Students Perception and Satisfaction towards Flipped Classroom system over Traditional mode of Classroom system reference to Jazan University: A Comparative Study

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Abstract

There has always been a growing controversy about selection of the Flipped classroom system over the traditional mode of classroom system and the vice-versa. However, especially after the COVID-19 the usage of Flipped Classroom system has increased and have taken different shapes in the form of Virtual mode. While the benefits of a flipped learning system have been acknowledged, a lack of learning pleasure remains a barrier to its widespread implementation. Therefore, the present study tries to make a comparative analysis about the student perception and satisfaction level in both the Traditional and Flipped classroom mode of system with reference to Jizan University in Saudi Arabia.

Different faculties of the Jizan University, Saudi Arabia students' responses were taken into consideration to test the most preferability mode of the students learning mode system (Traditional learning system v/s Flipped classroom style).

Keywords: flip classroom, traditional classroom, student perception, student satisfaction.

INTRODUCTION

Systems of education have changed in tandem with societal progress and requirements. Various improvements have been made to adapt educational systems to the changing times. unique characteristics of each period (Bachiller and Badía 2020). Modern university graduates are expected to not only memorise theoretical content, but also to be able to apply it in reality by figuring out how to do so. Students do not need to be "packed" with information for the rest of their life; instead, they should seek out, analyse, and acquire new information as needed. In other words, there is a shift from "lifelong education" to "lifelong learning," which is defined as the continual and self-directed pursuit of knowledge for a variety of objectives, both professional and personal. Students' professional and personal progress as future experts is aided by the notion of lifelong learning (Evseeva and Solozhenko 2015). The learning environment, situations, circumstances, resources, and so on that are beneficial in learner growth are all covered by the integration of technology with education. Teachers in a student-centred learning environment try to address students' interests, talents, and limitations based on their past experiences and knowledge. Teachers favour the conventional technique for students' knowledge acquisition in a knowledge-centred learning environment. A gain in information occurs when you apply fresh knowledge to a problem or someone else. Teachers must do thorough analysis in order to respond to queries about what students must know and do, as well as what stance they must take at the conclusion of a topic or course. In the delivery of this answer, the efficient and effective use of technology plays a significant role. Technology, science, and the ongoing advancements in these two fields all have an impact on education. The system's constant changes highlight the importance of

incorporating technology into all aspects of education. Without a doubt, the educational system needs to be aware of technology advancements and incorporate them into the system. In this environment, there have been several paradigm shifts. Technology advancements have encouraged the creation of new teaching and learning methods, as well as the consideration of a new teaching strategy: the flipped classroom. (Sezer 2017). Flipped learning is a novel way to learning in which homework and classroom activities are reversed. Students learn new information in the classroom, such as via lectures, and then practise it at home through homework. In flipped learning, students study at home, for example, by viewing videos created by the instructor, and then apply their abilities in class, where the teacher can easily monitor and correct them (Vĩnh n.d.). The Flipped Classroom is a teaching style that allows teachers to reduce direct instruction while improving one-on-one involvement in their classroom. This technique makes use of technology to provide students with online access to extra supporting educational material. This frees up time in the classroom that was previously utilised for lecturing. Students in three high school math classes where teaching was "flipped" were polled on their impressions of the Flipped Classroom and the role of social media, educational technology, mastery learning, and self-pacing in these settings (Johnson 2013). In accordance with, it the present study aims to focus on making a Comparative Study of Students' Perceptions and Satisfaction with the Flipped Classroom System vs. the Traditional Classroom System at Jizan University in Saudi Arabia.

The objective of the Research

The main objective of the research was:

1.   To study the attitude of the students towards the usage of the Flipped Classroom.

2.   To understand the students perception over the usage of Flipped Classroom.

3.   To evaluate the difference of satisfaction level of the students between the adoption of Flipped classroom and Traditional mode of classroom system.

4.   To examine the practical difficulties being encountered by the Flipped Classroom

system and Traditional mode of classroom system.

5.   To understand the students experience of the flipped classroom over the Traditional method of teaching.

Review of Literature

Scientific studies on the notion of a "flipped classroom" and its usage in teaching and learning are examined in a literature review.

People are enthusiastic about the flipped classroom as an important component of blended learning. Tremendous attention among academics and educators today, according to the researcher's study article "Use of Flipped Classroom Technology in Language Learning". The term "flipped classroom technology" refers to a manner of organising the educational process that reverses classroom activities and homework assignments. The authors describe the findings of their flipped classroom implementation experience in a language course (Evseeva and Solozhenko 2015).

Higher education has been pressed to adopt more flexible, effective, active, and student-centered teaching practises that address the constraints of traditional transmittal education paradigms. According to the researcher in the research article "The flipped classroom: for active, effective, and increased learning – especially for low achievers." In a last-year university research methods course, the researcher examined students' perceptions of flipped classroom education and discovered that the vast majority of students had a positive attitude toward flipped classroom, video, and Moodle, and that a positive attitude toward flipped classroom was strongly correlated with perceptions of increased motivation, engagement, increased learning, and effective learning. (Nouri 2016).

As described in the Research Article "The Effectiveness of a Technology-Enhanced Flipped Science Classroom," this study examined the ramifications of a flipped classroom on the education of students and motivation and found that in a flipped classroom, the pupils achieved both a higher level of academic achievement and motivation (Sezer 2017).

In the article "Flipped Classroom using a MOOC" the author (Lopes and Soares 2017), claims that Mathematicians Without Stress (MOOC) MOOC, the objective of this study was to offer an experimental Higher Educational plan dubbed "Flipped Classroom with a MOOC," which is employing the flipped classroom model as an educational method. This study examines the impact of flipping on student accomplishment and engagement, as well as the relationship between active learning practises and the approach. On the basis of their experiences in Mathematics Zero, students were polled on their thoughts on the teaching style of "Flipped Learning with a MOOC".

FT is a teaching style that promotes active learning and makes learning easier for students, according to a study titled "The Flip Teaching as Tool to Improving Students' Sustainable Learning Performance in a Financial Course" published in the Journal of Financial Education. Students' test scores show that FT may help them improve their performance while also developing other skills, including self-discipline and self-awareness, that contribute to long-term success in the classroom. This study contributes to current educational research and shows that FT can be introduced in a course block that can be applied to other courses (Bachiller and Badía 2020).

"Flipped Classroom: Trend or Effective Pedagogical Model Compared to Other Methodologies?" is a research article that discusses how the Flipped Classroom methodology is becoming more popular as time goes on, in part due to the increasing accessibility and spreadability of technological resources in education. The efficacy of this approach is still being debated, though. According to the authors' findings, , the Flipped Classroom might be more useful than traditional methods employed in higher education. Other educational levels, such as elementary, do not employ conventional techniques as much and hence might benefit more from it (Galindo-dominguez 2021).

Theoretical Background:

Students Perception and Satisfaction Level with Traditional Classroom system

Educational spaces portray an educational concept of teaching and learning. Essentialism is an educational theory that focuses on "injecting knowledge into pupils' minds." This mindset might be reflected in a classic lecture hall with fixed chairs all facing the podium. Various philosophical perspectives, such as empiricism and pragmatism, are regularly represented, in various classroom designs, demonstrating a philosophy of dynamic, collaborative teaching and learning. When bigger and specialised rooms were essential throughout the mediaeval university era, spatial patterns emerged. Because paper and books were few at the time, the primary purpose of lectures was to communicate the original source of information to pupils via the instructor's reading. Universities developed bigger, larger, and higher structures to meet the rising demand for enrolling slots. According to the ideas of 'Scientific Management,' These buildings' classrooms were designed to be more efficient. . This design may still be seen in many higher education classes today (Park and Choi 2014). There have been different level of perceptions and beliefs among the students catering to the traditional classroom systems. Traditional classrooms have their own site and set of classrooms. Students reside either close or on the college campus. Every day, they go to class and follow the same curriculum. The pupils, on the other hand, are all the same age. As a result, the educator may design preparations based on their psychological personalities. The pupils are divided into many courses. This style of school follows a set schedule and uses the same textbook throughout. They design courses based on the course's qualities as well as the students' cognitive growth. Students may master a variety of disciplines in a single day. Teachers, on the other hand, must encourage pupils to think and develop solutions to challenges based on their particular performance. They have face-to-face interactions (Yan Sufeng and Song Runjuan 2013).

Students Perception and Satisfaction Level with Flipped Classroom system

An inverted, or flipped the classroom is one in which information is delivered through video lectures that are viewed outside of the classroom, freeing up time in the classroom for student-centered activities such as active and problem-based learning. (Mason, Shuman, and

Cook 2013). The flipped classroom benefited students academically and motivationally since they were free to study at their own pace and felt competent during interactive learning activities in class. To put it another way, this type of learning instruction has enhanced academic progress, motivation, engagement, and interaction among students. (Zainuddin and Halili 2016). Components of student satisfaction must be addressed as blended or flipped education becomes more popular and dynamic forces such as adoption rates, learner expectations, levels of support, and other situations continue to change. . (Giannousi et al. 2014). Flipped learning encourages students to use modalities that increase their happiness. They promote autonomous learning and enhanced student participation in class, eclipsing conventional lecture approaches, which have been accused of encouraging student lethargy. Online lectures enable students to work at their own speed and remove time and geographical limitations. Flipped classrooms allow for more fruitful conversation and improved student participation throughout class time, improving students' ability to reason and apply what they've learned. Learning experiences may be enhanced at many undergraduate and postgraduate phases education by using a mix of strategies of teaching. (Sajid et al. 2016). More classroom time may be used to deliver rich, relevant learning activities using the Flipped Classroom. Lectures and worksheets are no longer required components of a class. Students welcomed the extra classroom time and the numerous activities that were integrated into teaching, according to the report. But, in order to assist student learning, how should this time be spent? This is a question that needs to be investigated further. Many professors discover that they have lectured for the majority of their careers. They may have more classroom time now, but they're stumped when it comes to inquiry-based laboratories. Activities that rely on communication? Are there any virtual learning communities? With the introduction of new technology and social media, instructors today have a plethora of possibilities. However, the ideal one to employ will most likely be determined by student requirements and instructor preferences. (Johnson 2013).

Research Methodology

Data Collection

To investigate how students feel about flipped classrooms in comparison to traditional classrooms the researcher made an attempt to collect the data from the students of 7 different colleges of Jizan University as an Model which included University College of Sabya, Darb. Abu Arish, Al-Arada. Dair, Samath and Farasan. A structured questionnaire were being distributed to the students and questions were being based on different statements which included different variables pertaining related to students perception towards Traditional Classroom and after use of Flipped Classroom and Students satisfaction level towards Traditional Classroom and Satisfaction level towards after use of Flipped Classroom. Questions were being asked on a 5 point Likert Scale ranging from 1 (strongly disagree to 5 strongly agree). The Data was being analysed with the help of IBM-SPSS Version 23 Software and MS-Excel. The study was mainly based on the Pre-Test and Post-Test pattern i.e, Students perception and Satisfaction level during the use of Traditional method and after the use of Flipped Classroom method. A Reliability and Validity check were being used to confirm the reliability of the data by using the Cronbach's alpha which showed a strong reliability of 0.957 value for 33 N of items.

Table No. 1.1

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.957	.953	33

An exploratory Factor Analysis was being conducted to reduce the number of factors and give a dimension reductions to the number of Constructs. A rotated Component Matrix was being used to reduce the number of factors on which the variables under investigation have high loadings and an eigen value greater than 1 was being considered for the total variances extracted from the communalities. From the total Variance explained it was being seen that out of the all the 7 components there was 1 components extraction sums of square loadings from student perception in traditional classroom environment followed by 1 components extraction sums of square loadings from student

perception in flipped classroom environment, student satisfaction level in traditional classroom environment and student satisfaction level in Flipped classroom environment.

Descriptive Statistics:

Total Population and Sample size

Table No. 1.2 *Age and Gender of the Respondents*

	AGE			GENDER		
	18 yrs-24 yrs	25 yrs and above	Total	MALE	FEMALE	Total
Frequency	296	26	322	45	277	322
Percent	91.9	8.1	100.0	14.0	86.0	100.0

Table No. 1.3 *University/ Colleges*

	Frequency	Percent
UNIVERSITY COLLAGE IN SABYA	191	59.3
UNIVERSITY COLLAGE IN DARB	5	1.6
UNIVERSITY COLLAGE IN ABU ARISH	63	19.6
UNIVERSITY COLLAGE IN AL-ARADA	2	.6
UNIVERSITY COLLAGE IN DAIR	14	4.3
UNIVERSITY COLLAGE IN SAMTAH	14	4.3
UNIVERSITY COLLAGE IN FARASAN	33	10.2
Total	322	100.0

The descriptive statistics mainly includes the demographic profiles of the 322 participants out of the total population which included 1000 participant with 95 percent confidence and 5 percent margin of error. From the table above (see Table 1.1) it can be seen that 293 respondents belonged to the age group from 18 years-24 years constituting 91 percent of the total respondents followed by 29 respondents from the age group of 25 years and Above that constitutes 29 percent of the total respondents. Out of the surveyed respondents 58 are Male and 264 are female that includes 18 percent and 82 percent of the total respondents being interviewed.

In addition, it is clear that the biggest number of respondents from table no. 1.3 who responded were 191 that accounted for 59.3 percent out of the total 322 respondents from the University College in Sabya followed by 5,63,2,14,14 and 33 of 1.6,19.6,0.6,4.3,4.3 and 10.2 percent of the University College in Darb, Abu-Arish, Al-Arada, Dair, Samtah, and Farasan .

Table No. 1.4 *Awareness about Flipped Classroom style*

	YES	NO	Total
Frequency	251	71	322
Percent	78.0	22.0	100.0

The above table (See Table no. 1.4) shows that 251 respondents of the 322 total respondents replied "Yes" about that they were aware of the Flipped Classroom which accounts to 78 percent. However 71 respondents of the 322 total respondents replied "No" about the awareness of the Flipped Classroom which accounts to 22 percent of the total 100% respondents.

Results

Student Perception in a Traditional Classroom Environment and Flipped Classroom

Table No. 1.5 *Students Perception Towards Traditional and Flipped Classroom Style of Learning*

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
perception_traditional	60	153	38	0	0
perception_flipped	32	0	0	133	86

It can be observed from the above table no. 1.5 that 86 students strongly agree and has a strong perception of the towards flipped classroom style of learning while 38 students stayed towards Neutral and 153 students Disagree towards the traditional kind of learning followed by 60 who strongly disagree with the traditional styles of learning. On the other hand 86 students has a strong liking towards the flipped classroom style of learning and they strongly agree that they have strong liking towards flipped classroom learning style while 133 students said that they agree that they have a liking towards Flipped classroom style followed by 0,0,32 towards Neutral, Disagree and Strongly Disgree towards Flipped Classroom style.

(H0): There is no significant difference between the student perception in a Traditional Classroom environment and student perception after the usage of Flipped classroom environment.

(H1a): There is a significant difference between the student perception in a Traditional Classroom environment and student perception after the usage of Flipped classroom environment.

In order to observe that if there was a significant difference between the student participation in Traditional Classroom environment and student perception after the usage of Flipped classroom environment the researcher used the Wilcoxon Sign Rank Test to test the difference between students attitude towards Traditional Classroom style of learning and Flipped Classroom learning style.

The Wilcoxon signed-rank test, which is similar to a dependent t-test, is a nonparametric test. The Wilcoxon signed-rank test can be used when the dependent t-test isn't appropriate because it doesn't require that the data be normal. It's used to compare two sets of identical people's scores. When we wish to look at any variations in scores from one point to the next, or when people are exposed to a variety of conditions, this can happen.

There was 7 statements related to Perception of the students towards usage of Traditional Classroom style and Flipped Classroom that

were being asked which mainly related to students interests and engagement, communication, understanding, pace,

motivation, fun method, and Time saving that was being asked.

Table No. 1.6 *Flipped and Traditional Perception Ranks*

Ranks

		N	Mean Rank	Sum of Ranks
perception_flipped - perception_traditional	Negative Ranks	0[a]	0.00	0.00
	Positive Ranks	219[b]	110.00	24090.00
	Ties	32[c]		
	Total	251		

a. perception_flipped < perception_traditional

b. perception_flipped > perception_traditional

c. perception_flipped = perception_traditional

Table No. 1.7

Test Statistics[a]

	perception_flipped - perception_traditional
Z	-13.081[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

As can be seen from the above table no. 1.6 that the Mean Rank of Positive ranks 110.00 is greater than the Negative ranks 0.00. On the other hand it can also be observed that 0 students perception towards traditional classroom style was greater than perception towards flipped

classroom style, 219 students perception towards flipped classroom style was greater than perception towards traditional classroom style and 32 students showed no change in the perception towards traditional and flipped classroom style.

By examining the final test statistics from the table Test Statistics (see table no.1.7) it can be observed that there has been significant difference, where the "Asymp-sig.(2-tailed) value which in this case is 0.000, in the students perception towards flipped classroom style and perception towards traditional classroom style which fails us to accept and reject the null hypothesis.

Student Satisfaction in a Traditional Classroom Environment and Flipped Classroom

Table No. 1.8 *Students Satisfaction Towards Traditional and Flipped Classroom Style of Learning*

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
satisfaction_traditional	58	122	71	0	0
satisfaction_flipped	32	0	0	91	128

It can be observed from the Table No. 1.6 that 58 students strongly disagree with their satisfaction towards traditional form of classroom style of learning while 122,71,0 students disagree, are neutral, agree and strongly agree with the statement. On the other hand 128 students strongly agree and are highly satisfied

with the Flipped mode of classroom teaching style and 32,0,0 and 91 have responded that they strongly disagree, disagree, are neutral and agree with the satisfaction towards the flipped classroom style.

(H0): There is no significant difference between satisfaction level of the student after the usage of flipped classroom and Satisfaction in Traditional Classroom environment.

(H1b): There is a significant difference between satisfaction level of the student after the usage of flipped classroom and Satisfaction in Traditional Classroom environment.

Table 1.9 *Flipped and Traditional Satisfaction Ranks*

Ranks

		N	Mean Rank	Sum of Ranks
satisfaction_flipped - satisfaction_traditional	Negative Ranks	0[a]	0.00	0.00
	Positive Ranks	219[b]	110.00	24090.00
	Ties	32[c]		
	Total	251		

a. satisfaction_flipped < satisfaction_traditional

b. satisfaction_flipped > satisfaction_traditional

c. satisfaction_flipped = satisfaction_traditional

Table No. 1.10

Test Statistics[a]

	satisfaction_flipped - satisfaction_traditional
Z	-13.043[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

As can be seen from the above table no. 1.9 that the Mean Rank of Positive ranks 110.00 is greater than the Negative ranks 0.00.The table above (see table no. 1.9) shows that 0 students have satisfaction towards traditional classroom style higher than satisfaction towards flipped classroom style, 219 students have satisfaction towards flipped classroom style higher than satisfaction towards traditional classroom style and 32 students showed no change between the satisfaction towards flipped classroom style and satisfaction towards traditional classroom style.

However, by examining the final test statistics from the table Test Statistics (see table no.1.10) it can be observed that there has been significant difference, where the "Asymp-sig.(2-tailed) value which in this case is 0.000, in the students Satisfaction towards flipped classroom style and Satisfaction towards traditional classroom style which fails us to accept and reject the null hypothesis.

Discussion, Conclusion, and Suggestions

In the present study, the researcher made an attempt to make a comparative analysis for the student's perception towards Traditional and Flipped classroom style and student's satisfaction towards Traditional and Flipped Classroom style. The student's responses from Jizan University and College were being recorded. Different constructs were being created pertaining to students' perception towards Traditional and Flipped classroom style and student's satisfaction towards Traditional and Flipped Classroom style. There was a total of 322 participants were selected for the study. The results indicated that there was a significant difference found between the student perception in a Traditional Classroom environment and student perception after the usage of Flipped classroom environment along with having a significant difference between the satisfaction level of the student after the usage of flipped classroom and Satisfaction in Traditional

Classroom environment, which led to the rejection of both the Null Hypothesis and move on with the alternative Hypothesis.

The results also showed that the students had a higher perception and satisfaction towards Flipped classroom-style than perception and satisfaction towards Traditional Classroom styles. Discussing the perception towards Flipped Classroom styles the results showed that students found the strategy used in the Flipped Classroom style more interesting and engaging, giving more space to communication, providing better understanding, giving a greater pace to the learning systems, motivating, a fun method and enabled in saving time and expenses as compared to the perception towards Traditional Classroom style.

Moreover, the satisfaction towards Flipped Classroom styles showed that the students found the strategy used in the Flipped classroom-style more interactive and communicative, having proper feedback mechanism, having easy access to frequently asked questions, boosted the student's confidence level, proper troubleshooting strategy, and completely satisfied.

A decline in student happiness and motivation is one of the most commonly stated difficulties with the flipped classroom (FC) method of education. These concerns may have an impact on the FC model's efficiency. The FC model of teaching's issues with student satisfaction and motivation are assumed to be linked to the students' e-learning readiness. (Yılmaz n.d.).

Traditional lecture approaches, which have been criticised for encouraging apathy among students, are surpassed by flipped classroom styles, which improve student involvement in class. Online lectures enable students to work at their own speed and remove time and geographical limitations. Flipped classrooms allow for more fruitful conversation and improved student participation throughout class time, improving students' ability to reason and apply what they've learned (Sajid et al. 2016).

In Saudi Arabia, flipped learning, a relatively new idea, has shown positive effects, including increased student satisfaction. In flipped classrooms, traditional lecturing has been replaced with active student-centered learning, which increases critical thinking, application, and knowledge retention.

The Flipped Classroom approach may be very beneficial for acquiring new abilities in both scientific and non-scientific fields. It may be more appropriate if future studios in cooperative disciplines, such as mathematics, require students to attend five lessons each week. This might aid in the development of a sensibility in students' encounters with the flipped classroom method, which they are exposed to on a regular basis. Furthermore, long-term observations should be evaluated in order to better understand and promote students' involvement and participation in flipped classrooms (Alwaqdani 2018).

A more practical study is required to have a better grasp of the flipped approach's usefulness in improving student learning results in other university college courses. (Alamri 2019).

The lack of such active methods and successful practises in global higher education institutions should be investigated in future research.

Reference

[1] Alamri, Mahdi M. 2019. "Students' Academic Achievement Performance and Satisfaction in a Flipped Classroom in Saudi Arabia." 11(1):103–19.
[2] Alwaqdani, Mohammed. 2018. "RESEARCH ARTICLE FLIPPED CLASSROOM APPROACH IN SAUDI ARABIA CONTEXT: STUDENTS' EXPERIENCES IN A FLIPPED COMPUTER SCIENCE CLASSROOM IN HIGH SCHOOL Alwaqdani."
[3] Bachiller, Patricia, and Guillermo Badía. 2020. "The Flip Teaching as Tool to Improving Students' Sustainable Learning Performance in a Financial Course." Sustainability (Switzerland) 12(23):1–11. doi: 10.3390/su12239998.
[4] Evseeva, Arina, and Anton Solozhenko. 2015. "Use of Flipped Classroom Technology in Language Learning." Procedia - Social and Behavioral Sciences 206(November):205–9. doi: 10.1016/j.sbspro.2015.10.006.
[5] Giannousi, Maria, Nikolaos Vernadakis, Vassiliki Derri, Panagiotis Antoniou, and Efthimis Kioumourtzogoul. 2014. "A Comparison of Student Knowledge between Traditional and Blended Instruction in a Physical Education in Early

Childhood Course." Turkish Online Journal of Distance Education 15(1):99–113. doi: 10.17718/tojde.99593.

[6] Johnson, Graham Brent. 2013. "Student Perceptions of the Flipped Classroom." (January).

[7] Mason, Gregory S., Teodora Rutar Shuman, and Kathleen E. Cook. 2013. "Comparing the Effectiveness of an Inverted Classroom to a Traditional Classroom in an Upper-Division Engineering Course." IEEE Transactions on Education 56(4):430–35. doi: 10.1109/TE.2013.2249066.

[8] Park, Elisa L., and Bo Keum Choi. 2014. "Transformation of Classroom Spaces: Traditional versus Active Learning Classroom in Colleges." Higher Education 68(5):749–71. doi: 10.1007/s10734-014-9742-0.

[9] Sajid, Muhammad R., Abrar F. Laheji, Fayha Abothenain, Yezan Salam, and Dina Aljayar. 2016. "Can Blended Learning and the Flipped Classroom Improve Student Learning and Satisfaction in Saudi Arabia ?" 281–85. doi: 10.5116/ijme.57a7.83d4.

[10] Sezer, Baris. 2017. "The Effectiveness of a Technology-Enhanced Flipped Science Classroom." Journal of Educational Computing Research 55(4):471–94. doi: 10.1177/0735633116671325.

[11] Vĩnh, Triều. n.d. "Computer Assisted Language Learning Using the Flipped Classroom to Enhance EFL Learning Learning."

[12] Yan Sufeng, and Song Runjuan. 2013. "Virtual Classroom and Traditional Classroom." (Icetms):0111–13. doi: 10.1109/nces.2012.6543379.

[13] Yılmaz, Ramazan. n.d. "Exploring the Role of E-Learning Readiness on Student Satisfaction and Motivation in Flipped Classroom."

[14] Zainuddin, Zamzami, and Siti Hajar Halili. 2016. "Flipped Classroom Research and Trends from Different Fields of Study." International Review of Research in Open and Distance Learning 17(3):313–40. doi: 10.19173/irrodl.v17i3.2274.

[15] Alamri, Mahdi M. 2019. "Students ' Academic Achievement Performance and Satisfaction in a Flipped Classroom in Saudi Arabia." 11(1):103–19.

[16] Alwaqdani, Mohammed. 2018. "RESEARCH ARTICLE FLIPPED CLASSROOM APPROACH IN SAUDI ARABIA CONTEXT : STUDENTS ' EXPERIENCES IN A FLIPPED COMPUTER SCIENCE CLASSROOM IN HIGH SCHOOL Alwaqdani."

[17] Bachiller, Patricia, and Guillermo Badía. 2020. "The Flip Teaching as Tool to Improving Students' Sustainable Learning Performance in a Financial Course." Sustainability (Switzerland) 12(23):1–11. doi: 10.3390/su12239998.

[18] Evseeva, Arina, and Anton Solozhenko. 2015. "Use of Flipped Classroom Technology in Language Learning." Procedia - Social and Behavioral Sciences 206(November):205–9. doi: 10.1016/j.sbspro.2015.10.006.

[19] Giannousi, Maria, Nikolaos Vernadakis, Vassiliki Derri, Panagiotis Antoniou, and Efthimis Kioumourtzogoul. 2014. "A Comparison of Student Knowledge between Traditional and Blended Instruction in a Physical Education in Early Childhood Course." Turkish Online Journal of Distance Education 15(1):99–113. doi: 10.17718/tojde.99593.

[20] Johnson, Graham Brent. 2013. "Student Perceptions of the Flipped Classroom." (January).

[21] Mason, Gregory S., Teodora Rutar Shuman, and Kathleen E. Cook. 2013. "Comparing the Effectiveness of an Inverted Classroom to a Traditional Classroom in an Upper-Division Engineering Course." IEEE Transactions on Education 56(4):430–35. doi: 10.1109/TE.2013.2249066.

[22] Park, Elisa L., and Bo Keum Choi. 2014. "Transformation of Classroom Spaces: Traditional versus Active Learning Classroom in Colleges." Higher Education 68(5):749–71. doi: 10.1007/s10734-014-9742-0.

[23] Sajid, Muhammad R., Abrar F. Laheji, Fayha Abothenain, Yezan Salam, and Dina Aljayar. 2016. "Can Blended Learning and the Flipped Classroom Improve Student Learning and Satisfaction in Saudi Arabia ?" 281–85. doi: 10.5116/ijme.57a7.83d4.

[24] Sezer, Baris. 2017. "The Effectiveness of a Technology-Enhanced Flipped Science Classroom." Journal of Educational

Computing Research 55(4):471–94. doi: 10.1177/0735633116671325.

[25] Vĩnh, Triều. n.d. "Computer Assisted Language Learning Using the Flipped Classroom to Enhance EFL Learning Learning."

[26] Yan Sufeng, and Song Runjuan. 2013. "Virtual Classroom and Traditional Classroom." (Icetms):0111–13. doi: 10.1109/nces.2012.6543379.

[27] Yılmaz, Ramazan. n.d. "Exploring the Role of E-Learning Readiness on Student Satisfaction and Motivation in Flipped Classroom."

[28] Zainuddin, Zamzami, and Siti Hajar Halili. 2016. "Flipped Classroom Research and Trends from Different Fields of Study." International Review of Research in Open and Distance Learning 17(3):313–40. doi: 10.19173/irrodl.v17i3.2274.