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Flipped Classrooms using Blackboard to Enhance the Instructional Design Skills of Postgraduate Students

Clases invertidas usando Blackboard para mejorar las habilidades de diseño instruccional de los estudiantes de posgrado

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Abstract

This study aims to determine the impact of using the flipped classroom approach through Blackboard, to enhance students' instructional design skills, and identify any challenges that may limit this us.
The study was carried out at the Northern Border University in Saudi Arabia in academic year 2020/2021, with ten students on the Instructional Design Course. The study uses a mixed methods approach, employing both a quantitative research method (test), and a qualitative method (semi-structured interviews).
The study produced several results, the most important of which being the effectiveness of using flipped classrooms in the development of instructional design skills. The study reveals a set of challenges that may limit the use of the flipped classrooms strategy through Blackboard, split into three sections. The first section includes the challenges relating to faculty members. The second section comprises the challenges relating to students. The third section incorporates external challenges.

Key Words: Instructional design, flipped classrooms, flipped learning, postgraduate students, blackboard.

Resumen

Este estudio tiene como objetivo determinar el impacto del uso del enfoque de aula invertida a través de Blackboard, para mejorar las habilidades de diseño instruccional de los estudiantes e identificar cualquier desafío que pueda limitar esto.
El estudio se llevó a cabo en la Universidad de la Frontera Norte en Arabia Saudita en el año académico 2020/2021, con diez estudiantes en el Curso de Diseño Instruccional. El estudio utiliza un enfoque de métodos mixtos, empleando tanto un método de investigación cuantitativo (prueba) como un método cualitativo (entrevistas semiestructuradas).
El estudio produjo varios resultados, el más importante de los cuales fue la efectividad del uso de aulas invertidas en el desarrollo de habilidades de diseño instruccional. El estudio revela un conjunto de desafíos que pueden limitar el uso de la estrategia de aulas invertidas a través de Blackboard, dividido en tres secciones. La primera sección incluye los desafíos relacionados con los profesores. La segunda sección comprende los desafíos relacionados con los estudiantes. La tercera sección incorpora desafíos externos.

Palabras clave: Diseño instruccional, aulas invertidas, aprendizaje invertido, Estudiantes postgraduados, pizarra.

Introduction

The concept of learning is constantly evolving, especially with the investment of modern technology for the purpose of alternative learning approaches, particularly those that support the enhancement of student learning and independence, such as the flipped classroom approach, which is one of the most important learning approaches that technology can contribute to, with creative, effective implementation. Peterson (2016) describes the

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flipped classroom as an educational approach that reverses the role of the classroom from a place for obtaining knowledge to a place for practicing knowledge, with activities that are traditionally completed outside of the classroom now being completed during class time.

Besides this, the learning management system Blackboard is one of the most important current modern technologies suitable for applying different learning approaches in general, with the flipped classroom approach in particular. The company that produces the Blackboard system defines it as an information system for managing education, monitoring students, and monitoring the efficiency of educational processes in educational institutions (Blackboard, 2021). This system provides great opportunities for students to communicate with the course outside of the lecture hall, anywhere, and at any time, due to this electronic system providing the various tools necessary to view the content of the course and to interact with it easily. It also provides the opportunity to communicate electronically with the course professor, as well as other registered students on the same course.

Research Problem

Despite the importance of instructional design for workers in the educational field in general, and for specialists in educational technology in particular, through his teaching of the instructional design course in the Master of Education Technologies program, the researcher noticed a weakness in students' instructional design skills, as the development of such skills requires practice and application, which is not available with the traditional lecturing method of teaching, but requires appropriate strategies that provide the student with the opportunity to understand the skills theoretically, and then apply and practice them practically, such as the flipped classroom strategy. Al Youssef (2020) therefore recommended expanding the use of the teaching model, using the flipped classroom approach, in teaching specialized courses for the College of Education students, especially on courses relating to the acquisition of teaching skills. The study also emphasized the importance of preparing and training faculty members for using technologies in education in order to apply modern methods and strategies in teaching, including the flipped classroom strategy.

The Blackboard system is a modern technology, characterized by many tools and services to assist faculty members to apply various learning methods and strategies, including the flipped classroom strategy. Thus, the El-Senousy, H. & Alquda, J. (2017) study recommended wider use of the flipped classroom approach through Blackboard in higher education in general, and for postgraduate students in particular. The Goedhart, et al. (2019) study also recommended that further studies should be conducted on post-graduate students in order to verify the extent to which the role of the flipped classroom develops students' skills, because the results may differ from one learning environment to another. Furthermore, the study (Busebaia, & John, 2020) recommended conducting studies in other curricula in order to determine their suitability for using the flipped classroom approach.

It is clear from the above that a problem could be formulated in needing to know the role of the flipped classroom using Blackboard to support the development of instructional design skills among masters' students in educational technology, and to recognise the obstacles that limit the use of flipped classrooms through Blackboard, from their point of view.

Research Objectives

The study identified the following two objectives:

(1) To determine the impact of FC using Blackboard to enhance students' instructional design skills.
(2) To determine the challenges of implementing the FC approach using Blackboard from the postgraduate student point of view.

Research Questions

The following research questions were addressed in order to achieve the above research objectives:

(1) What are NBU postgraduate students' levels of instructional design skills, both before and after studying the instructional design course, using FC through Blackboard?
(2) What are the challenges of the FC approach using Blackboard from NBU postgraduate students' points of view?

Importance of the Study

The importance of the study lies in investing in modern technology, including the learning management system (Blackboard), by applying innovative and modern methods and approaches in the provision of university courses, with flipped classrooms being one of the most important.

The current study is a theoretical addition to knowledge indicated by previous studies relating to the research topic and its variables.

Furthermore, the results of this study may help Northern Border University, as well as other universities, to adopt the integration of the learning management system (Blackboard) in the flipped classroom approach.

Moreover, identifying the challenges that limit the use of flipped classrooms using Blackboard helps decision-makers at universities to develop solutions to overcome such challenges.

Literature review

Several studies, such as (Bhagat et al. 2016; González-Gómez et al., 2016; Yang, Yin & Wang 2018; Day, 2018), confirm an improvement in student academic performance as a result of using the flipped classroom approach.

One of the most important advantages of the flipped classroom approach is the transformation of the student's role into researcher and participant in building knowledge, and the role of the teacher as a mentor. The flipped classroom also contributes to strengthening the spirit of cooperation among students, as well as bearing responsibility, as students take responsibility for their learning before, during, and after the course (Prust et al., 2015).

Knowledge and experience is gained and used at each stage of the flipped classroom approach in order to enhance students' critical and creative thinking, self-learning, and development of communication and cooperation skills during the learning process. Educational materials are available for students at the pre-classroom stage in order to prepare them for the discussion in the classroom stage. Students are provided with a set of learning activities, such as discussion and group presentations, with any required support from the teacher. Then, in the post-class stage, students are set assignments, tests, or enrichment activities in order to reinforce the knowledge gained from the previous stages (Al-Samarraie, et al., 2019). Thus, the flipped classroom approach has become a popular new method of teaching in the 21st Century (Wilson, 2020; Lee and Wallace 2018; Steen-Utheim & Foldnes, 2018).

There are, however, various difficulties that limit the use of flipped classrooms, with some teachers not accepting this approach as it significantly changes the educational process in terms of teaching activities and teacher practices. In addition, it requires more time compared to traditional methods Al-Samarraie, et al. (2019). Each teacher has his own teaching style that they are accustomed to, which they may not wish to change. Moreover, one of the most important challenges facing the implementation of the flipped classroom approach is the lack of full institutional support (Hao & Lee, 2016).

The concept of flipped classrooms is that learning is centered on the student, rather than the teacher. Many researchers (Betihavas et al., 2016; Lai & Hwang, 2016; Sohrabi & Iraj, 2016) believe that it is highly appropriate to utilize student-centered learning theories in flipped classrooms, such as active learning and collaborative learning, for example. Active learning can be defined as ‘any instructional method that engages students in the learning process’ (Prince, 2004, p. 223). The flipped classroom approach provides opportunities for students to interact and participate in learning activities, where the student goes from being a passive listener to an active learner. In addition, flipped classrooms enhance students' thinking and communication throughout the learning process, as they interact with the educational materials provided by the teacher in the pre-class stage in preparation for presentation in the class stage, through a range of learning activities, such as discussions and group presentations, with minimum support from the instructor.

Collaborative learning is broadly ‘a situation in which learners interact in a collaborative way’ (Dillenbourg, 1999, p. 8). The flipped classroom approach offers the flexibility of time, interacting collaboratively with peers, and participating in higher-order cognition. Through flipped classrooms, the student becomes a researcher and participant in building knowledge and obtaining information using technology, through learning outside of the lecture hall, enhancing the skills of collaborative work among students, and effective participation with faculty members. Moreover, flipped classrooms can also provide students with the opportunity to use class time to work together and participate in cooperative learning.

Despite the importance of technology, it is difficult to talk about its application in education without talking about instructional design, as this is one of the most basic elements in educational technology. Seels & Richey (1994, p. 31) defines educational design as ‘an organized procedure that includes a group of activities and skills related to education analysis, design,

development, implementation, evaluation and management.

The importance of instructional design is that it is the link between the theoretical and applied part of educational technology, making it imperative for all workers in the educational field to master the skills of instructional design, as well as specialists in the field of educational technology to use the best learning strategies that support this, especially those that invest in modern technology, including learning management systems. Despite the importance of instructional design skills, a limited number of studies have examined innovative teaching strategies to help students develop, such as the flipped classroom strategy.

Many studies have confirmed the effectiveness of the flipped classroom approach for developing students' skills. AlSaleh (2019) conducted a study to identify the effect of flipped classrooms on enhancing the research skills of postgraduate students at King Saud University. The results of the study's pre and post tests proved that the flipped classroom approach is highly appropriate for developing the skills of postgraduate students.

Al youssef (2020) conducted a study among students at the College of Education at King Faisal University, on the effect of the flipped classroom strategy on the development of various higher-order thinking and self-learning skills, through a questionnaire distributed to 100 students. The results of using the flipped classroom strategy revealed a statistically significant effect on developing skills for higher-order thinking and self-learning, with the study recommending expanding the use of the flipped classroom strategy for teaching specialized courses to students at the College of Education, especially on the courses relating to the acquisition of teaching skills.

Shih & Tsai (2017) also conducted a study on students' perceptions about the role of flipped classrooms in facilitating project-based online learning in higher education. The study used several tools, such as questionnaires, interviews, and a note card, on a sample of 67 university students. The results showed that the flipped classroom approach may enhance students' learning effectiveness, learning motivation, and learning interest, as well as encouraging diverse development and teamwork. Finally, various suggestions were proposed relating to flipped classroom research and instruction.

Sezer & Elcin (2020) conducted an experimental study which included 363 students from the Faculty of Medicine at Hacettepe University, aimed at identifying the effectiveness of the flipped classroom strategy in imparting students' skills. A performance test and feedback form were used as tools to collect data. The results revealed that students in the experimental group who were taught through the flipped classroom approach were more successful, and gained skills. The degree of their interaction with the lecturer was better and more qualified after practice, compared to the students in the control group who were taught using the traditional lecture-based approach.

The Elmaadaway, M. A. N. (2018) study revealed several results, the most important of which is that using flipped classrooms through Blackboard provides the opportunity for more students to participate in class activities, being able to ask questions and participate in solving problems with their peers.

Wang, F. H. (2017) conducted a study to explore the use of the flipped classroom strategy through an e-learning management system, the results of which showed a high impact on academic achievement and interaction between students, and with their academic staff. The study recommended using the flipped classroom strategy across learning management systems.

Mabrouk and Gendey (2018) conducted a study on the effectiveness of flipped classrooms using the Blackboard system to develop technical work skills, and the attitudes of the students at the College of Education at Al-Jouf University towards the use of practical skills. The results showed that flipped classrooms using Blackboard proved their effectiveness in developing technical work skills.

Nielsen et al. (2018) conducted an experiment with the sample divided into an experimental group and a control group. The aim was to discover the effect of teaching through the flipped classroom approach compared to the traditional approach, on the university's Statistics course. The test scores showed clear differences in student performance improvement in the experimental group, who studied using the flipped classroom approach, compared to the control group.

Busebaia, T. J. A. & John, B. (2020) conducted a study that aimed to assess the participation of nursing students in academic performance using the flipped classroom approach, by means of

multi-modal research, to find their observations and perceptions of the flipped classroom (FCR), compared to the traditional teaching approach. 22 female and four male students were studied, who reported that they had gained a deeper understanding of concepts, and were more motivated and confident when learning the course material. The results of the study support the use of FCR in learning pediatric course content. The study also recommended conducting studies in other curricula in order to determine their suitability for using the flipped classroom approach.

El-Senousy, H. & Alquda, J. (2017) conducted a study entitled The Effect of Flipped Classroom Strategy Using Blackboard Mash-Up Tools in Enhancing Achievement and Self–Regulated Learning Skills of University Students, on 60 post-graduate students. The results revealed that a difference was found in the average achievement scores of the experimental group of students, before and after the test, in favor of the post test. The study recommended a wider use of the flipped classroom strategy using Blackboard in higher education in general, and for postgraduate students in particular.

In contrast, the results of the Goedhart, et al., (2019) study conducted on master's students at Vrije University, Amsterdam, The Netherlands, indicated that although the overall experience was good, not all students agreed that the flipped classroom contributed to positive learning outcomes. Further studies were recommended, as these results may differ from one learning environment to another.

The results also indicated the need for significant institutional support to be one of the most important challenges facing the expansion of the use of the flipped classroom strategy.

Wilson, K. (2020) conducted a qualitative study about resistance to flipped classrooms in the higher education context. His findings revealed that perceived or actual increased workload, equity, and relevance to observed practice were key to understanding the nature of resistance embedded within an implicit understanding of what it means to carry out teaching.

An analytical study conducted by Shi, et al. (2020) aimed to identify high-quality experimental studies that investigated learning outcomes using the flipped classroom approach for university students. A systematic search was conducted in the database that includes the Web of Science, the Education Resources Information Center, and Elsevier ScienceDirect, in order to identify the studies, with a total of 33 studies included in this review. The results established that the implementation of flipped classrooms in education positively affects cognitive learning outcomes, and helps university students to improve their cognitive learning compared to traditional lectures.

Furthermore, the results of the studies indicated some challenges in implementing the flipped classroom strategy using Blackboard. For example, Al-Samarraie, et al. (2019) reported that one of the most important challenges is the length of time that it takes for teachers to prepare educational materials. In addition, there is a marked lack of evidence-based best practices for implementing flipped classrooms in higher education (Betihavas et al. 2016).

In Graziano's (2017) study, the teacher participants agreed that the most important challenge to implementing flipped classrooms in education is increased workload.

Akçayır & Akçayır (2018) conducted a study entitled The Flipped Classroom: A Review of its Advantages and Challenges, with the aim of uncovering the advantages and challenges of using flipped classrooms, as reported by students and faculty members. 71 research articles were analyzed, with the results revealing that the most common advantage of the flipped classroom is improved student learning performance. It was found that the majority of challenges related to activities outside of the classroom, such as student insufficient preparation before the class. A study conducted by Comber and Brady-Van den Bos (2018) on university students confirmed that one of the factors challenging the use of flipped classrooms is the difficulty of applying it to financially poor students.

Davenport (2018) and Sammel, et al. (2018) studies indicated a sense of weariness due to large volumes of preparatory work, limited incentive to complete the work, and a lack of tangible benefits from learning in this way.

Cabi's (2018) study also showed a main challenging factor to be resistance to change, as the results of the study found that some students had an urgent desire to stay with traditional education, and rejected changing to the flipped classroom strategy.

Al-Oufi's (2021) study demonstrated several challenges for using the flipped classroom, the most important of which were lack of internet

access for students, students' lack of interest in following up flipped classroom content, and a lack of skills required for dealing with the technology, programs, and applications needed for use in the flipped classroom. In addition, it was found that additional time and effort was required from both teachers and students.

Research Methodology

A mixed method approach was used for this study, employing a quantitative research method (test) and a qualitative method (semi-structured interview).

Participants

This study includes 10 female students on the master's program in the specialization of Educational Technology in the Department of Curriculum and Educational Technology at the College of Education at Northern Border University. It represents the total number of all students on the program at the time of conducting the study, in the academic year 2020/2021. This program's students study on many courses in the educational technology specialization, including the Instructional Design course, which is one of the most important basic courses in the major. This study was applied to students who are on this course for a full semester (18 weeks).

Intervention

In the first lecture, the flipped classroom strategy was explained, providing information about how it would be used through the Blackboard system. The lecture would be uploaded on the learning management system (Blackboard) seven days before it actually takes place, including presentations, video and audio clips. Students are then able to access and view this uploaded material prior to the lecture taking place. At the time of the actual lecture, a discussion of the topics takes place, as well as practical exercises in order to develop the required skills.

Data Collection

In order to answer the study's questions, data were collected using two methods: test and interview.

Test

The first question of the study used the test tool.

What are NBU postgraduate students' levels of instructional design skills, both before and after studying the instructional design course, using FC through Blackboard?

All of the program's students work in the field of education, for example, as teachers and supervisors, and were therefore expected to have a level of skill and experience in the field of instructional design. In order to view student progress, a pre-test was conducted before the course commenced, and the students were then re-tested at the end of the semester, after being taught strategically via the flipped classroom approach.

Due to the small number of participants on the study, testing the validity and reliability statistically was found to be challenging, however, the test was evaluated and presented to a group of experts in the field of educational technology, curricula and teaching methods, and evaluation. The referee's comments and amendments were considered in order to ensure validity and reliability, as the test included 30 questions relating to the skills of instructional design, including analysis, design, development, implementation, and evaluation.

Interview

Interviews were conducted in order to answer to the second question of the study.

What are the challenges of the FC approach using Blackboard from NBU postgraduate students' points of
view?

After reviewing the theoretical literature and previous studies relating to the topic of this study, the tool was constructed and interview questions were prepared, including 16 questions about the possible challenges of using the flipped classroom strategy through Blackboard, for teaching postgraduate students.

After building the tool in its final form, it was presented to a group of experts selected from Saudi university faculties, and then edited by means of deleting, adding, and amending various questions based on their comments. In addition, the researcher conducted a pilot study, applying the tool by conducting interviews with two female masters' students, in order to ensure the clarity of the sample's questions, and to determine the time required to conduct the interview.

Results and Discussion

What are NBU postgraduate students' levels of instructional design skills, both before and after studying the instructional design course, using FC through Blackboard?

This question was assessed using the paired samples t-test in order to compare the mean pre-test score with the mean post-test scores (Table 1).

Table 1.
Summary of Pre-Test and Post-Test Score

	Mean	Standard deviation	P-value
Pre-test	4.9	2.424413	0.000
Post-test	60	9.128709	

(Own authorship)

Table (1) above shows NBU postgraduate students levels in instructional design skills, before and after using the flipped classroom strategy through Blackboard.

The average pre-test score was found to be 4.9 (with a 2.4 standard deviation), while the average post-test score was found to be 60 (with a 9.1 standard deviation). This increase is found to be statistically significant (p-value=0.000). This result indicates that using the flipped classroom strategy through Blackboard is effective in developing the instructional design skills of postgraduate students. This may be attributed to the advantages provided by the learning management system (Blackboard) to implement the flipped classroom strategy with high quality, confirming the suitability of using the Blackboard system to effectively implement the flipped classroom strategy.

In addition, this result may also be due to the students' interest and motivation for using technology in their learning, as postgraduate students and specialists in educational technology.

This finding is consistent with Mabrouk and Genedy's (2018) study, confirming that the flipped classroom strategy using Blackboard has proven its effectiveness in developing students' technical work skills.

Elmaadaway, M. A. N. (2018) proved that the flipped classroom strategy using Blackboard provides the opportunity for more students to participate in class activities, asking questions and participating in solving problems with their peers.

This result is also consistent with the results of many other studies, such as (Al youssef, 2020; Busebaia, & John, 2020; AlSaleh, 2019; Sezer & Elcin, 2020; Shi, et al., 2020), proving the effectiveness of using flipped classrooms in developing the skills of university students.

What are the challenges of the FC approach using Blackboard from NBU postgraduate students' points of view?

After analyzing the personal interviews of the study sample, the results showed that there are several challenges that limit the use of flipped classrooms through Blackboard, which can be classified into three sections - challenges relating to faculty members, challenges relating to students, and external challenges.

First: Challenges relating to faculty members

Most of the study's sample agreed that despite the advantages and benefits provided by flipped classrooms, this approach requires additional effort from academic staff, as confirmed by one of the sample members below:

In my opinion, the most important challenge to using flipped classrooms is that it requires a great effort and a long time to prepare the material and produce it in an appropriate way to upload it to Blackboard.

This may be attributed to the many burdens on faculty members, as they have several responsibilities other than teaching, such as research, and participation in conferences, in addition to the various committees that they are on, as well as family and social responsibilities.

Participants also stressed that one of the most important challenges facing the application of flipped classrooms is the resistance to change by some faculty members, as mentioned by a participant below:

From my point of view, one of the critical factors impeding the use of flipped classrooms is the

reluctance of some faculty members to change from teaching in the traditional way.

The participants also emphasized that the lack of conviction of some faculty members in the importance and benefits of flipped classrooms is one of the challenges facing its implementation, as mentioned by a participant below:

Through our discussions with some faculty members, it becomes clear that some of them have a conviction that the benefit of flipped classrooms is not commensurate with the effort exerted on it, as some of them see that the result is the same, whether they use the traditional method or use the flipped classrooms method.

This may be attributed to the faculty member's reliance on his own opinion without reference to scientific studies and research, of which most have proven the effectiveness of flipped classrooms.

Some participants also mentioned that one of the challenges facing flipped classrooms using Blackboard is academic staff lack of skills in technology in education, including the use of Blackboard, as stated by one of the participants, as follows:

The flipped classroom strategy requires the faculty member to be familiar with the technical skills necessary for the success of this strategy, and this may not be available to some faculty members.

This may be due to a lack of training courses in the use of technology in education. In addition, some faculty members are not interested in using technology in education on a large scale.

These results are in agreement with several studies, where both Wilson, K. (2020) and Graziano (2017) confirmed that the most important challenge to implementing the flipped classroom approach in education is to increase the workload of academic staff. Al-Samarraie, et al. (2019) also reported that one of the most important challenges is the length of time that it takes teachers to prepare educational materials. Davenport (2018) and Sammel, et al. (2018) indicated that there is weariness due to lack of tangible benefit from learning in this way.

These results are also consistent with Al-Oufi (2021), who emphasizes that one of the most important factors limiting the use of flipped classrooms is a weakness in the necessary skills to deal with the technology, programs, and applications in the flipped classroom.

Second: Challenges relating to students

The results demonstrate several challenges relating to students, the most important of which is the lack of the necessary capabilities to use flipped classrooms, such as the internet and computers for some students. One of the participants confirmed that prior to using flipped classrooms, a reliable internet connection must be provided to all students. He states:

The lack of internet availability of adequate quality for all students is one of the most important challenges facing the use of flipped classrooms, as it is no secret to you that some students cannot connect to the internet due to the absence of a subscription to one of the telecommunications companies, or he may not have a computer or a smart phone.

This may be attributed to the economic situation of some families, where it can prove difficult to provide students with computers or smart devices, and subscribe to internet service providers, due to the high cost of smart devices, and the tariffs of subscribing to the internet. There could also be a lack of high-quality internet in many of the areas where students live.

On the other hand, participants mentioned that one of the challenges of using flipped classrooms is that it requires additional time and effort from students, as explained below:

Yes, flipped classrooms are very useful for us as students, but it takes an extra effort from us to read the lecture and read it well before the actual lecture date, and we unfortunately do not have enough time to do so, due to the many assignments required of us as postgraduate students.

This may be due to the fact that postgraduate students often have many assignments from their courses, in addition to often being married and having families, family responsibilities, and social duties.

The participants also stressed that another challenge of using flipped classrooms is low student motivation. A participant mentioned:

Really, I would like to continue in the traditional way, and I do not wish to change to the use of flipped classrooms. I do not have a strong motivation to use this type of education.

This may be due to the conviction of some students in looking for the easiest method of teaching, regardless of the benefit, as the use of flipped classrooms requires more effort from the student.

These results agree with the study of Comber and Brady-Van den Bos (2018), conducted on university students, and confirming that one of the factors challenging the use of flipped classrooms is the difficulty of applying it to financially poor students. Financially poor students may not have internet access, or the use of smart devices to connect to the internet. Akçayır & Akçayır (2018) assert in their study that the majority of the challenges relate to activities outside of the classroom, such as insufficient student preparation before class, due to the extra effort that is required to do so. Cabi's (2018) study also showed that another challenging factor is resistance to change, as the study's results found that some students have an urgent desire to stay with traditional education, and reject changing to the flipped classrooms strategy. Al-Oufi's study (2021) indicated that one of the challenges facing the use of flipped classrooms is the unavailability of the internet for all students, as well as weak learner motivation.

Third: External Challenges

The study's results revealed challenges other than those relating to faculty members and students. The most important of these challenges is the lack of necessary hardware and software for the production of content. One of the participants stated:

The university must provide the necessary tools to use flipped classrooms, such as content production programs, in an appropriate way with flipped classrooms.

This may be due to the economic factors of some universities, as these programs and devices need high financial support which may be difficult for some universities with low budgets.

On the other hand, most of the sample members agreed that one of the most important factors limiting the use of flipped classrooms is the inadequacy of flipped classrooms for all subjects, as one of the participants mentioned:

Despite the advantages of flipped classrooms, we must take into account that it is not suitable for all courses, as there are some courses that are difficult to use in them.

This may be attributed to the fact that the nature of courses can differ so much from one to another, for example, some courses are theoretical, some are practical, and some contain theoretical and practical parts. Moreover, the content of courses is different, whether in theoretical or practical courses.

Therefore, Busebaia, T. J. A. & John, B. (2020) recommended conducting studies in other curricula in order to determine their suitability for using the flipped classroom approach.

Conclusion

After analyzing the study's data and interpreting and discussing its results, the effectiveness of using flipped classrooms in developing instructional design skills among students on the Master of Educational Technology program at the Northern Border University is clear. The study also found a set of challenges that may limit the use of the flipped classroom approach through Blackboard, which are classified into three sections. The first section highlights the challenges relating to faculty members, and as such requires additional time and effort, resistance to change, lack of conviction in the importance of flipped classrooms for some, and weak skills in using technology in education. The second section discusses the challenges relating to students, including the lack of necessary capabilities, such as computers, internet connection for all students, the requirement of additional time and effort, and weakening the motivation of some students. The third section is external challenges, which includes a lack of the hardware and software needed to produce educational content, and the inadequacy of flipped classrooms for all courses.

Recommendations

Based on the results of the study, the researcher recommends the following:

1. Using flipped classrooms via Blackboard to develop postgraduate student's instructional design skills.
2. Developing the skills of faculty members to use the flipped classrooms strategy through Blackboard.
3. The necessity of providing high quality internet for all students.
4. Spreading the culture of integrating technology into university education.
5. Reducing the teaching burdens of faculty members who use flipped classrooms in their teaching.

6. The university must provide the necessary hardware and software to use flipped classrooms.

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