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A REVIEW OF GLOBAL STUDIES PERFORMED WITHIN THE FRAMEWORK OF THE FLIPPED CLASSROOM MODEL

Literature review

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Abstract

This research aims to provide information about the flipped classroom model, that is brought to the literature in terms of distance education and innovative approaches and which has taken place in learning and teaching environments and around the world during the COVID 19 Pandemic process. In addition, the aim is to guide researchers and educators by revealing the negative and positive of this model with the relevant studies in the literature. In the current study, scientific studies about flipped classroom were examined by scanning the literature. The literatur review is carried out in traditional kind of this method, by compiling the literature.

The use of innovative approaches in the globalizing world is important for all countries to follow each other and progress at the same level. With the development of technology and its transfer to educational environments, the flipped classroom, that is a most up-to-date approach examples in today's world, the theoretical part, that is, according to Bloom's Taxonomy, which should be taught in the lesson, is transformed into an individual acquisition out of the classroom for the learner, and active in the time he spends with his friends and teacher in the classroom. Through this way, learning activities and high-level learning can be carried out.

Thus, the content of the lecture before and during the class time can be differentiated and varied by the educator. These facts can contribute to the differentiating the education process according to the learners individual differences. In this context, in this study, more comprehensive general information about the flipped classroom was brought out, the weak and strong sides of this model were emphasized, the ways of enriching and differentiating the curriculum with such models were emphasized, and suggestions were made to researchers and educators.

Key Words: Flipped Classroom, Curriculum, Education, Learning Model

1. Introduction

Due to the technologies used in the constantly changing and developing education process, some changes are needed in the education and training processes. Learning approaches that differ with the developments in technology also emerge in the context of current educational sciences. Traditional educational approaches and models, which have been going on for centuries, seems inadequate for these changing and developing needs. The necessity of preferring differentiated learning environments according to individual needs, instead of the models in which individuals with different learning speeds receive the same education, comes to the forefront of educators as a problem that should always be solved as a need, even a necessity, in the learning-teaching process, regardless of the type of school. One of the current learning approaches used in this context is the flipped classroom model, which is a form of blended learning or hybrid learning models.

The Flipped Classroom Model was firstly developed and implemented by Baker (2000) and Lage et al. (2000). However, Jonathan Bergmann and Aaron Sams have been the main proponents of this model. Flipped classroom model; Bergmann and Sams, chemistry teachers in Colorado, have to find solutions for their students who have to fulfill their athletic duties at the same time and therefore start to miss their classes. First of all, live lessons were prepared for these students who missed the lesson, and students were provided with remote access to the lesson. Before the relevant lesson, videos were prepared in accordance with the curriculum and these videos were conveyed to the students with various technical links, and the deficiencies of the students were eliminated (Bergmann & Sams, 2012). Afterwards, it was noticed and popularized by more people with TED (Technology, Entertainment, Design) talks given by founder of Model Khan Academy, Salman Khan.

When the literature on flipped classrooms examined, flipped classroom models' alternative names come out since its first appearance. According to Correa (2015), the idea-based origins of the flipped classroom model date back to the 1990s, although throughout the literature it emerged in the 2000s. In the early 90s, physics professor Eric Mazur, within the framework of a teaching strategy called "Peer instruction", students did their reading at home while completing their homework in the classroom (Mazur, 1997). Towards the end of the 1990s, a group of economics professors shared various multimedia content with learners. Instead of asking the students to read the related topic as homework before coming to their school, they wanted to watch the video content about the topics and named this, inverted classroom (Lage, Platt, & Treglia, 2000). Likewise, during the same processes, Baker and Mentch (2000) worked on a similar system, used it practically, and named it flipped classroom.

In addition to the many definitions of this model, which has become one of the new trends in education, in general, unlike the teacher-centered face-to-face learning methods and traditional methods, theoretical information is generally learned through videos before the lesson and various activities. In this way practices are used during the lessons to assimilate and consolidate the information (Strayer, 2009). Staker and Horn (2012), on the other hand, mentioned that in the flipped classroom model, which they defined as a sub-type of blended learning, learners may own the chance for learning the subject individually by using the distance education system at home as an advantage. There are also many pedagogical reasons for preferring the flipped classroom model along with the practical usage reasons. One of the priorities is that in this model, students can allocate more time to active learning activities in the classroom (Roehl, Reddy, & Shannon, 2013). It is stated that in the lessons in which this model is used, lectures and homework are replaced, and learning takes place independent of time and place (Turan & Göktaş, 2015). When evaluated in terms of the revised Bloom taxonomy proposed by Krathwohl, learning takes place individually before the lesson in line with the levels of remembering and understanding, which are the steps related to low-level learning, and during the lesson, learning at the level of application, analysis, evaluation and creation, which are the steps for higher-level learning. and teaching environment. In the application of this model, since the information to be grasped theoretically will be realized from home before the lesson, it will save time in the learning environment in the classrooms (Çukurbaşı & Kızılcı, 2017; Miller, 2012).

Flipped Learning Network (FLN) (2014) states that the features that should be found in the flipped classroom model are "Flexible Environment, Learning Culture, Intentional Content and Professional Educator". The flexible environment offers students the flexibility to choose when and where they learn. Learning culture states that it belongs to a student-centered approach.

Intentional content, on the other hand, is that educators have knowledge of what to teach and make decisions about what the relevant materials will be. The meaning of a professional educator is to play a more active role with his experience, since the educator should be a guide.

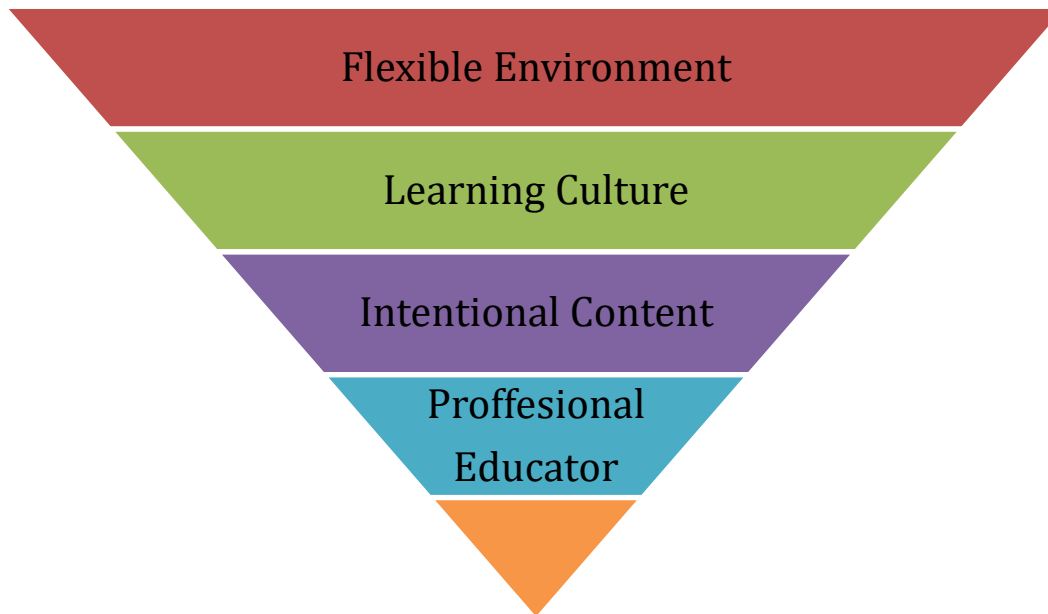


Figure 1. *Features That Should Be Found In The Flipped Classroom Model*

Thanks to the flipped classroom model, it is predicted that the stress level of students regarding homework or task to be done at home will decrease as they come prepared, and education will be more efficient and the model will increase the academic success of students who are allowed to spend more time on active learning activities (Aydın, 2016). In the classroom environment, they will have the opportunity to discuss and solve the problems they encounter by interacting with the teacher, and they will also have the opportunity to socialize through interactive activities. Thus, it is predicted that some disadvantages that may be experienced in distance education can be avoided (Bergmann & Sams, 2012).

There are clear differences between the “Traditional Model” and the “Flipped Classroom Model”. It can be clearly seen from which factors the change is caused. In the traditional model, the teaching and learning process is teacher-centered and subject-centered. Learners participating in the learning-teaching process take a passive role. There is a one-way learner and teacher communication. Repetition and reinforcement processes related to the lessons are taught out of the class. It is given in the form of homework to be done by the student himself. Educational process of flipped classroom is learner-centered. Contrary to the traditional method, the learning environment in the classroom can be realized with plenty of interaction, plenty of activity, mutual communication and a higher participation rate in terms of students and teachers. Since learning in the sense of group work is focused on being supported by the teacher, it can create positive effects such as taking responsibility, cooperating and creating common products, projects, etc. with the group. It can respond to the needs of students with different learning styles and speeds, taking into account individual differences. More difficult tasks are done in a classroom setting, while theoretical knowledge is learned at home.

Technological tools should be used both in the distance education process and in the classroom environment in order to differentiate and enrich the activities (Dursunlar, 2018).

In the current research, providing researchers and educators with conceptual information about the flipped classroom model in the literature, as well as to provide benefits to education stakeholders from different dimensions of scientific studies based on this model is aimed. The positive or negative results of the studies examined will also be included in the research, and it will be ensured that the sample studies are brought to the literature collectively.

1.1. Aim and Importance

Today, due to the results of the development and spread of technology, the way of application in technology education also differs. With the reflection of these changes and developments in education, communication tools such as the internet and computer have become an indispensable tool that is used extensively from kindergartens to higher education institutions. Technological innovations have made many new methods possible in education. Educators, who actively benefit from these, create new educational processes so that students can learn more efficiently. The flipped classroom model, which is one of the new approaches that emerged as a result of technological developments, stands out as a developing field of study. Especially during the COVID 19 epidemic period, the instructors who conduct their courses through distance education and blended education have often found the opportunity to use such methods. This model, which is integrated into education with technology, plays an important role in directing educational practices in our country, revealing the potential of the model, determining the strong and weak specialites of the model, and taking students out of the classroom environment and making them active. In this context, the present study has an important role as it will contain information that will benefit all stakeholder groups in terms of education.

2. Method

In the current study, scientific studies about flipped classroom were examined by scanning the literature. This study is a qualitative educational research based on literature review. In addition to academic studies, various methods that vary according to the type of research are used in the literature review, which is one of the first steps that can be applied in every field in an innovative sense (Köroğlu, 2015). The literatur review is carried out in traditional kind of this method, by compiling the literature. In traditional literature review studies, the information that is scattered in the relevant literature is handled as a whole, and a link is established between the topics discussed or a synthesis is reached (Baumeister & Leary, 1997). A literature review makes an in-depth analysis of existing publications related to a particular topic or research question. This review summarizes the current state of the available literature, different perspectives, methods, findings and conclusions. On the other hand, a literature review whis is carried out by compiling is a comprehensive study that collects and summarizes all available publications for a broad subject area or a particular discipline. Rather than answering a specific question, this type of review offers a broad perspective covering all research in the field. In this context, studies which are performed within the framework of flipped classroom model has been examined, based on the literature review by compiling method.

In this research, scientific studies with a high number of downloads and a high number of citations that could form the basis of the literature on this model were included. Generally the studies starting from 2010s took more place in the study. In order to reach these studies, the literature review was used with the "keyword" selected in the literature searches. Key words

selected for the study; flipped learning, flipped classroom model, flipped classrooms and inverted classroom. The scientific resources reached with the help of these keywords have been used to support the research in terms of both conceptual and scientific results, experimental applications and to reach the conclusion. The articles aimed to be reached in line with the purposes of the research were written with the Turkish and English meanings of the model on Google Scholar and were obtained by performing a literature review. In order to reach the relevant data in the subject searches related to the research, similar national and international academic databases were carried out, which include scientific studies such as YÖK National Thesis Center, YÖK Academic, ULAKBİM, Web of Science, etc.

3. Literature Review

Studies on the flipped classroom are increasing recently, depending on the development of technology. The study group of the studies examined within the scope of this research, which was carried out in order to reveal the trends in the studies carried out, the research method used, the technologies used to apply the flipped class, the subject areas and the findings on the topics discussed were presented in a compilation in this section and interpreted in the other sections.

Talan and Gülseçen (2018), in their study on determining the effects of flipped classroom model, blended learning and traditional teaching methods on students' self-regulation skills and computer self-efficacy perceptions, found that students in experiment-I, experiment-II and control groups. They stated that there was no significant difference between computer self-efficacy perceptions and self-regulation skills, but the flipped classroom model had a positive effect on students' self-regulation skills. Similarly, Wiginton (2013) concluded that the flipped classroom model is a suitable model for improving students' self-efficacy and self-regulation skills, and in this model, students have more self-confidence and beliefs, thus they feel more comfortable. Similarly, Marquard (2014) found that the self-efficacy scores of the experimental group in which the flipped classroom model was applied were significantly higher. In addition to these, Enfield (2013) stated in his study that thanks to the flipped classroom model, students have the opportunity to practice more, allowing them to learn independently, thus increasing their self-efficacy perceptions by improving their beliefs about themselves.

Göksu Yüreğilli (2018) in her research of thesis, aimed to determine the effect of the flipped classroom model on the English academic achievement, learning anxiety and attitudes of fifth grade students. As a result of the research, it was observed that the academic achievement levels, attitudes and anxiety levels of the students in the experimental group, in which the flipped classroom model was applied, and the students in the control group, in which the program prescribed by the Ministry of National Education, increased positively. In addition, it was concluded that the students in the experimental group had higher academic achievement and attitudes towards the English lesson than the students in the control group. It was concluded that the anxiety level of the experimental group was lower than the anxiety level of the control group. In qualitative analyzes, the students stated that the flipped classroom application made their learning easier by making them fun, they gained time to use the foreign language in the classroom because they watched the lecture on video at home, and their self-confidence increased because they came to the lesson knowingly. As a result of the research findings, the model have been found to be positive in the context of the flipped classroom, and it can be suggested that teachers in each disciplines should have teacher trainings on technology use and to increase their competencies in this area.

Gençer (2015) and Turan (2015) found that out-of-school activities contributed significantly to student success in the process of applying the flipped classroom model in their research. While Yavuz (2016) found in his research that pre-class activities increase motivation and

readiness, Aydın (2016) stated in his study that these activities contribute to being prepared for the lesson.

Turhan (2009) found in his research that the activities carried out during the lesson are interesting for students and effective in terms of education. Kaylak (2014), on the other hand, emphasized the importance of the contribution of face-to-face training in mathematics lessons in his research, while Aydın (2016) found that the flipped classroom model contributed to success and was beneficial because it created a competitive environment for the classroom process. Yavuz & Karaman (2021) examined the effect of the flipped classroom model on students' academic achievement and students' experiences with the model. As a result, it was stated that the model was enjoyed by the students as a positive aspect of the model, it increased the motivation in the lesson and it was not understood how the time passed. In addition, it was stated that with the model, time and place-independent learning took place and the lesson was not delayed.

In the literature, it is stated that the model creates a flexible learning environment, encourages students to participate in activities in the classroom, and increases active participation in the lesson (Graham et al., 2017; Rudow & Sounny-Slitine, 2015). It has also been stated that active learning strategies such as cooperative learning activities are used in the classroom (Critz & Knight, 2013).

Sögüt & Polat (2020) conducted a research to determine the effect of using the flipped classroom model in the teaching of the "Active Citizenship" learning area of the 5th grade Social Studies course on the academic achievement of the students and their views on the process. As a result of the research, it was determined that the flipped classroom model increased academic achievement according to the process determined by the Ministry of National Education in accordance with the curriculum. In the interview, it was determined that the participants put forward opinions that the model would be more efficient as a result of eliminating the deficiencies related to the flipped classroom model.

Mason, Shuman & Cook (2013) investigated the effectiveness of flipped classrooms in engineering learning in their studies for engineering students and stated that flipped classroom practices increase student success and more content can be accessed during the course.

Jenkins (2012) advocates that the flipped classroom has also advantages besides disadvantages for students and teachers. One of these disadvantages is difficulty of controlling and being sure about students' watching or not watching the videos and learn the subject. However, it is possible for students who do not have individual learning characteristics to have problems in the learning process. In addition, students must have a strong connection of internet connection. Duerden (2013) states that in the flipped classroom system, the student can have difficulties in the process of studying out of the class, without interacting with the lecturer and learners. The learners may also have some difficulties about asking during the learning process. So they can't connect the knowledge they learned, and this can be a reason of having disconnection during learning time. Miller (2012), during this model's usage, it is stated that, when the learning platform is not ready, according to learners' necessities, it won't be possible for them to be active for the listening activity, and their lack of reaction can decrease.

In addition to the possibility that the student learns the information incorrectly and cannot be understood, the time for spending by correcting the incorrect information another disadvantage for this model. Regarding the disadvantages, for example, even if the trainer who practices flipped classes has excellent experience in his field, video and lecture quality content may appear, because not every trainer can produce a technically quality video. In addition, it is a disadvantage to continue the course process by assuming that all students are watching. In

the absence of any parent or instructor at the beginning of the lesson, it may not be predicted under which conditions they will be able to watch on their own. For example, when a student watches a football match or listens to music while watching the related course material, many distractions are present with the student (Milman & Natalie, 2012). Or, the student may not be able to ask a question that comes to mind while watching the lesson, and may not receive instant feedback. Finally, not all students may have the same technological opportunity or may have limited access to technology. The flipped classroom of course shouldn't be seen as a panacea for solving all educational problems, but rather a way of enabling learning (Hamdan, McKnight, 2013).

4. Conclusion, Discussion and Recommendations

Within the scope of the literature review, the study topics covered about the flipped classroom model are academic achievement, opinions of students and teachers, participation of learners, attitudes, satisfaction of learners, motivation, perception of self efficiency, flexibility level of learning, writing skills and problem solving skills. In a study on the subject, it is stated that subjects such as academic achievement, participation, student and teacher opinions, and motivation are the subjects that are frequently studied in studies using the flipped classroom (Aydın & Demirer, 2017). In another study conducted for the flipped classroom in education, it is stated that subjects such as success, perception, concept/definition, attitude, motivation, metacognition, and satisfaction are mostly studied (Sakar & Uluçınar- Sağır, 2017).

However, it has been seen based on the findings within the scope of related studies that the preparation of a program according to individual differences, which is one of the most important elements in education, can be overcome by the help of the flipped classroom model. However, when research-based findings were examined, besides the advantageous and positive aspects, the disadvantages and negative findings were also put forward by the researchers.

In this part of the study, the results with positive findings and the results with negative findings are presented separately and in order. Solution suggestions for the findings related to negative results are also presented in the conclusion, discussion and suggestions section.

In the traditional education system, where teachers are more active in general, students feel limited and cannot learn at their own pace (Cooper & Valentine, 2001). Considering the learning abilities of the individual, it can be said that each individual has the ability to learn in a different structure (Serçemeli, 2016).

Considering the student necessities who has different and individual learning styles, preparations for flipped classroom applications should be made. Situations may arise where affective characteristics cannot be taken into account too much with the application of flipped classes, and individual differences are ignored. In this case, teachers will have to support learning in different ways. Therefore, it can be considered as a method that will increase the workload of the teacher during the preparation and support stages (Beebe, Gurenlian & Rogo, 2013).

In some studies, the observations show that, detailed results on effectiveness of the model could not be obtained with quantitative methods. Butzler (2014) stated in his study that he could not get enough results with quantitative data, and that mixed methods should be used by supporting the studies on the model with qualitative data. By using mixed methods, in-depth information on the effectiveness of the model in various dimensions can be presented. Mixed

methods' researchers can provide comprehensive, versatile and detailed research options, enabling them to find answers to different research questions (Johnson & Onwuegbuzie, 2004).

Among the findings of Yavuz and Karaman (2021), the flipped classroom system needs technology a necessity as the difficulties encountered, and it can't be implemented without the computer or internet. Moreover, the quality of the videos and their duration time should be well organised, on the other hand, it would cause low motivation and lead to the disruption of the process.

As a result, it has been revealed by field studies that flipped classrooms are successful for students and that they are a model where they can listen to their lessons whenever and wherever they want. This model has a function that can address their own learning in terms of individual speed for students whose understanding and speed of the lesson are not the same. Traditional methods may cause some students not to fully understand the subject during the lesson. However, since the students can repeat the videos through flipped classroom system, they are allowed to watch and if they want watch again the videos at any speed. Since the lessons need to be more associated with technology in terms of content and they need to be taught in an interactive way and it becomes easier for the students to perceive the subject visually. It ensures that students who cannot participate in the lesson for some reason do not fall behind in the class completely and do not have problems with understanding the subject. In addition, it is ensured that they are always accessible in the context of course materials. Teacher-student interaction can also be possible outside the school through mutually used systems. Responsibility awareness in students increases and no student remains passive in the classroom..

Based on the study findings and other findings, the following suggestions for practitioners and researchers can be presented within the scope of the literature;

In order for the flipped classrooms to be carried out effectively and efficiently in teaching, it is important to eliminate the technical equipment and equipment deficiencies of students and teachers. In classroom activities, gamification activities can be used at the beginning of the lesson to enable students to reinforce what they watch in the videos. The duration of the videos should be kept short in order to prevent the students from getting bored. In order to increase the viewing rates of the videos, motivating elements should be added to the videos. Worksheets can be used after the videos to understand whether students have watched the videos.

Flipped classes have features that are quite different from the traditional method. This situation causes the adaptation process of students to take time. In future studies, studies that examine the factors affecting the adaptation process of students can be carried out. The integration of flipped classrooms into the education process, which generally follows a faster process in terms of becoming widespread in higher education institutions, concerns a wide audience, including academics, students and administrators.

This model, which is frequently used in higher education, can be extended to other education levels. Scientific studies can be carried out with a larger sample group and longer-term, spread over time. In this model, which is carried out by working from home, students' individual studies may need to be supported more by the instructors with feedback outside the classroom, both with the help of the system and in the learning environments. Before implementing the flipped classroom, it may be beneficial for students and parents about informing the model, to eliminate the possible concerns of the students about the model, to meet with the parents when necessary, to inform the school administrators about the model, and to prevent the difficulties that will be experienced during the operation process. Lesson videos should also be of a quality that will attract the attention of the students. For this reason, it should be noted that instead of

ready-made videos, videos where the teacher lectures should be presented, the videos should not be longer than 10 minutes, and the sound and image quality should be good.

It is thought that these findings obtained as a result of the current research will guide future research, researchers and practitioners within the framework of the flipped classroom.



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