HONG KONG JOURNAL OF SOCIAL SCIENCES

香港社會科學學報

第一的第 60 期 (2022 春/夏) Vol. 60 Autumn/Winter 2022

Open Access Article https://doi.org/10.55463/hkjss.issn.1021-3619.60.39

The Relevance of Flipped Classrooms for ESP Courses in the Post COVID-19 Scenario

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Received: October 12, 2022 ▪ Reviewed: November 8, 2022

▪ Accepted: November 19, 2022 ▪ Published: January 5, 2023

Abstract:
This study is the result of testing the concept of a flipped classroom (FC) in an ESP class in the aftermath of COVID-19 scenario at a private university in Oman. The recent shift from online classes to face-to-face classes in the university exposed a significant knowledge gap that existed in the learners of English for ESP courses. To address this challenge, the authors decided to experiment on the concept of the FC in an ESP class for business administration students. As a result, instead of a classroom lecture, the simplified summary of prescribed lessons along with useful illustrations were posted online for the students to read at home before coming to the class. Consequently, the class-time was mainly used for solving application questions individually or in groups of mixed ability students. Additionally, special attention was given to slow learners during the experiment. This experiment proved to be very beneficial for the students as there was significant improvement in their grades for both ongoing and final assessments compared to the grades of students in another section of the same course that followed the traditional lecture method. The focus of the experimental class was on making students solve critical homework tasks during the class-time with appropriate teacher intervention. The first part of this paper describes the important FC concepts and their implementation in an ESP classroom and the second part analyses the final grades of both FC and traditional classes to understand the relevance of the FC model for ESP students. Therefore, the research goal of this study is to determine the effectiveness of the Flipped Classroom methodology by critically evaluating its pros and cons compared to the traditional lecture method. The novelty of this study consists in recommending complete inversion of the role of the traditional lecture method and homework tasks. In other words, FC believes that traditional lectures should be replaced with critical home-work tasks during the class-time to achieve the goal of education. The revolutionary concept of solving critical home-work tasks and exploring the practical applications of fundamental theories during the class-time can empower students to reconstruct and apply knowledge in practical and personally meaningful ways instead of spending their time listening passively to lectures. Therefore, implementing Flipped Classroom methodology in ESP classes can enhance the critical and cognitive skills of learners effectively.

Keywords: critical thinking, ESP course, flipped classroom, problem-solving, traditional class.

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新冠肺炎后情景中静电除尘器课程翻转课堂的相关性

摘要：
这项研究是在阿曼一所私立大学的新冠肺炎情景之后测试静电除尘器课堂中翻转课堂(FC)概念的结果。大学最近从在线课程向面对面课程的转变暴露了静电除尘器课程英语学习者中存在的巨大知识差距。为了应对这一挑战，作者决定在工商管理专业学生的静电除尘器课程中试验FC的概念。因此，不是课堂讲授，而是将规定课程的简化摘要连同有用的插图发布在网上，供学生在上课前在家阅读。因此，课堂时间主要用于单独或以混合能力学生为小组解决应用问题。此外，在实验过程中，特别注意慢学习者。事实证明，该实验对学生非常有益，因为与同一课程的另一部分采用传统授课方式的学生相比，他们在持续评估和最终评估中的成绩都有显着提高。实验课的重点是让学生在课堂上通过适当的教师干预解决关键的家庭作业任务。本文的第一部分描述了重要的FC概念及其在静电除尘器课堂中的实施，第二部分分析了FC和传统课程的最终成绩，以了解FC模式对静电除尘器学生的相关性。因此，本研究的研究目标是通过批判性地评估其与传统课堂教学法相比的优缺点来确定翻转课堂教学法的有效性。这项研究的新颖之处在于建议完全颠倒传统讲课方法和家庭作业任务的作用。换句话说，FC认为，传统的讲座应该被课堂上关键的家庭作业所取代，以实现教育的目标。在课堂上解决关键家庭作业和探索基础理论的实际应用的革命性概念可以使学生以实际和对个人有意义的方式重构和应用知识，而不是花时间被动地听课。因此，在静电除尘器课程中实施翻转课堂教学法可以有效地提高学习者的批判性和认知能力。

关键词：批判性思维、静电除尘器课程、翻转课堂、问题解决、传统课堂。

1. Introduction

This study outlines the relevance of testing the flipped classroom (FC) for ESP students, specifically in connection with the popularity of flipped classrooms (FC) in the post COVID-19 scenario. The recent shift from online classes to face-to-face classes in the university has exposed a significant knowledge gap among the learners of English for special purposes. Since the FC is designed specifically for enhancing the cognitive skills and critical thinking power of students, it could effectively address the knowledge gap that existed in ESP students because of continuous online classes. The sudden spread of the COVID-19 pandemic forced a complete lockdown on day-to-day activities of human life around the world. Consequently, the educational system also came to a complete standstill. However, many educational institutions surmounted this challenge by introducing online classes or distance mode of education through internet support, which lasted for a considerable time. When regular classes in the universities resumed after a gap of nearly two years, the major challenge faced by teachers was tackling the knowledge gap in students that resulted from the long stretch of online classes.

The primary function of a teacher is to disseminate knowledge and skills to the students during the class time. This is traditionally carried out through a lecture method in which the teacher explains the content material using illustrations and examples. In such traditional classes, normally the student engagement is limited to certain routine procedures or some individual or group activities designed by the teacher. As a result, the class activities and discussions are invariably teacher-centred and students often become merely passive spectators. Moreover, the tasks that require critical thinking are usually given as home-work. However, the Flipped Classroom (FC) is intended to promote student-centred learning by giving them opportunities for active engagement through making them solve critical home-work tasks during the class-time. Moreover, the teacher's presence in the class and his appropriate intervention during task completion will positively influence critical thinking and problem-solving skills of students, which can ultimately reflect in their overall performance and grades.

The FC is a type of blended learning that employs digital or online materials for learning the course content, which can be accessed by students at any time before coming to the class. As a result, the home-work tasks that require critical thinking skills can be performed during the class time under the guidance of the teacher. In other words, first, students watch short video lectures or other online materials at home to grasp the content material and later they are engaged in active problem-solving and critical thinking tasks during the class-time. Bishop and Verleger (2013) defined the FC as a student-centred learning method, which consists of two parts. The first part is an online uploading of the learning material in a learning platform which can be accessed online by students and the second part is made up of interactive learning activities such as solving critical home-work tasks or group discussions during the class hours with appropriate intervention from the teacher. According to Mull (2012), the FC prepares the students for the lesson through short video presentations, lectures, or podcasts posted online in

advance and make them ready to solve critical questions during the class time. However, according to Milman (2012), FC is an approach to transfer knowledge through videos online and to enhance students' cognitive skills through the process of solving critical questions and tackling aspects of practical applications about the topic during class-time.

The sudden shift from face-to-face class to online learning occurred because of the rapid spread of the Covid-19 pandemic throughout the world. Consequently, many studies have come up from different quarters on the challenges of implementing an online learning system effectively at short notice. In the context of the Arabian Gulf countries, the few studies that appeared were mainly from Saudi Arabia. For example, Tanveer et al. (2020) dealt with the challenges of the sudden shift in learning medium for teachers and students. Similarly et al. (2020) highlighted the online teaching methods adopted by the teaching community in some of the educational institutions in Saudi Arabia. However, Al-Nofaie (2020) dealt with the perceptions of Saudi students about online learning and Almekhlafy (2020) focused on the implementation aspect of online learning in Saudi Arabia. However, two studies could be identified from the Omani context. While the study by Syahrin & Salih, (2020) dealt with the online classroom experience in Oman, the study by Al-Maqbali & Raja Hussain (2022) focused chiefly on online assessment challenges. At present, most of the universities have reverted to the traditional mode of face-to-face classes. However, the recent shift from online classes to face-to-face classes in the university exposed the significant knowledge gap that existed among the learners of English, particularly for ESP courses. This situation had resulted from the long stretch of online classes in which direct interaction and intervention from teachers were absent. Since meaningful interaction between teachers and learners on an ongoing basis is essential for effective second language acquisition, online sessions had an adverse effect on ESP classes causing knowledge gap in learners.

2. Literature Review

The origin of the FC can be traced back to Nechkina (1984) who said that pupils should extract new insights from autonomous reading of a textbook. Similarly, King (1993) was against the practice of delivering lectures during class-time and assigning critical thinking tasks as home-work. She wanted a complete reversal of this practice to achieve the goal of education. According to her, the students should be engaged in reconstructing information and applying knowledge in new and personally meaningful ways during the class-time instead of spending their time listening to the lectures which can be done at home-work. Later, in 1997, the Harvard professor Eric Mazur insisted that information transfer should be taken out of the classroom. In his view, information assimilation and its practical application should be the primary goal of classroom activities. Consequently, many studies appeared supporting this view, which came to be known as Flipped Classroom (FC) and many universities began posting content videos or online lectures before the class and used the class-time for critical problem solving activities. For example, researchers like Lage et al. (2000), specified the necessity of replacing classroom lectures with media presentations of course materials accessible to students online whenever they wanted, in order to use the class hours for gaining in-depth knowledge of the topic through solving critical questions about the concepts they learned outside class hours.

In short, educationalists believe that the FC can explore the topics in greater depth and create meaningful learning opportunities primarily by introducing new topics outside the classroom through the digital media. Although many experts clearly define the concept of FC through their case studies and sporadic instances of experiments they conducted, there was a dearth of practical working models for instructors and educators. According to Vogelsang et al. (2019), FC is a highly contemporary subject with a steady increase in publications, especially during the COVID-19 pandemic. However, they lament that most of the research is case-based in which a systematic approach is found to be lacking. Lundin et al. (2018) also echoed similar views. As a result, Vogelsang et al. (2019) conducted a systematic survey of FC publications in their attempt to design a process model for flipped classroom courses. The focus of their model was on the development of useful guidelines for the practitioners of FC. In other words, they wanted to create a reference process model for FC course development from a teacher's perspective in which guidelines are clearly defined by incorporating basic tasks and milestones.

Recently, flipped learning has come to the limelight and become popular again in higher education in the background of COVID-19 pandemic as a viable alternative for teaching content materials. According to Khreisat (2022), who examined various online teaching strategies adopted during the COVID-19 pandemic in the context of Asia and the Middle East, identified the flipped classroom as the second most effective strategy after a systemic literature review. Recent research further highlighted the relevance of the FC in second language teaching. For example, Vitta & Al-Hoorie (2020), who focused their studies on ESP instruction methods, recommended that the course material should be posted online to prepare the students before going to the class and class time should be used for problem-solving, discussion, and higher-order thinking tasks to consolidate the content material. They meta-analysed 56 language learning reports involving 61 unique samples and 4220 participants. In their discussion and results, they claimed that flipped classrooms outperformed traditional classrooms. Furthermore, they claimed that flipped learning did not seemingly vary by age, but it varied by proficiency level and indicated that if the proficiency of the learner is higher, the effects are

also higher and concluded that flipped learning also had a clear and substantial effect on most language outcomes.

Considering the above-mentioned studies in the FC, this learning model could effectively address the teaching and learning challenges of ESP classes in the aftermath of COVID-19 pandemic due to the sudden shift from online classes to direct face-to-face classes. The greatest challenge of face-to-face classes that resumed in the aftermath of the COVID-19 pandemic was addressing adequately the knowledge gap in students caused by the long stretch of online classes. The lack of direct control and intervention from the teachers and the consequent loss of motivation on the part of students were the chief drawbacks of online classes. Furthermore, such online sessions could not promote student-centred learning necessary for developing their cognitive skills. To address the above issues, the authors decided to experiment the FC model in one of their ESP classes within the university framework to promote student-centred learning. Therefore, the research question or the current study examines how effective is the Flipped Classroom (FC) model for ESP students compared to students who follow the traditional lecture method in the post COVID-19 scenario. To validate the research question, the first author taught one section of an ESP course using the experimental FC model and the second author followed the usual lecture method in his class for another section of the same course. Finally, the grades of both the sections were analyzed in detail using the descriptive-analytic method of comparison and contrast to arrive at the effectiveness of the flipped classroom model.

2.1. Advantages of FC over Traditional Lecture Method

Since the literature review has highlighted the important features of a flipped classroom, it is necessary to understand the advantages of the FC model of instruction over traditional methods of teaching and learning. One of the most important benefits for teachers is that they should spend less time on explaining new topics as students come to the class with basic knowledge of the topic. This allows the teachers to spend their time exploring the topic in greater depth. Moreover, students develop independent study skills and improve their cognitive ability since critical questions are solved during the class hour that never happens in a traditional classroom. Moreover, FC mode of instruction provides students with interactive learning opportunities with their peers for solving difficult application questions that can enhance their cognitive skills. Finally, appropriate teacher intervention is available in the FC for completing difficult tasks during class hours. Since the primary materials on the topics are made available online, absenteeism in the class cannot create a considerable knowledge gap in learners. Additionally, teachers can re-use the carefully crafted content materials over a long time. In short, unlike the traditional classrooms, FCs provide ample opportunities for student engagement and interaction with teachers and peers. As a result, FC classes are more interesting than traditional passive lecture classrooms, which do not offer quality time for knowledge enhancement. According to Akcayır & Akcayır (2018) who undertook a systematic review of literature about the advantages and challenges of FC by examining 71 research articles, concluded that the most important advantage of FC is the improvement of learning performance by the participants. They also claimed that most of the reviewed articles highlighted enhanced learning motivation and development of positive attitude on the part of learners. The main challenge they found was about the quality of the uploaded videos.

3. Methodology

A descriptive-analytic method of comparison and contrast is employed in this research. The authors experimented with the FC model of instruction in one section of their ESP classes and followed the traditional lecture method in another section of the same course. The study sample consisted of 62 students who were distributed equally into two classes. The first group of 31 students belonged to the experimental class of the FC model of instruction and the second group of 31 students followed the traditional mode of instruction. Except for the mode of instruction, all other parameters were the same for both groups. As it was a coordinated ESP course, the final grades for the students were arrived at by adding the grades of Class Work (60%) and the Final Examination (40%). The 60% marks for classwork (CW) consisted of quizzes and a midterm examination conducted in the class by the respective course instructors. However, the final examination question paper (40%) is the same for both streams of students. Moreover, the examination is conducted at the same date and time for all sections, including the experimental group, as it is a coordinated ESP course. On a cumulative-grade analysis, it was found that the experimental FC class had a significantly higher class-average than the other section that followed the traditional lecture method of instruction. Therefore, the authors decided to analyze in detail the overall performance and grades of the two classes to understand the advantages of the FC model over the traditional lecture method concerning ESP classes.

4. Results and Discussion

4.1. The FC Model

The below grade distribution chart (Fig. 1) of the FC model of instruction shows that initially there were 31 students in the class. Later 2 students withdrew from the course and only 29 students completed the course and took the final examination. The graph shows that the highest number of students (10) could score only a minimum pass mark between 60 and 64 which indicates

that there existed a knowledge gap among students. 5 students scored between 65 and 69. Therefore, the students who scored between 60 and 70 constitute almost 50% of the class. However, the other 50% of the class could score 70 marks or above. The basic statistics (Table 1) reveal that the class average for the experimental class that followed the FC model is 71%. As there were two withdrawals, the pass percentage in the table is shown as 94 although there were no actual failures in the class. The maximum, median and minimum are respectively 90, 68 & 60. As there were no failures in the class who completed the course, the actual pass percentage for the FC model is 100.

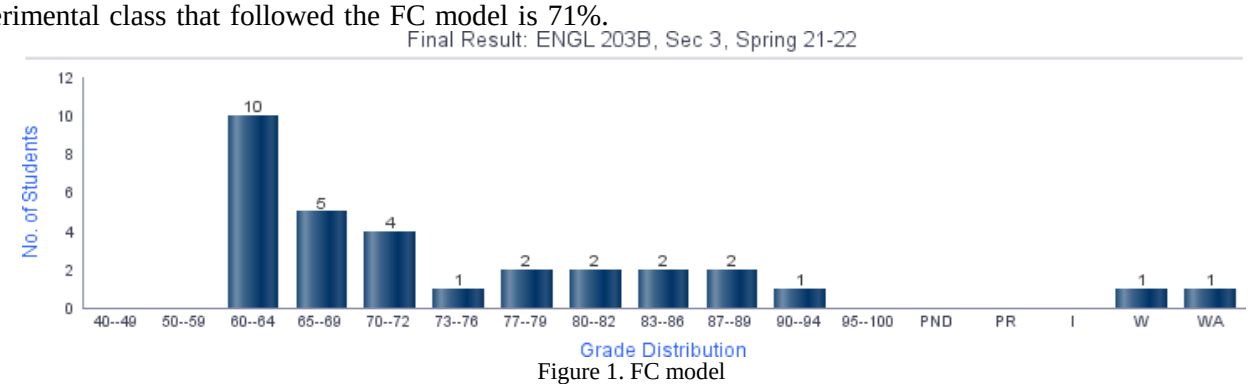

Figure 1. FC model

Table 1. FC model basic statistics

Measures	Grade	Point
Mean	71.0	1.7
Standard Deviation	9.7	
Minimum	60.0	1.0
Median	68.0	1.3
Maximum	90.0	3.7
% Fail	0%	
% Pass	94%	
% Withdraw	6%	
Total	31	

4.2. The Traditional Lecture Method

The below grade distribution chart (Fig. 2) shows the performance and grade analysis of the students who underwent the usual traditional mode of instruction. In this class also there were 31 students, but one student withdrew from the course and 30 students completed the course. The students who could secure the minimum pass mark between 60 and 64 were 20. That means almost two-thirds of the class got only the minimum required pass mark and 3 students could score between 65 and 69. This means that 75% of students scored less than 70 marks. As a result, only 25% of the class could score 70 marks and above. Furthermore, the class average for the traditional model is only 62.1% and the maximum, median and minimum are respectively 83, 60 & 30. 2 failures occurred, making 6%, and the pass percentage was 90, as illustrated in (Table 2).

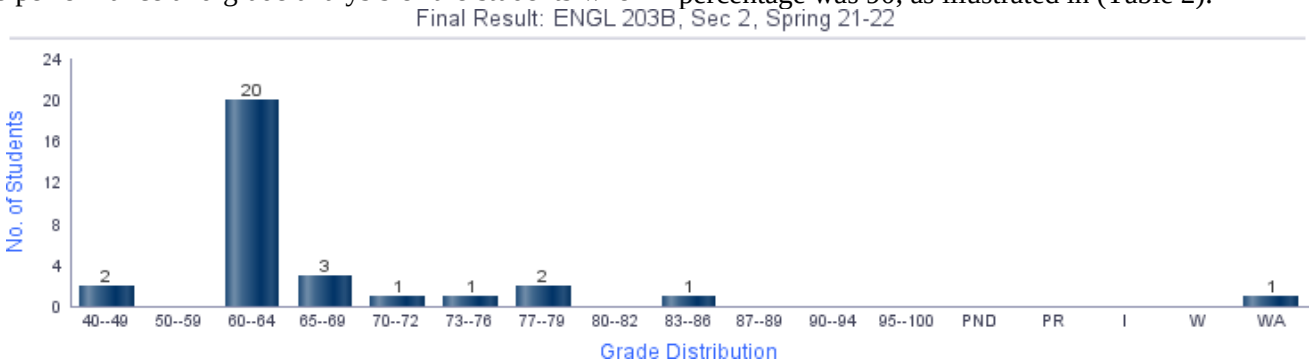

Figure 2. Traditional model

Table 2. Traditional model: basic statistics

Measures	Grade	Point
Mean	62.1	1.0
Standard Deviation	9.5	
Minimum	30.0	
Median	60.0	1.0
Maximum	83.0	3.0
% Fail	6%	
% Pass	90%	
% Withdraw	3%	
Total	31	

4.3. Comparative Analysis

As evident from the analysis of the above result and discussion, we can conclude the FC model of instruction in ESP classes can achieve higher grades and better pass percentage than students who undergo the normal traditional lecture method of instruction. Although there is similarity in the patterns of grades scored by students in both the streams, the percentage of marks scored by students from the FC stream is consistently higher than that scored by the students from the traditional mode of instruction. For example, the highest number of students in both streams is from the lowest pass percentage (60–64). In this category, there are only 10 students from the FC, while there are 20 students from the other class. Similarly, students who scored in range of 65–69 come second highest in both streams. 5 students in this category were from the FC and only 3 from the other class. The main difference that can be noted is that as the scores go up, the number

of students keeps increasing in FC compared to the other class. For example, there are 14 students in the FC who scored above 70%, which is around 50% of the class. In the other class, there were only 5 students who could score above 70% that is less than 18% of the class. Another major difference is that in the FC there are no failures, whereas there are 2 failures in the other class, which is 6% of the class. The patterns of maximum, median and minimum marks scored by students are also different. In the FC, they are 90, 68 & 60, but they are 83, 60 & 30 in the other class.

5. Conclusion

In short, the above analysis and comparison of the grades and performance of students in the experimental FC model and the normal traditional lecture mode of instruction clearly indicate that the flipped classroom (FC) model of instruction is more effective than the traditional lecture mode of instruction. This is evident from the higher scores achieved by individual students in the FC model and the performance of the whole class in terms of pass percentage. The scientific novelty of this study is that the cognitive skills of learners in the experimental FC class improved significantly, as evident from the lowest and highest marks scored by them compared with the overall grades of students in the traditional lecture class. Moreover, solving critical home-work tasks during the class-time in a group of mixed ability students could enhance the cognitive skills of low achievers. However, the authors are aware of certain limitations in this study, such as the size of the study sample being too small for drawing definite conclusions. Additionally, both classes are taught by two different instructors, which is not generally acceptable in serious studies. The authors are willing to admit the above limitations as this study was not a pre-planned research activity, but it took shape after noticing the significant variations in the marks scored by students in their respective classes after the COVID-19 period.

During discussion, one of authors experimented with the flipped classroom model to overcome the challenge of the knowledge gap among the students that resulted from the long stretch of online classes. The other author realized that it was the same knowledge gap in learners that resulted in their low grades. To write about the advantages of flipped classrooms, the authors suggested that it would be better if the article take up the comparative analysis of the marks scored by the experimental FC group and the traditional lecture group. Although this study does not conform to strict research parameters, the authors believe that this experimental study can contribute to and enrich the body of EFL/ESL knowledge because it tackles a significant classroom challenge faced by many ESP teachers.

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