# A Longitudinal Study on Flipping the Classroom in a College Level English Course: Performance of undergraduate students at the Lebanese International University (LIU)

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*Abstract*— **Technological trends have given rise to the development of flipped learning classrooms. An inverted (or flipped) classroom is a specific type of blended learning that uses technology to separate lectures from learning activities. While lectures will take place outside the classroom, learning activities and concepts practice will take place inside the classroom. This paper compares the learning achievement of two flipped English (ENGL 201) classes with traditionally taught classes at the same university. A longitudinal panel research study is used to investigate the learning environment of these two classrooms. At the onset of the pilot, students were less satisfied with the new orientation, but, they – later - became more open to the new learning method. These findings are discussed in terms of how they contribute to the stability and connectedness of classroom learning communities.**

***Keywords-Blended Learning; Flipped Classrooms; Educational Technology; Inverted Classrooms***

## I. INTRODUCTION

The Ministry of Education and Higher Education in Lebanon (MOEHE) regulates the education institutes through a regional education system. The education system in Lebanon is centralized, and this regulation is not direct. The education system is managed through regional education bureaus leaving the integration of technology into the education system up to the public or private institution. Given that the incorporation of technology is an integral part of the curriculum, instruction, and assessment, technology addition is inevitable.

Furthermore, the idea of integrating diverse approaches to teaching and learning has been one of the major goals of education. With the advancement of technological means come new trends to advance the goal of education, the goal of personalizing instructions, and leading up to the introduction of flipped classrooms. The university system at the chosen educational institution (LIU, Lebanese International University) piloted the flipped learning – a part of blended learning - for the first time in fall of 2014/2015.

In subsequent sections, we will address areas of research related to student reaction of integrating flipped classroom techniques with English 201 students at LIU (Lebanese International University). In the first section, research related to the impact of general goals of education will be addressed. In the second section, the goal of personalizing instruction with students will be discussed. Finally, the last section focuses on research-based strategies that have been implemented in flipped classrooms.

### *A. The Goal of Education*

According to Paul O'Keefe [6], individuals have certain approaches to goal pursuit. Two factors - cognitive and affective – influence how people pursue goals. Individuals need to be interested to maximize motivation and self-regulation, and the structure of achievement context influences motivation for attainment of goals as per O' Keefe and Garcia [7]. In short O'keefe's research examines motivational processes involved in the pursuit of goals.

### *B.* The Goal of Personalizing Instruction

According to Keefe and Jenkins [4], personalization of instruction and learning is the effort on the part of an educational institution to take into account individual student characteristics and needs and flexible instructional practices in organizing the learning environment. Teachers committed to personalizing instruction help their students develop personal learning plans, assist in diagnosing their cognitive strengths and weaknesses and other style characteristics, help adapt the learning environment and instruction to learner needs and interests, and mentor authentic and reflective learning experiences for their students. Personalization is broader in scope, more

 ISBN: 978-1-61208-422-0 

systematic in organization, and more authentic in its goals and strategies.

### C. Asynchronous Learning

In an asynchronous learning environment, students are able to actively participate in their own learning, giving them the opportunity to interact with their peers, provide peer feedback, and reflect on the status of their personal learning goals and outcomes [2]. In many learning environments, there are learning activities and expectations that require students to create, synthesize, explain, and apply the content or skills being taught [3]. Asynchronous technologies support learning and allow more time for student reflection, collaboration, and student-to-student interactions [1].

### D. Educational Technology

Technology has the potential to not only offer access to resources for learning in a superficial sense, but also to provide increased affordances for autonomous learning. Opportunities for interaction, situated learning, and support for learning outside formal contexts, have greatly improved because of technology. These affordances are not yet always capitalized on. However, they offer the opportunity to support the learning process [8].

### E. Flipped Classroom Approach

The flipped classroom approach has been used for years in some disciplines, particularly within the humanities. Barbara Walvoord and Virginia Johnson Anderson encouraged the implementation of this method in their book *Effective Grading* [9]. They suggest a model in which students gain *first-exposure learning* prior to class and focus on the *processing* part of learning (synthesizing, analyzing, problem-solving, etc.) in class. To ensure that students do the preparation necessary for productive class time, Walvoord and Anderson propose an assignment-based model in which students produce work (writing, problems, etc.) prior to class. The students receive productive feedback through the processing activities that occur during class, reducing the need for the instructor to provide extensive written feedback on the students' work.

According to Aronson and Intern [5], the Flipped Learning model of instruction is gaining consideration among instructors and professors at the college and university levels. In this model, some or most of the direct instruction is conveyed outside the group learning space using multiple modes of delivery. Class time is optimized for students to engage in hands-on learning, collaborate with their peers and evaluate their progress rather than traditional direct instruction delivery. Instructors can offer one-on-one support, guidance and motivation. This enables a shift from an instructor-centered classroom to a student centered learning environment. Flipped Learning is principally well-suited to higher education settings for a variety of reasons. The in-class discussion and enrichment activities allowed by moving content delivery outside of class time provide opportunities for students to develop vital skills needed in the 21st century, including critical thinking, creativity, communications, and collaboration. The model can also be especially useful in large lecture courses where student engagement and interaction is usually minimal. When students receive the lecture outside of class, they can use time in class with their peers more effectively by breaking up into smaller discussion groups or engage in other in-class activities. Instructors also make more effective use of their time by reviewing content that students actually need help with and guiding student discussions. The Flipped Learning model also permits for differentiated learning in classes of all sizes, since students can preview the lecture content at their own pace and ask questions on their own time [2].

## II. METHODOLOGY

### A. Research Purpose and Questions

The purpose of this study was to examine the effectiveness of flipping a college course designed to teach composition and research skills when compared to the traditional classroom orientation. The research question was: Does flipping the classroom impact learning effectiveness? The following point was considered: how much did students perceive what they learnt? The motivation was based on the expectation that flipping the classroom will have a positive impact on the students' achievements, quantitatively and qualitatively.

### B. Design of the Study

This research used a short - term longitudinal panel study in which students of two flipped classrooms at Nabatieh and Beirut campuses were tracked over a period of four months and, eventually, compared to their traditional counterparts. Inferential statistics were used to determine the significance of any differences found between and among groups. Observational data supplemented assessment data to help better interpret and understand the results. The setting for the study was an English (ENGL 201) course, a general University requirement that teaches the principles of "Composition and Research Skills", taught by two instructors at the Lebanese International University Nabatieh and Beirut Campuses. English 201 is a course where students study different types of discourse: narrative, description, argumentative, cause – effect, process, etc… and evaluate them based on the four bases of good writing: unity, coherence, sentence skills, and support. Students also learn how to conduct research and write essays.

### C. Description of the Instructional Approaches

This section describes the approaches tested in this study: 1) traditional instruction in the form of classroom lectures and large group based instruction. 2) a flipped classroom enabling technology using videos, pdfs, web links, narrated power points, word docs with classroom

 ISBN: 978-1-61208-422-0 

support. Students of both sections used the same material: all used a textbook, syllabus, assignments and exams.

### D. Form of Instruction

In the two chosen sections, instruction following the traditional approach took place inside the classroom. On the other hand, in the flipped approach, the instruction was provided using a specialized platform called "Coursesites" [10] where assorted materials were uploaded and announcements to students were made regularly keeping them updated of upcoming online sessions. Instructors had to send invitations to their students so that they can log onto the platform.

### E. Assessment

The primary reasons for evaluating students are those reasons which are an essential part of a teacher's main responsibility, helping students improve in knowledge and skills, feelings and attitudes, and hence, helping students learn. In both treatments, students were assessed formatively based on a criterion - referenced benchmark. Students sat for two types of exams: a midterm and a final one. The validity of the exams was taken into consideration.

### F. Class Process

In both orientations, students were asked to read the textbook materials before attempting to complete the homework. In the traditional classroom orientation, the teacher provided instruction in the classroom. Students were expected to be active learners: that is - come to class prepared, participate in class discussion, and ask questions. In the flipped orientation, students did not attend class, but tackled the starting material and completed some assessments online. In the flipped classroom orientation, in addition to reading the textbook material, students were able to watch narrated power points, videos, demonstrating how to accomplish the task. Pdf's, weblinks, and other attachements were also provided to aid the stds in understating the starting material. There was also a discussion forum that they can use in order to raise any question on mind. Answers to the forum can either be from fellow students or from the teacher her/himself. In addition, students were – through the forum able to read other perspectives and carefully consider a final response.

### G. Participants

Subjects in this research were undergraduate students taking the composition and research skills English course (ENGL 201) during the Fall semester of 2015 at the Lebanese International University (LIU), Nabatieh and Beirut campuses. This course was divided into a fourteen weeks term. Participants of both orientations were taught simultaneously. The participants took the course as a required part of their program. 36 participants were involved per each traditional and flipped class in Nabatieh and 35 participants per each section in Beirut.

### H. Data Collection and Analysis

To answer the primary question regarding the students' achievement, Pearson correlation was measured to identify any statistically significant correlation specially that the class sample was parametric. Final average grades were calculated based on the unified grading system of the four sections: Participation %10, Research Presentation %20, Essay Quizzes %20, Midterm Exam %25, and Final Exam %25. The tests were identical and designed to assess students' achievement of the learning outcomes of the course. The tests were formative and summative, online and in-class, assessments the instructors gave students throughout the learning process.

### I. Limitations

Course redesign took large time investment and effort since extra resources and material other than the traditional ones had to be found and used on part of the instructors. Student Commitment – to a certain extent - rendered the reliability of the instructions for students with high absence rate. Email was the main form to send announcements, where % 5 of the students still faced difficulty in checking their emails regularly, but, eventually, doing so before attending the sessions in question. There was difficulty in reserving the computer lab – in one of the campuses - to accommodate students in varied and convenient timings. Students felt threatened – at the beginning - by the use of technology, but – later - got accommodated with it. Some students had difficulty accessing internet in and outside the university, but had access to IT support though phone or mail.

## III. RESULTS

Quantitative results were used to identify patterns and explore the research findings.

### A. Students' Achievements

Given the fact that all students submitted their assignments, Pearson correlation was used to examine the effect of the instruction time (i.e., the regular classroom; the flipped classroom) on test scores. The main effects of instruction type in both Campuses: Nabatieh & Beirut were significant as shown in the tables below:

TABLE I. FINAL AVERAGE GRADES: NABATIEH

**CORRELATIONS**

| | | NAB201E | NAB201A |
|---|---|---|---|
| NAB201E | Pearson Correlation | 1 | .097 |
| | Sig. (2-tailed) | | .573 |
| | N | 36 | 36 |
| NAB201A | Pearson Correlation | .097 | 1 |
| | Sig. (2-tailed) | .573 | |
| | N | 36 | 36 |

 ISBN: 978-1-61208-422-0 

Table I shows that there is positive correlation between the traditional section (NAB201E) and the flipped one (NAB201A); the correlation as shown is (Sig .573)

TABLE II. FINAL AVERAGE GRADES: BEIRUT
**CORRELATIONS**

| | | Beirut201PF | Beirut201GT |
|---|---|---|---|
| Beirut201PF | Pearson Correlation | 1 | .310 |
| | Sig. (2-tailed) | | .070 |
| | N | 35 | 35 |
| Beirut201GT | Pearson Correlation | .310 | 1 |
| | Sig. (2-tailed) | .070 | |
| | N | 35 | 35 |

Table II shows that there is also positive correlation between the traditional section (Beirut201PF) and the flipped one (Beirut201GT); the correlation is (Sig .070).

## IV. DISCUSSION AND CONCLUSIONS

This paper explored how technology can be used to teach composition and research skills and what impact flipped leaning might have for students taking a college course in comparison to the traditional instruction. As shown in the tables above, both traditional sections in Nabatieh and Beirut showed positive correlations with their flipped counterparts. Hence, it demonstrated how technology integrated into class instruction has a similar impact as the traditional method, which was manifested by Pearson Correlation - .5 at Nabatieh section and .07 at Beirut's. Compared to the traditional treatment, the flipped classroom approach provided an effective method for delivering the class; it allowed students to learn course content at their own pace in which they had access to the online session either on campus computer labs (in which the broadband was made sure to be feasible to upload or download material) or at the convenience of their own home, allowing them to make a better use of their time and become more teacher independent. At first, students used to rely on the teacher to deliver the required material in class in which they were quasi passive recipients, whereas and after the very first two sessions, students were participating, commenting, giving their opinion on the class material used on Coursesites. It is of utmost importance to mention that to meet the students' needs, they were oriented on creating student accounts, surfing the site, downloading and uploading material, using discussion forums, & receiving online announcements, in the university lab before the official onset of the online sessions.

We expected the flipped approach to be better than the traditional one, but, this result was surprising. We found no statistical difference between the novice and the traditional ones when it comes to the students' final averages achievements, and that is – of course – quantitatively. Qualitatively, we are in the process of collecting students' feedback using a questionnaire "Students Satisfaction Survey Form – SSSF) which will allow us to have a more thorough view of the qualitative difference between the flipped and the traditional approaches from the students' perspective.

The evidence suggests that the flipped approach is at least as effective as the traditional one for delivering this class and somewhat more scalable which is impressive given the limitations stated above. Despite the fact that few students faced difficulty in logging onto their emails, most of them were able to accomplish the intended tasks in the modules. Moreover, students received vis-a-vis support and had access to their instructors during their office hours to fill in any gaps. It is a newly founded approach for students and they still managed to fair out the same as a regularly delivered class. Students had ownership of their own learning resulting in experiencing independent educational experiences. As the semester progressed, it was evident via the teachers' observation in class that students were able to tackle various directions and topics independently. Another point to elucidate, that prior to administering the final exam, a mock-final exam was uploaded in one of the modules which required higher order thinking skills, and the student fared very well.

We also expected that the blended approach might be inferior to the regular one in achieving the required outcomes and objectives especially with the limitations we had. But, the results of this study seem to suggest that this is not the case and students became well acquainted with technology and common educational means used globally.

In summary, our findings suggest that the flipped approach was as instructional as the traditional method given all the stated limitations.

## V. FUTURE RESEARCH

While our study provides evidence that the flipped classroom is as efficient as the non - flipped, we should be cautious in generalizing the findings beyond the scope of the context. Future studies will show if one method has efficacy over the other, when it comes to students' performance and motivation. Future research in this area is required. Due to the positive impact of the flipped course in Fall 2014/2015, the flipped program will continue as of Fall 2015/2016. It is recommended to proceed with the study tackling both quantitative and qualitative sides in accordance with LIU (Lebanese International University) students' profiles. Future recommendations include widening the scope of flipped learning into telecommunication reaching students in other countries.

 ISBN: 978-1-61208-422-0 

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