

Education Students' Responses to Flipped Learning Methodology in the Lebanese University

Evelyne Girgis^{1,*}, Majed Khodr², Lee Waller³

¹Faculty of Education, Lebanese University, Rawda, Lebanon

²School of Engineering, American University of Ras Al Khaimah, Ras Al Khaimah, United Arab Emirates

³School of Arts & Sciences, American University of Ras Al Khaimah, Ras Al Khaimah, United Arab Emirates

*Corresponding author: emgirgis@yahoo.com

Abstract The aim of this research was to test and analyse student responses to the introduction of the flipped learning methodology at the Faculty of Education in the Lebanese University, to identify potential relationships between the responses and to determine underlying factors guiding the responses. A survey questionnaire was developed by a team of faculty and sent to students via an online survey software. The analysis employed dimension reduction techniques to ascertain underlying factors guiding responses. The two major factors identified were student engagement and course flexibility of the flipped classroom approach. The research concluded that the flipped learning methodology can be useful for improving learning and holds the potential to more adequately engage today's learners.

Keywords: *flipped, classroom, communication, education, creativity, Lebanon*

Cite This Article: Evelyne Girgis, Majed Khodr, and Lee Waller, "Education Students' Responses to Flipped Learning Methodology in the Lebanese University." *American Journal of Educational Research*, vol. 4, no. 12 (2016): 868-871. doi: 10.12691/education-4-12-3.

1. Introduction

This is what any traditional classroom looks like: the teacher teaching to the middle group of the class -the students that could follow along while going over the content- while the higher level of students already bored with the content and ready to move forward, and there is always the struggling group of students that are not receiving enough effective radiation. In most cases, the teacher is standing in front of a group of students and not meeting all their needs; and whatever little time remains of the class time is actually just spent on applications, which lead to the fact that students have to work home and apply the concepts that were given out in class. This scenario is exactly according to the "bucket theory" that describes traditional learning, where the teacher provides the necessary fundamental knowledge so that the students is able to recall or retrieve the needed information to solve the real-life situation [1].

The flipped classroom addresses this issue and makes learning more personal. This methodology is becoming a new wave of education reform which provides a different way for the further development of teaching and learning, and is utilized by a large numbers of leading universities all around the world. This approach creates a 90% of class time spent on application of the content so that students can work on inquiry-based assignments in class and the teacher transitions into the role of a facilitator. Thus only about 10% of class time is spent on delivery of content and lecturing, where a teacher can take any question that could come from watching the video [2]. The main

purpose of the flipped classroom methodology is to shift from the traditional instructional paradigm to a more dynamic technologically based didactic approach. Flipped learning reverses the traditional order of the classroom to engage students in learning materials outside the classroom via technology. Flipped learning then employs students in working together on project/problem based learning during traditional class meetings. The flipped classroom is founded on learning procedures that are reflexive, and connected with the modern availability of massive amounts of information [3].

2. Literature Review

Most of the literature of the studies conducted to date, according to according to Yarbrow J et al [4], suggests that the flipped learning model is showing educational success for a variety of reasons. The in-class enrichment activities and discussions that allow moving content delivery outside of class time provide opportunities for students to develop vital skills needed in this century. Flipped classroom methodology holds students to a higher level of academic expectations by requiring team-based and peer-to-peer interaction. According to Fisher & Waller [5], course redesign, teaching load, student acceptance, and student evaluation may be challenging issues. In addition, teachers applying the flipped approach reported that for the first time in their careers they were able to provide face-to-face time with the students and utilize that time for instructional and emotional support [6].

There are a few studies on the efficacy of flipped learning at the university level. Nevertheless, some

preliminary research suggests that the flipped classroom may produce several benefits. For instance, in his comparative study, Chipps [7] concluded that the classroom that was taught using the flipped class method had significantly raised scores in comparison to the control group and also promoted a classroom culture of student collaboration and teamwork.

Other reported benefits include providing opportunity for real time feedback [8], increasing the depth of student engagement [9], adding meaning to course assignments [10], improving student-teacher interaction [11], and empowering self-paced learning [12]. Other than its effectiveness in increasing the teacher-to-student interaction during class time, the flipped approach is characterized by another important feature which is student-to-student interaction, where the students receive productive feedback from the teacher, collaborate with peers on projects and discuss/explain with their peers content ideas which promotes more deep engagement [13].

A convergence of factors including the lecture video (first seen in distance learning education), inquiry learning theories, and educational technology tools that enabled teachers to create their own high-quality instructional videos; allowed the flipped classroom model to evolve. Cooperation devices can be utilized both as a part of class and outside of class for gathering tasks, engaging critical thinking and sharing assets, contingent upon the instructional exercises [14]. A pool of educational webtools (such as the websites Knowmia & Edmodo; & certain screen casting tools like Camstudio & Webinaria) may also be useful creative tools for the educators. The University of Southern California [15] also pointed out the use of other efficient tools such as: writing board course site, video recording and modification (webcam, iMovie),

videoconferencing (Skype), annotation/ remarking (VoiceThread), and mobile gadgets for venture based exercises (tablets, phones).

3. Research Methodology

A survey instrument was created and a subsequent questionnaire was sent via the personal university email. The study was done at the Lebanese University, Faculty of education, second branch.

The survey was designed to check the education students' understanding of the flipped classroom methodology, to identify potential relationships, and to determine the underlying factors guiding the responses. A team of three faculty members developed and utilized, a 6-item survey intended to examine student views regarding the flipped classroom methodology and to establish content validity (Table 1). The first five questions scored answers according to a 5-point Likert scale from strongly agree (5) to strongly disagree (1). Question 6 had only three possible answers: short - less than 10 minutes (3), medium - more than 10 minutes but less than 20 minutes and long - more than 20 minutes (1). The faculty team also included an open-ended section into which participants could enter any comments deemed germane to the responses on the questionnaire. The instrument was administered via an online methodology to a set of 89 selected students representing the university's faculty of education. The survey garnered 53 individual responses, with a response rate of 60%. A Chronbach Alpha was utilized to establish the reliability of the responses and returned a score of 0.904, which falls above the minimum threshold of .70 [16].

Table 1. Question responses on the fall 2016 flipped classroom survey

Question	N	Mean	Standard Deviation
1. Would you say that you have knowledge about flipped classrooms?	53	3.43	1.101
2. Do you think that implementing flipped classrooms would help you get better grades?	53	3.77	0.954
3. Do you think that problem solving and discussion in class, would keep the class from being boring?	53	3.94	0.770
4. Do you think the idea of flipped classrooms would make the learning process more fun?	53	3.72	0.885
5. Do you think that implementing flipped classrooms would ease the pressure of missing the lecture?	53	3.57	0.1047
6. If you were required to watch videos of the lecture, what do you prefer the length of the video to be?	53	1.55	0.503

The study examined two research questions.

What are the education student responses to the flipped classroom survey?

Do relationships exist within the education student responses to the flipped classroom survey?

Research question 1 was answered by descriptive analysis and did not require the development of research hypotheses. The following two research hypotheses were utilized to examine research question 2.

Ho: No relationships exist within the education students' responses to the flipped classroom survey.

Ha: Relationships exist within the education students' responses to the flipped classroom survey.

Survey responses were collected to answer the descriptive research question 1. The researchers utilized Bartlett's test of sphericity to examine the research hypotheses associated with research question 2. Critical values were established at the standard range of 0.05. Once a relationship was established, dimension reduction (factor analysis) was utilized to examine for factors

underlying the identified relationship. The study utilized principle component as the extraction method and employed a varimax rotation with Kaiser normalization. Eigenvalues having scores above 1.0 were deemed significant. The protocols for dimension reduction were examined, and the Kaiser-Meyer-Olkin measure was employed to examine sampling adequacy. Dimension reduction was deemed an appropriate research methodology to examine underlying factors guiding responses on a survey instrument as long as the appropriate research protocols were established [17]. All associated findings are discussed in the analysis of research question 2.

4. Research Findings

The survey was sent to students several times to obtain the highest possible response rate. Once the survey was responded to, no student could enter a second time to

record another response. After the responses were obtained, all identifying information was removed to protect the anonymity of the respondents.

The survey targeted education students' responses to the flipped classroom. In response to research question 1, descriptive analysis was conducted to determine the number, mean, and standard deviation for the responses to each question. Findings are provided in Table 1.

A Findings ranged from a high of 3.94 on question 3 to a low of 3.43 on question 1 excluding question 6. These responses indicate a mean response rate ranging from strongly agree to agree for all six survey questions. The scale utilized for question 6 differed from the scale utilized on question 1 through question 5. The score on question 6 indicates a preference for medium to long length videos. Long videos were defines to be more than 20 minutes, while medium length was defined to be between 10 and 20 minutes in length.

Prior to the examination of the research hypotheses associated with research question 2, the study examined the adequacy of the sample size and established the requirements of the data set. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.437, which falls into an acceptable range. Dimension reduction requires that the data set have more variables than identified underlying factors [17]. The data set conformed with this expectation.

The Bartlett's test of sphericity was utilized to ascertain the existence of relationships within the responses to the survey instrument. Bartlett's test of sphericity indicated significance < .001. Accordingly, the null hypothesis-Ho was rejected in favour of the alternate hypothesis-Ha. Relationships were found to exist within the Faculty of Education student responses to the flipped classroom survey. The identified relationships were then examined with dimension reduction techniques utilizing a principle component extraction. The findings are shown in Table 2.

Table 2. Total variance explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	1.978	32.967	32.967	1.797	29.958	29.958
2	1.439	23.977	56.944	1.619	26.986	56.944

Note. Extraction Method: Principle Component Analysis.

Findings identified two major factors underlying student responses to the questionnaire. Examination of the rotation sums of squared loadings indicated that these two identified factors accounted for 56.944% of the variance within the data set. Viewed conversely this means that 43.056% of the variance was not explained. Factor I

accounted for the highest portion at 32.967% while Factor II accounted for 23.977%. The factor loadings were extracted utilizing a varimax rotation. Factor loadings of more than .4 were considered significant [16]. The factor loadings follow in Table 3.

Table 3. Component matrix

Question	Component	
	1	2
1. Would you say that you have knowledge about flipped classrooms?	0.083	0.816
2. Do you think that implementing flipped classrooms would help you get better grades?	0.479	0.395
3. Do you think that problem solving and discussion in class, would keep the class from being boring?	0.937	0.015
4. Do you think the idea of flipped classrooms would make the learning process more fun?	0.814	0.017
5. Do you think that implementing flipped classrooms would ease the pressure of missing the lecture?	-0.095	0.799
6. If you were required to watch videos of the lecture, what do you prefer the length of the video to be?	0.114	0.399

Extraction Method: Principle Component Analysis – Rotation Method: Varimax with Kaiser Normalization Rotation converged in 3 iterations.

Analysis of the component matrices led the researcher to identify and name the two factors underlying responses to the survey. The first factor relates to questions 2, 3, & 4. It appears to center on enhancing student engagement in the course. The factor could be named, "Student Engagement." It explains 32.967% of the variance in the data set. The second factor relates to questions 1 & 5. It appears to center on enhancing the flexibility of the course. The factor could be named, "Course Flexibility." It explains 23.977% of the variance in the data set. These two factors are distinct from each other. They do not share any of the five questions. This shows that two issues were at the heart of the student responses concerning flipped learning: 1) student engagement and 2) course flexibility. These two issues become the strengths of the flipped learning methodology.

Survey participants provided several comments that they deemed germane to the responses on the questionnaire. Comments were both positive and negative though the positive were more predominant. The positive comments revealed advantages to the utilization of flipped learning and can be summed in the following: improves

grades, manages time and encourages creative thinking. However, a few negative comments indicated that very few students don't feel flipped classroom will achieve certain goals and improve their grades.

5. Conclusions and Implications

Analysis of the findings indicates that the students held a positive impression of flipped classroom methodology. The identification of the two underlying factors that strengths the flipped learning methodology with the students are 1) student engagement and 2) course flexibility.

Review of the comments provided in support of survey responses indicated strong support for implementation of the flipped classroom model. Flipped learning methodology was clearly viewed by students as a creative idea that could be successfully implemented in the Lebanese University. Many positives were identified relating to this innovative concept. They felt that flipped learning methodology holds potential usefulness for enhancing their engagement in the learning process.

Moreover, the data showed that the flexibility of this method is very important to the Lebanese students considering their working-studying life style due to lack of economical prosperity of the Lebanese society.

Finally, instructors at the Lebanese University are encouraged to examine this methodology as a means of engaging students at a higher level to strengthen their knowledge base skills and foster creative thinking solutions through empowered discussion. Unfortunately, the task of pinning down teachers' attitudes has not always been an easy one because many variables and processes could affect their attitudes and actions [18].

The researchers propose further exploration on the topics of flipped classroom with the guidance and encouragement of this research. Both quantitative and subjective studies ought to be connected to look at the potential adequacy of the flipped classroom display and to recognize techniques for effective execution at the advanced education level.

References

- [1] Allen, D.E., Donham, R.S. & Bernhardt, S.A. "Problem-based learning". *New Directions for Teaching and Learning*, 128, 21-29. 2011.
- [2] Bergmann, J., & Sams, A. "Flip your classroom: Reach every student in every class every day". *International Society for Technology in Education*. 2012
- [3] Lumadue, R., Waller, L., Hendricks, L., & Lumadue, R.. "The mobile classroom at cross purposes with higher education: Pros and cons; Do's and don'ts". *FOCUS on Colleges, Universities, and Schools*, 6(1).2012
- [4] Yarbro J., Arfstrom K., MicKnight K & McKnight P. "2014 Extension of the 2013 Review of Flipped Learning". Flipped Learning Network. 2014. Available: <http://flippedlearning.org/wp-content/uploads/2016/07/Extension-of-FLipped-Learning-Lit-Review-June-2014.pdf>.
- [5] Fisher, D., & Waller, L. "The 21st century principal: A study of technology leadership and technology integration in Texas k-12 schools". *The Global eLearning Journal*, 2(4). 2013.
- [6] Moore, A. J., Gillett, M. R., & Steele, M. D.. "Fostering student engagement with the flip". *MatheMatics teacher*, 107(6), 420-425. 2014.
- [7] J. Chipps, The Effectiveness of Using Online Instructional Videos with Group Problem Solving to flip the calculus classroom, 2013.
- [8] Greenberg, B., Medlock, L., & Stephens, D. *Blend my learning: Lessons from a blended learning pilot*. Oakland, CA: Envision Schools, Google, & Stanford University D.School. 2011.
- [9] Medina, J. *Brain rules: 12 principles for surviving and thriving at work, home, and school*. Seattle, WA: Pear Press.2008.
- [10] Beesley, A., & Aphthorp, H. (Eds.). "Classroom instruction that works, second edition". *Research report*. Denver, CO: McRel. 2010.
- [11] Hamre, B. K., & Pianta, R. C. "Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure?" *Child Development*, 76(5) 949-967. 2005.
- [12] Hattie, J. (*Visible learning: A synthesis of over 800 meta-analyses relating to achievement*). New York: Routledge. 2008
- [13] N. Hamdan, P. McKnight, K. McKnight, and K. M.Arstrom, The flipped learning model: A white paper based on the literature review titled: A Review of Flipped Learning, □ Flip. Learn. Netw., 2013.
- [14] Waller, L. & Lumadue, R. "There's an (Educational) app for that?: M-learning across device platforms". *Academic Leadership*, 9(3). 2011.
- [15] University of Southern California. "The Flipped Classroom" 2015. Available: <https://learningdesign.usc.edu/teach/strategies/the-inverted-classroom/>.
- [16] Lumadue, R. & Waller, L.. *Educational Research Today*. (1st ed.). Cupertino, CA .2013.
- [17] Waller, L., & Lumadue, R.. *Factor Analysis*. (1st ed.). Cupertino, CA. 2013.
- [18] Zimbardo, P., Ebbesen, E., & Maslach, C. *Influencing attitudes and changing behavior*. Reading, MA:Addison- Wesley Publishing Company. 1977.