

IMPLEMENTING BLENDED LEARNING AND FLIPPED LEARNING MODELS IN THE UNIVERSITY CLASSROOM: A CASE STUDY

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Abstract

Mobile technologies have increasingly become more and more widespread not only for making our daily lives easier and simpler, but also for their enormous potential in educational development. This case study examines university students' satisfaction with and perceptions towards the use of blended learning and flipped classroom models in foreign language learning (FLL) contexts. The methodology used in this study involves the descriptive and quantitative analysis of responses generated from students studying English as a foreign language at the Faculty of Foreign Languages at the University of Jordan. The analysis of these responses gave the author of this study an idea about what factors a teacher should take into account when introducing blended learning and flipped classroom models into a classroom.

Key words: blended learning; flipped classroom; technology; case study

1. Introduction

Nowadays, mobile technologies, the Internet, TV, and mass media have expanded opportunities for learning, enabling learners to access and receive any piece of information they want anytime and anywhere.

Such phenomena have, therefore, led many higher education institutions to realize the importance of integrating technology into their educational systems to replace the traditional, teacher-centered, non-interactive methods that are based on memorization, rote learning, and accumulation of information for students with student-centered and task-based approaches that can extend learning beyond the classroom walls. This integration of technology to push the learning process to the next level involved introducing digital learning methods such as e-learning and blended learning on which a large body of research has been conducted to assess the effectiveness of their employment in education.

According to Kafyulilo (2015), e-learning incorporates using an electronic device (such as computers, mobile phones, tablets, etc.), Internet connection, and a particular platform to deliver part or all of course content to students inside and/or outside the campus. Conversely, Picciano (2014) refers to blended learning as a combination of traditional, face-to-face

classroom meetings and a mixture of online learning components. Many researchers (Picciano, Dziuban, & Graham, 2013) also define a blended learning course as a hybrid offering that encompasses a blend of face-to-face instruction with technology-based learning, deemed as a significant force for driving educational change. Similarly, the Department of Education and Early Childhood Development in the State of Victoria (2012) refers in its paper to blended learning as a mixture of traditional and technology-based learning approaches and resources to help learners accomplish their learning aims. According to Rovai and Jordan (2004), blended learning scheme is a “hybrid of classroom and online learning that includes some of the conveniences of online courses without the complete loss of face-to-face contact” (p. 1).

Blended learning comes in many formats and the teacher can choose the format that suits their pedagogical context. The Ultranet and Digital Learning Branch of the Department of Education and Early Childhood Development in the State of Victoria refers in its report published in 2012 that blended learning is not a recent creation; it refers to a teacher’s successful use of some activities and extra resources in addition to the textbook(s), a practice that some teachers have adopted for years to provide their students with learner-centered experiences. The report also mentions another version of blended learning that involves using the internet with its wide array of information sources as well as mobile technologies to take advantage of the connectivity they offer to both students and teachers. Another format of blended learning, as described by Picciano (2006), requires determining specific percentages of face-to-face classroom meetings and online instruction to encourage independent, student-centered learning and active interactions among learners rather than the mere provision of knowledge to them, so that instead of meeting in a classroom three hours a week, the class meets two hours per week with the third hour dedicated to an online discussion.

Graham (2013) noted that many universities and colleges have designed their own blended learning models which vary depending on how much of a course is taught face-to-face or virtually.

As per the components of blended learning, Bullmaster-Day (2011) suggested that any blended learning course combines three types of instruction. The first is the traditional way of teaching; in which the instructor presents the course material directly to students through lecturing, visual materials, quizzes and other means. The second type emphasizes learning actively through researching information, doing exercises or solving problems. The last type is interactive learning in which students work with their peers in groups. She also concluded that effective blended learning is a personalized way of learning that can be tailored to meet students’ individual needs and preferences, stressing the importance of constantly assessing

students' work and providing feedback to increase the involvement in their work and enhance their ability to become independent learners. Bullmaster-Day (2011) also pointed out that in a blended learning scheme the material is broken down into small manageable parts that students can easily access and process in a variety of ways; thus boosting cognitive engagement levels. The last finding pertaining to blended learning is that it enhances instruction by balancing teacher control with learner control, as students are given a chance to plan how much time they need to spend on each part of the material, arrange these parts in a sequence that makes it easier for them to learn them and access any learning support materials such as worked examples or exercises.

These findings were to a great extent consistent with the study by Lord and Lomicka (2008), in which they examined how to assist teachers to model cross-institutional situations for their students through integrating technological tools into blended learning. According to their findings, a teacher can implement a wide selection of technological tools in a blended course, including chats, blogs, and wikis to encourage distant discussion and interaction.

The study conducted by Banerjee (2011) in which he investigated the effectiveness of combining face-to-face and online models of instruction using a variety of tools including Blackboard and Google at a small college in translation demonstrated students' satisfaction with the use of technology for learning purposes. They noted that it offered more convenience, better self-learning control and better communication; however, they still favor face-to-face teaching for it entails dealing and interacting with a human being rather than with computers.

In a study examining the effect of blended learning on the critical thinking skills and attitudes of high school students towards a geography course, it was found that blended learning contributed more to student attitudes towards the geography course and was positively correlated with students' critical thinking skills (Korkmaz & Karakus, 2009).

Al-Zoghby and Doumy's study conducted in 2012 (as cited in Fakhir, 2015) showed that fourth graders in selected Jordanian schools displayed a positive attitude towards using the blended learning approach in teaching mathematics with greater motivation towards its learning.

Yapici and Akbayin (2012) examined the views of high school students on applying blended learning in a biology course. The results of the study showed that students' attitudes were positive.

Alseweed (2013) investigated the effects of blended learning on university students' achievements in the listening course of the English language and their attitudes towards this

approach. The results of the study show that students' attitudes as well as scores in achievement test were in favor of blended learning.

Obiedat, Nasir Eddeen, Harfoushi, AL-Hamarsheh, Koury, and Alassaf (2014) reported in their study which aimed to evaluate the effectiveness of blended learning on the academic achievement of students in the University of Jordan that there is a significant and positive impact of blended learning on academic achievement of the students in the University of Jordan.

Fakhir and Ibrahim (2018) explored in their study the effect of using blended learning on the achievements of the sixth-grade students in English. The results were in favor of blended learning.

Despite this large body of research on blended learning, only a limited number of studies, according to the researcher's knowledge after reviewing the related previous studies, have been conducted on the perceptions of students towards employing blended learning in English Language contexts in Jordan. In this study, the researcher aims to investigate students' attitudes towards using blended learning and flipped classroom models in English language learning contexts.

2. Methodology and description of the course

For the purposes of this study, the blended learning model of instruction was applied to two separate sections of one course entitled "Essentials of Public Speaking," offered to 2nd year students by the Department of Linguistics at the Faculty of Foreign Languages in the University of Jordan. The number of students in each section was 30.

As stated in the department's approved study plan, this speech communication course initially aims to strengthen the student's self-confidence to speak in public within the student body. During the course, the student is given the opportunity to develop their accuracy and fluency as well as their effective use of gestures and appropriate body language to reinforce their overall communicative ability and confidence. Two genres of speech are usually emphasized: the informative and the persuasive.

In this course whose classes took place five times a week, one-day of class time was utilized for corresponding online learning tasks. The other four classes were traditional face-to-face classroom meetings in which students were asked to give speeches in front of their classmates.

The course also used a flipped classroom design, which meant that the student is responsible for reading the class texts and watching the assigned videos before the lesson so

that class time can be used for presentation delivery and thoughtful discussions. No textbook was used for the course. This was remedied by readings selected from different websites, Power Point presentations, and YouTube videos shared with students. The new course format necessitated different assessment methods and requirements. To convert the course into a blended format, the University of Jordan's E-Learning Moodle platform was used in the course as the online learning environment. The course portal was organized into a weekly format with a topic to be tackled with in each class during the week.

Each topic had a video simulating the course content retrieved from YouTube, a Power Point presentation and a class reading (sometimes only one or two of these three components was shared); a plan of the lecture; and a clearly-stated mini-task for the students to do. The mini-tasks, which were assigned to students before the face-to-face classes, required information processing and a summary of the assigned class readings, slide shows, and/or YouTube videos recommended for watching. Delivering one mock speech every week and taking part in a forum discussion on a selected course subject were also a must. These activities were monitored and evaluated in the period between the face-to-face class meetings. The virtual class meetings' tasks were meant to enable the students to apply the knowledge they acquired from the mini-tasks through analyzing, synthesizing, and problem solving.

To evaluate students' progress, a new rating system was adopted. It allocated 30% of course work, rather than the usual 20% allowed by the university, to activities and learning tasks carried out inside and outside the classroom. The midterm and final exams consisted of oral presentations and were worth 30% and 40% respectively.

A questionnaire (appended at the end of this paper) to get students' feedback on combining face-to-face and online learning was carried out. The survey addressed their overall impressions of the new features of the course, namely: the new course design using the blended learning model of instruction, the new course structure using the flipped classroom format, and the new online learning environment using the e-learning platform.

3. Results and discussion

The results of the paper-based questionnaire which was distributed towards the end of the term are presented in the following tables. These tables show that the students who took part in the survey have different attitudes regarding the concepts as well as the features of blended learning and flipped learning. Before analyzing these attitudes, it is worth mentioning here that as far as Questions 4, 5, 6, and 7 in Table 2 are concerned, the participants in the survey were

allowed to select from the list of choices provided in each of these questions all the choices that are applicable to them. The same thing applies to Questions 11 and 12 in Table 3.

Table 1. Students' overall impression of blended learning

No.	Questions	Answers	Percentages
1	Before taking this course, I thought Blended Learning was....	I have not heard about it before	31.66%
		Using online sources and submitting assignments online	33.35%
		Submitting assignments online	11.66%
		Using online sources	15%
		Another (Specify please): - Face-to-face in-class meetings and virtual meetings - Using an e-learning platform for knowing grades and number of absences	8.33%
2	Since taking this course, I have realized Blended Learning is...	A new way of learning enabling students to be independent and active participants in the learning process.	50%
		Making use of both face-to-face meetings and online tools	30%
		Doing and submitting many assignments	8.34%
		Another (Specify please): - A tiresome way to learn	11.66%

In Table 1, the analysis of Question 1 indicates that blended learning is somehow popular with the students, as only almost 32% of them stated that they have not heard about it before. The most likely explanation of their prior knowledge of blended learning is that they heard about it from other students who were taking other blended learning courses in the same semester with other instructors in other departments in the Faculty. Conversely, 68% of the students had different ideas about what blended learning could be like, as almost 33.5% of them believed before taking the course that blended learning is basically about using online sources and submitting assignments online, whereas 34.5% of them presumed that blended learning only involves "Submitting assignments online," "Using online sources," "Face-to-face in-class meetings and virtual meetings," or "Using an e-learning platform for knowing grades and number of absences."

These percentages highlight the importance of giving orientation to students at the beginning of the semester to make them acquainted with what blended learning is and what its potential benefits to them are and eliminate any misunderstandings that any of those students who are already familiar with blended learning might have.

Table 1 (Question 2) also outlines students' perceptions of blended learning after taking the course, with half of them agreeing that this model of instruction is a new learning method encouraging independent and active learning. Conversely, 30% of the students realized that this

method of learning is basically making use of both face-to-face meetings and online tools. In addition, almost 20% of the students believe that blended learning is a tiresome way to learn, requiring them to do and submit many assignments.

Table 2a. Students' evaluation of blended learning experience

No.	Questions	Answers	Percentages
3	How did you like the Blended Learning model of instruction?	Liked it	50%
		Did not like it	20%
		Not sure	30%
4	What I really enjoyed about Blended Learning is...	Opportunity to practice what I learn and get feedback on every assignment I do (theory and practice combination)	73.33%
		Having one day off	36.66%
		Supplementary materials (extra readings, videos, etc.) are useful	43.33%
		Learning from a variety of sources: searching the Internet, watching videos, reading online articles; not only using textbooks	56.66%
		Integrating technology for learning purposes	23.33%
		Another (Specify please): - Broadened student's knowledge boundaries - A channel for communication between the student and his peers on one hand as well as the student and the instructor on the other	8.33%
5	What I found challenging about Blended Learning is...	Too many assignments and activities	76.66%
		Course nature does not fit the Blended Learning model of instruction (more face-to-face meeting time is needed)	28.33%
		Taking part in online discussions	10%
		The new rating system (30% of course work is allocated to activities carried out inside and outside the classroom)	11.66%
		Having to learn independently at a distance	26.66%
		Learning from a variety of sources is demanding	33.33%
		Another (Specify please):	0%
6	What did you like about using E-learning (the online learning platform)?	User-friendly interface	20%
		logical course structure	25%
		Access to a wide variety of learning materials	33.33%
		Easy access to learning materials (everything is available at all times in one place)	66.66%
		Collaborative learning possibility (through discussions)	15%
		Another (Specify please): - I liked receiving immediate feedback on my work	8.33%

Table 2b. Students' evaluation of blended learning experience

		Collaborative learning possibility (through discussions)		15%										
		Another (Specify please): - I liked receiving immediate feedback on my work		8.33%										
7	What challenges have you faced related to technology or access to E-learning?	The interface is not easy to use; I did not get used to it quickly		21.66%										
		Too many activities and assignments to do and submit		58.33%										
		Having to read articles and/or watch videos before coming to class		26.66%										
		Having to take part in online discussions		13.33%										
		The E-learning sometimes crashes (Cannot access, upload, or download course materials all the time)		38.33%										
		Working on the computer is tiring when compared to usual classroom work		41.66%										
		Another (Specify please): - A mobile application is needed; missing the assignment due to lack of push notification		10%										
8	What kind of activities did you enjoy the most? Grade your preferences from 1 (lowest) to 4 (highest).	online assignments	3	48.34%	2	15%	4	15%	2	8.33%	4	8.33%	4	5%
		searching the Internet	2		3		1		4		1			
		online discussions	1		1		3		1		3		2	
		presentations	4		4		2		3		2		3	
9	Are there any other activities that you like to add to the above list? If yes, specify them.	- I enjoyed the course. All the activities were perfect. - No.										100%		

As Tables 2a and 2b demonstrate, half of the students were in favor of blended learning. The other half was divided between those who are not sure whether they liked it or not (30%) and those who had a negative attitude towards it (20%).

As regards students' reasons for their positive attitudes towards the format of blended learning used in the course, almost 74% viewed blended learning as an opportunity to practice what they learn and get feedback on every assignment they do; where more than half of the students (56.66%) mentioned they liked learning from a variety of sources, including searching the Internet and watching online videos. Almost 44% of the students believed that using

supplementary materials (extra readings, videos, etc.) are useful and 23.3% of them liked the idea of integrating technology for learning purposes. Some students were in favour of the idea of having a day off from university with a percentage of 36.6%, while 8.33% of them noted that blended learning helped them broaden their knowledge boundaries and communicate more with their peers as well as with their instructor.

When asked about what they found challenging about blended learning, almost 77% of the students noted that this model of instruction involves doing too many assignments and activities, 33.3% of them believed that learning from a variety of sources is demanding, 28.3% of them assumed that the course nature does not fit the blended learning model of instruction (i.e. more face-to-face meeting time is needed), and 10% of them did not enjoy taking part in online discussions. Furthermore, 11.6% and 26.6% of the students, respectively, agreed that allocating 30% of course work to activities carried out inside and outside the classroom rather than the 20% previously allocated, and having to learn independently at a distance are among the challenges they encountered in the blended learning course they took.

In Table 2, Questions 6 and 7 outline students' positive and negative attitudes, respectively, towards using an online learning platform in the course. In Question 6, most of the students with a percentage of 66.6% indicated that using an e-learning platform enabled easy access to learning materials as everything is available at all times in one place, whereas 33.3% of them approved of using an e-learning platform for being able to access a wide variety of learning materials. Also, the students indicated that Moodle, the e-learning platform used in the course, has a user-friendly interface with a percentage of 20%, displayed the material in a logical order with a percentage of 25%, enabled collaborative learning through online discussions with a percentage of 15%, and allowed students to receive immediate feedback on their work with a percentage of 8.3%.

In Question 7, the shortcomings of the platform indicated by the students with the percentages of 10%, 38.3%, and 26.6%, respectively were missing the assignment due to lack of push notification through a mobile phone application, not being able to access, upload, or download course materials all the time as the platform sometimes crashes, and having to read articles and/or watch videos before coming to class. Additionally, the results show that the students did not approve of the idea of doing and submitting too many assignments and activities with a percentage of 58.3%, which is the highest percentage among the other shortcomings, while it is shown in the results that the idea of using a computer program to write assignments is tiring prevailed with a percentage of 41.6 among the students.

On the other hand, Table 2 shows some inconsistency in students' responses. For example, more than half of the students (56.66%) mentioned they liked learning from a variety of sources, including searching the Internet and watching online videos, but only 23.33% of them were supporters of integrating technology for learning purposes, despite the well-known love of those young students for using technology in general. This conflicting attitude of students is justified by the high percentage of them believing that blended learning requires doing too many assignments and activities (76.66% in Question 5, and 58.33% in Question 7).

Another significant finding in Table 2 that shows inconsistency in students' responses is that 15% of the students liked the idea of using a virtual learning environment to learn collaboratively through discussions (Question 6) - possibly due to its novelty to them - while 13.3% of them did not like having to take part in online discussions (Question 7).

Similarly, 20% of the students indicated that Moodle is a user-friendly interface (Question 6), while 21.66% of them believed that the interface is not easy to use and getting used to it takes time (Question 7). This inconsistency is justified by the fact that some students, as they notified the researcher, have used Moodle before in other courses and it was not easy to use at the beginning but now they know better how to use it.

Another example showing irregularity in students' answers is that 33.33% believed that learning from a variety of sources is demanding (Question 5), while the same percentage of students liked using a virtual learning platform for being able to access a wide variety of learning materials (Question 6). These instances, together with the experience of the researcher who conducted this study, demonstrate that students like learning through visual (videos) and textual (readings) contents. However the instructor has to balance the different types of learning materials; so that students will not be overwhelmed with too many activities and assignments to do.

When asked about their preferences for the types of tasks and activities they were assigned (Question 8), 48.34% of the partakers preferred the suggested activities in the following order: presentations, online assignments, searching the Internet, and online discussions. This choice of order is understood since the nature of the course in which the partakers were enrolled required them to give presentations regularly which necessitate doing pertinent online assignments and searching the Internet to prepare for these presentations. Yet, taking part in online discussions was not much preferred most likely due to its novelty and the considered amount of time and effort it needs. Generally speaking, these types of assignments were the most satisfying for students and the most appropriate for the course in question given that no other activities were suggested by the participants (Question 9).

Table 3. Students' evaluation of using the flipped learning model

No.	Questions	Answers	Percentages
10	How did you like the flipped classroom strategy?	Liked it	70%
		Did not like it	13.34%
		Not sure	16.66%
11	What did you like about it?	Being in full control of my learning (I am able to re-watch videos, read assigned articles at my own pace, write down questions and discuss them in class)	48.33%
		Class time is used to master skills through collaborative discussions and applying what I learned rather than only receiving knowledge from the teacher	38.33%
		Coming well-prepared for class discussion	3.166%
		Ability to catch up quickly if I miss a class as course content is accessible at all times online	41.66%
		Another (Specify please):	0%
12	What didn't you like about it?	I did not have access to the Internet all the time	21.66%
		I needed to spend a long time in front of a computer watching videos, reading articles, doing and uploading online assignments.	75%
		Another (Specify please): - Videos are sometimes long - Constant fear that the assignment was not uploaded and shared with the instructor on e-learning	4.99%

Even though the strategy of flipped classroom learning which emphasizes the idea of self-study and limits the role of the teacher and the supervisor of the learning process to a mentor is somewhat new to students, almost 70% of them expressed their general acceptance of it as shown in Table 3, Question 10.

This positive attitude was demonstrated by the responses of the students to Question 11 (Table 3). They indicated that flipped learning helped them to be in full control of their learning and study at their own pace (48.33%), to catch up quickly if they miss a class (41.66%), to exploit class time to master skills through collaborative discussions and apply what they learned (38.33%), and to come well-prepared for class discussion (3.16%).

At the same time, the students were negative about such a concept with 75% of them expressing their dislike of the idea of spending a long time in front of a computer watching videos, reading articles, doing and uploading online assignments (see Table 3, Question 12).

Furthermore, 21.66% of the participants indicated that they do not have access to the Internet all the time, while 4.99% of them mentioned that the videos they were asked to watch were sometimes long and expressed a constant fear that they might not have properly uploaded and shared the assignment with the instructor on e-learning.

4. Findings and recommendations

The results of this study demonstrate that blended learning and flipped classroom strategies can be used as effective tools to move from the traditional educational systems to more recent educational models. Such models encourage the adoption of student-centered learning, which fosters students' analytical and critical thinking skills and encourages them to work interactively and acquire knowledge in a way that suits their interests and learning styles. Such a form of implementation allows the role of the teacher to shift from a source of information to a facilitator.

The study also gives an insight into the considerations that instructors intending to teach courses with blended learning and flipped classroom models should pay attention to.

The findings of this study indicate that blended learning balances the use of both traditional face-to-face instruction and modern technology to facilitate interactive collaboration, which is an important feature of the modern classroom. Additionally, this study reveals that blended learning offers a customized learning experience with a variety of activities and collaboration tools, online discussions, and student-tailored feedback. Furthermore, results show that effective blended learning requires keeping a balance between the material covered in the course and the number of tasks and activities assigned to students on the one hand, and learning objectives on the other. Moreover, the collected data show that the flipped classroom model helps reduce the infrastructure challenges associated with using modern technology in the classroom. Such a model enables students to watch videos and do the readings in preparation for class discussions in advance anytime, anywhere and not necessarily on campus.

As far as the integration of technology, particularly the use of an e-learning platform, in learning contexts is concerned, the results of the study demonstrate that successful use of technology for classroom learning necessitates carefully choosing the tasks and activities (visual and textual) that attract students and increase their willingness to learn. In addition, this study underscores the significance of overcoming any case of student computer illiteracy or

fear associated with the integration of new kinds of learning activities in the educational process. According to the study, this can be achieved by providing students with constant technical assistance through, for example, sharing course-tailored manuals about the new virtual learning environment or referring them to the IT department in the pertinent educational institution for technical support.

All in all, further research should be carried out and more data should be collected to make generalizations about students' perceptions with regards to blended learning and flipped classroom design. The investigation should also examine the types of activities and assignments that promote greater student engagement and improve their experience with blended learning and flipped classroom models, as well as the types of technical and logistic difficulties that both teachers and students face in blended and flipped learning.

References

- Alseweed, M. (2013). Students' achievement and attitudes toward using traditional learning, blended learning and virtual classes learning in teaching and learning at the university level. *Studies in Literature and Language*, 6(1), 65-73. Retrieved November 20, 2018 from <http://www.cscanada.net/index.php/sll/article/view/j.sll.1923156320130601.1464>
- Banerjee, G. (2011). Blended environments: Learning effectiveness and student satisfaction at a small college in transition. *Journal of Asynchronous Learning Networks*, 15(1), 8-19. Retrieved November 20, 2018 from https://secure.onlinelearningconsortium.org/publications/olj_main
- Bullmaster-Day, M. (2011). *Online and Blended Learning: What the Research Says. White Paper*. New York, NY: Kaplan K12 Learning Services. Retrieved November 20, 2018 from http://www.academia.edu/1143441/Online_and_Blended_Learning_What_the_Research_Says
- Fakhir, Z. & Ibrahim, M. (2018). The effect of blended learning on private school students' achievement in English and their attitudes towards it. *English Language and Literature Studies*, 8(2), 39-51. Retrieved November 20, 2018 from <http://www.ccsenet.org/journal/index.php/ells/article/view/75382>
- Fakhir, Z. (2015). *The Impact of Blended Learning on the Achievement of the English Language Students and Their Attitudes towards It* (Master's thesis, Middle East University, Amman, Jordan). Retrieved November 20, 2018 from https://meu.edu.jo/libraryTheses/5874904ebbd3b_1.pdf
- Graham, C. (2013). Emerging practice and research in blended learning. In M. Moore (ed.), *Handbook of Distance Education* (3rd ed., pp. 333-350). New York, NY: Routledge.
- Kafyulilo, A. (2015). Challenges and opportunities for e-learning in education: A case study. In J. Keengwe (ed.), *Handbook of Research on Educational Technology Integration and Active Learning* (1st ed., pp. 317-328). Hershey, Pennsylvania: IGI Global.
- Korkmaz, O. and Karakus, U. (2009). The impact of blended learning model on student attitudes towards geography course and their critical thinking dispositions and levels. *Turkish Online Journal of Educational Technology - TOJET*, 8(4), 51-63. Retrieved from: <https://files.eric.ed.gov/fulltext/EJ859497.pdf>

- Lord, G., & Lomicka, L. (2008). Blended learning in teacher education: An investigation of classroom community across media. *Contemporary Issues in Technology and Teacher Education*, 8(2). Retrieved November 20, 2018 from <http://www.citejournal.org/volume-8/issue-2-08/general/blended-learning-in-teacher-education-an-investigation-of-classroom-community-across-media>
- Obiedat, R., Nasir Eddeen, L., Harfoushi, O., AL-Hamarsheh, M., Koury, A. & Alassaf, N. (2014). Effect of blended-learning on academic achievement of students in the University of Jordan. *International Journal of Emerging Technologies in Learning (iJET)*, 9(2), 37-44. Kassel, Germany: International Association of Online Engineering. Retrieved November 20, 2018 from <https://www.learntechlib.org/p/182487/>.
- Picciano, A. (2006). Blended learning: Implications for growth and access. *Journal of Asynchronous Learning Networks*, 10. Retrieved November 20, 2018 from https://www.researchgate.net/publication/255620924_Blended_learning_Implications_for_growth_and_access
- Picciano, A. (2014). Big Data and Learning Analytics in blended learning environments: Benefits and concerns. *International Journal of Interactive Multimedia and Artificial Intelligence*, 2(7), 35-43. Retrieved November 20, 2018 from <https://pdfs.semanticscholar.org/814e/e53f2397879f86716bfe3566afe256e3e939.pdf>
- Picciano, A., Dziuban, C., & Graham, C. (Eds.). (2013). *Blended Learning: Research Perspectives*. Volume 2. New York: Routledge.
- Rovai, A. P., & Jordan, H. M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distance Learning*, 5(2). Retrieved November 20, 2018 from <http://www.irrodl.org/index.php/irrodl/article/view/192/795>
- Ultranet and Digital Learning Branch. (2012). *Blended Learning: A Synthesis of Research Findings in Victorian Education 2006-2011*. Melbourne: Department of Education and Early Childhood Development (DEECD). Retrieved November 20, 2018 from <http://www.education.vic.gov.au/documents/about/research/blendedlearning.pdf>
- Yapici, I. U., & Akbayin, H. (2012). High school students' views on blended learning. *Turkish Online Journal of Distance Education*, 13(4), 125-139. Retrieved November 20, 2018 from <https://eric.ed.gov/?id=EJ1000418>