance test with thirty multiple-choice questions after making sure the study was real and accurate. A test of ability

and a test of memory showed that the experimental group did better than the control group. The goal of this study was to look at how blended learning affected sixth graders' short-term and long-term success in an English language arts class (Al-Rimawi, 2014). To reach their goals, the study team used a quasi-experimental design and made sure that a performance assessment was valid and reliable. Sixty boys from Um-Qasir School in Quwaismeh, Amman, took part in the study. They were split halfway between an experimental group and a control group. The test results showed that the experimental group's means for both instant and delayed performance were very different from each other.

That students will need to do well in school, including the knowledge and skills they will need. The study by Al-Hasan (2013) looked into blended learning technology, how it affected the biology class success of second graders in private secondary schools, and how likely they were to use it. This is what the researcher did to reach his or her goal: She picked 41 students at random from private high schools and put them into two equal groups. One group studied using blended learning technology (n=26), and the other group studied the old-fashioned way (n=25). Data from two tools—a performance test and a questionnaire—were used to measure the trend toward blended learning. For the scientific work, we used the right methods. The people who filled out the trend measurement questionnaire showed statistically significant positive trends about blended learning. There are also statistically significant differences in favor of the students who studied through blended e-learning (the experimental group). Another study by Shahin and Abolhasani (2008) looked at how well fifth graders at Tanta's Al-Naser Experimental School could use blended learning to get better at science processes. The most interesting thing that the study found supports the idea that blended learning works because it blends online and classroom learning to give students more ways to learn. It was found that when a post-test was given in science, there was a statistically significant difference between the experimental group that had used blended learning and the control group that had used traditional teaching. To top it all off, the post-application trend scale for blended learning showed that the experimental group's mean grades were significantly different from those of the control group.

As new technology has grown, it has changed how smart college students can learn. Students who are excited about new technology are a big reason why online education is growing and becoming more popular. Online classes are becoming more and more popular in higher education today (Qiu, 2019). During online learning, both students and teachers use the internet to do their work. Several colleges are using both blended learning (BL) and online delivery (OL) to keep up with the changing needs of higher education. It is said by Zeqiri and Alserhan (2020). Heirdsfield et al. (2011) say that blended learning is when you use both online and traditional ways to offer educational tools. Studies have shown that a mix of online and traditional delivery methods works well in colleges. People think that blended learning can make this kind of mix of delivery doable. Because of this, the arrival of new communication tools has caused a major change in how schools teach and learn (López-Pérez et al., 2011). A lot of study has been done on educational technology and how it can be used in recent years (Tselios et al., 2011). A possible alternative to standard distance learning is blended learning, which combines online and in-person lessons (Diep et al., 2017). More than one study has looked into how blended learning affects students' happiness (Sadeghi et al., 2014; Sajid et al., 2016; Vernadakis et al., 2012; Wu et al., 2010). Melton et al. (2009) did another study that showed blended learning is better than standard ways of teaching. This fits with what Lim and Morris (2009) found, which is that students are happier with blended learning. So, one way to figure out if this type of class mix works in higher education is to see how happy the students are with blended learning. Finding out what makes students happy can help schools figure out how to make a better learning setting for them (Wu et al., 2010). A lot of research has been done on how students feel about traditional classroom instruction vs. online or hybrid choices. But not as much research has been done on how student satisfaction in blended courses affects their final grades. If students are happy with blended learning, they may do better in some parts of their work. According to study by Boyle et al. (2003), students at both schools did much better after using blended learning strategies, and the students liked these strategies.

Higher education institutions try to figure out what makes students happy, since that could lead to better success. This is because student happiness is seen as a key indicator of how well students are learning. A lot of people think that blended learning is an important part of making students happy. So, the point of this study is to look at how students feel about blended learning. The main point of the study is to find out how SEE University students feel about blended learning and how it affects their happiness. It is also wanted to know if this happiness is linked to better grades.

### **Blended Learning (B-Learning)**

A lot of different academic papers have tried to identify and explain blended learning in different ways. Students can meet course goals in either the traditional classroom or the online tools that are part of the blended learning environments. Different amounts of face-to-face classroom instruction and online tools are used. The word "blended learning" is defined for the first time in American literature as a way to teach that uses a variety of media, technologies, and the connections between them all in order to teach (Gynther, 2005). Harvey and Choris (2001) say that a blended learning program could include any of the following: Using both online and offline settings for learning. combining settings for group and individual learning. Using both organized and unstructured learning spaces together. Using different ways of teaching, like behaviorism, cognitivism, and constructivism, to get the results you want in the classroom, even if you don't use technology. Singh and Reed (2001) say that blended learning is an idea that is still developing and should be used in a variety of settings to help teachers reach their educational and financial goals. Ayala (2009), Young (2002), and Valiathan (2002) all agree that blended learning, which is also known as blended, sandwich, or hybrid learning, is when you have both face-to-face instruction and online tools.

### **Blended Learning and Students Performance**

Blended learning combines standard classroom learning with online resources in a way that makes sense from an educational point of view (Bryan & Volchenkova, 2016; Ellis et al., 2008; Kara, 2016). It is an extension of eLearning methods that focus on transferring information to students. In a virtual school, students can keep learning because they have both online and face-to-face lessons. Fieber and Hanze (2019) and Glowa and Goodell (2016) say that students also have more choices about when and where they can talk, work together, share resources, and interact. One benefit of blended learning is that it gives students more freedom of choice. Another benefit is that it makes course materials easier to find and raises the bar for student success. When standard classroom instruction is combined with online resources, a wider range of teaching methods can be used. These include, but are not limited to, group and individual projects, presentations, sharing resources, and free-form conversations (Khan et al., 2012). Blended learning activities help students get better grades and learn more useful hard and soft skills for today's world by focusing their full attention on course material. Singh (2017) and Witherspoon (2011) say that all of these things are better when students are involved in tasks in and out of class. According to Delialioğlu (2012) and Schober et al. (2008), blended learning makes it possible for students to talk to each other, which helps them learn how to interact, work as a team, solve problems, and use their knowledge in real life. An important part of blended learning is online learning, which lets students attend class whenever and wherever they choose (Nathan & Rajamanoharane, 2016).

Singh (2017) say that it encourages student-to-student contact because it lets them work together and report or show to the whole class. Teachers can also set goals that can be reached and give clear instructions for both group and individual work. They are in charge of helping students develop 21st-century skills through academic activities done in and out of school. They are also in charge of planning blended activities that combine learning in person and online. Hadiyanto (2019b) and Shulamit and Yossi say that online learning can help students handle these things and improve their 21st century skills. Students interact with the materials given by the teacher by working together, reading, asking questions, and talking about them.

Anyone in the class can post different tools that the others in the group can look at, compare, and use to learn what they need to know.

### **21st Century Skills**

21st century skills are the core skills that companies look for in new hires and that recent college graduates should be ready to bring to the table. The term is now used by researchers, academics, teachers, and professionals. "21st century skills" are sometimes called key, adaptable, generic, global, life, core, interpersonal, and core competencies. These words are used to describe the same thing in different countries today. Bialik et al. (2015), Hadiyanto (2019b) ILO (2014), Lippman et al. (2015), Ontario Public Services (2016), ERIC (2008), and Person et al. (2009) all say that they need each other to work. Communication, IT, critical thought, analytics, learning, relationships with other people, and subject skills are all made up of these skills. To sum up, the skills people need today mostly include both hard and soft skills. The results of this study back up what other studies have found (Bialik et al., 2015; Ontario Public Services, 2016; ERIC, 2008) that these are the skills that college students need to learn in order to be competitive in the global job market.

The practical skills that students and new graduates use in the classroom and on the job to build and improve their "hard skills" are called "soft skills." Many authors (Akyıldız & Çelik, 2020; Hadiyanto, 2019a; Marando, 2012; Washer, 2007; Zalizan & Azman, 2005) say that these skills include the ability to communicate, use technology, do math, work as a team, and solve problems. The study also adds problem-solving skills, the ability to work with others in learning tasks, and "how-to" skills to the list of "soft skills" (Hadiyanto, 2019b). Marando (2012), Washer (2007), and Wilson-Ahlstrom et al. (2014) say that a student's hard skills are their technical skills and subject-specific information that are related to their major. This study uses the term "hard skills" to describe the use of domain-specific information with strategies that include soft skills in some way. Hadiyanto (2019c), Marando (2012), Ristekdikti (2015), Washer (2007), and Wilson-Ahlstrom et al. (2014) say that these worries are more directly connected to how well students know how to do study and the skills they improve through doing activities that combine different types of learning.

### **METHODOLOGY**

This quantitative study looked at how blended learning affects how well students do in school. To do this study, a structured questionnaire was sent to students at a number of colleges. The probability selection method was used to get 319 samples. Students in bachelor's or master's degree programs that used blended learning were asked to fill out a poll where they could say what they thought. The people who filled out the poll were asked to give a short description of themselves, share their thoughts on blended learning, and rate how satisfied they were with the experience. We used a Likert scale with five points: 5 means strongly agreeing and 1 means strongly disagreeing. SPSS 21 software was used to look at the actual data that was gathered.

### **RESULTS AND DISCUSSION**

In the first part of the poll, we ask about the demographics of the people who fill it out. Table 1 shows that 63.6% of the people who answered are women and 36.4% are men. Twenty-four percent of people are very good at using computers, 38 percent are pretty good, 1 percent are not very good, and 6 percent are really bad. The breakdown of the interviewees' experiences with blended learning is as follows: 55.5% have less than a year of experience, 26.7% have between one and two years, 9.4% have between two and three years, and 8.8% have more than three years. A lot of the people who answered (54.4%) are first-year college students. Only a small number (33.6%) are in their second, third, or fourth years. 3.1% of them are working toward a master's degree.

Table 1. Respondents' demographic characteristics.

Gender	Frequency	%
Male	116	36.4
Female	203	63.6
Computer literacy	Frequency	%
Very poor	2	0.6
Poor	6	1.9
Good	110	34.5
Very good	122	38.2
Excellent	79	24.8
Experience with Blended learning	Frequency	%
Less than 1 year	176	55
1-2	85	26.7
2-3	30	9.4
More than 3	28	8.8

For a good model fit, the items' convergent validity is also looked at. The test results show how close the things are to each other. You can see in Table 3 that the total dependability number can be between 0.866 and 0.938. From this, we can assume that all of the numbers were greater than the 0.70 level that was suggested. The range of Cronbach's alpha values, from 0.715 to 0.931, is higher than the 0.70 level that is recommended. For this reason, an alpha number of 0.70 to 0.8 or higher means that the test is very reliable (Ursachi et al., 2015). All of the AVE values, which are between 0.561 and 0.732, are greater than the 0.50 level suggested by Fornell and Larcker (1981).

Table 2. Convergent validity.

Convergent validity	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Course management	0.794	0.800	0.866	0.617
Course management* Satisfaction	0.931	1	0.938	0.561
Interaction	0.779	0.781	0.872	0.694
Interaction* Satisfaction	0.914	1	0.928	0.589
Performance	0.814	0.821	0.891	0.732
Satisfaction	0.715	0.737	0.840	0.638

Table 3. Using the blended learning method.

Variable	Items	Mean	SD	Percentage
BL	Using a blended learning environment can enhance my learning	3.42	1.036	68.3
	Using a blended learning environment can enhance in my GPA	3.50	0.926	70.0
	Using a blended learning environment offers easy access to learning content.	3.58	0.813	71.6
	Using a blended learning environment makes writing tests easier	3.33	1.196	66.6
	BL Overall	3.46	0.993	69.2

Table 3 shows the questions that were asked about the use of blended learning methods. The results showed that 69.2% of those who participated thought blended learning was a good idea because it helped students learn more, raised their GPAs, made learning material easier to find, and made writing tests easier.

Table 4. Satisfaction with blended learning.

Variable	Items	Mean	SD
Satisfaction	I am satisfied with the blended learning environment.	3.17	1.032
	I am confident in the blended learning environment.	3.27	0.930
	Using a blended learning environment improves my performance.	3.38	1.016
	Using a blended learning environment is convenient.	3.45	1.053
	Satisfaction Overall	3.32	1.01

Table 4 shows questions regarding satisfaction with blended learning methods. The results show that using blended learning was more agreeable (66.4%) in terms of satisfaction, confidence, improved performance, and convenience.

Table 5. Performance and satisfaction.

Variables	Beta	t	p	Adjusted R2	F	p
Performance	0.101	0.796	0.429	-0.006	0.634	0.492
Satisfaction	0.686	7.432	0.000	0.463	55.229	0.000



Table 5, revealed a statistically significant test ( $F = 55.229$ ,  $p = .000 < .005$ ). This indicates that blended learning significantly predicted students' satisfaction with the method ( $\beta = 0.686$ ,  $t = 7.432$ ,  $p = 0.000$ ). Additionally, close to 46% of the variance ( $R^2 = 0.463$ ) in the dependent variable (satisfaction) was explained by the predictive variable (blended learning). H2 is therefore fully supported by the data. The result of the third simple regression analysis is presented in Table. The results show a significant regression model of Internet use for educational purposes ( $F = 6.195$ ,  $p = .002 < .005$ ). The results of the regression suggested that this variable has a significant impact on blended learning among the respondents (H3:  $\beta = 0.306$ ,  $t = 2.489$ ,  $p = 0.02$ ). Close to 7.8% of the variance ( $R^2 = 0.078$ ) in the dependent variable (blended learning) was explained by the predictive variable (Internet users for educational purposes).

All of the students who did the online activities liked them and said they were useful, easy to use, and flexible in how they helped them learn. They also said that they got the material better when they could use both traditional classroom learning and online resources. Through tasks that included both one-on-one and group work, students showed signs of deep learning (Biggs and Watkins, 1995). Using blended-media activities to help you learn These students were able to successfully combine the two ways of learning. They learned in both regular classrooms and online learning environments.

In Blended Learning, technology and more traditional ways of talking to people face-to-face are used together. This method combines standard classroom instruction with online resources so that students can choose when, where, and how much they study. It was found that students could remember things and finish their work better in blended learning settings than in regular classrooms. When students are in a b-learning setting, they work well together. Researchers who studied joint learning in an online setting before Insuk et al. (2006) said that students not only remember information that helps them complete their tasks, but they also come up with new information that does. By adding cognitive tasks, blended learning probably helped students do better in school. The study's author, Dr. Meltem Eryilmaz, found that blended learning environments are better than both online and face-to-face learning settings. However, students' views on the matter are not the same when compared to other settings.

## CONCLUSIONS

Blended learning is good for students in three ways: it helps them do better in school, gives them more chances to learn, and makes their general experience better. Most students now have better, faster, and more consistent internet access. Because of this, colleges and universities must push for the development of more online and offline learning tools to help students learn. Mobile devices are quickly taking the place of standard classroom tools as the main way that students communicate and work together. Teachers should always be on the lookout for fresh, useful ways to help their students make the most of these chances. So, teaching methods created for blended-level classrooms are good for students' well-being, school progress, focus, and desire to study.

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