

# Effectiveness of Flipped Classroom in Teaching Basic English Courses

## Temel İngilizce Derslerinin Öğretiminde Tersyüz Öğretim Tekniğinin Etkilliliği

Seema Arif<sup>1</sup> , Irfana Omar<sup>2</sup> 

<sup>1</sup>University of Management and Technology, Lahore, Pakistan

<sup>2</sup>University of Central Punjab, Lahore, Pakistan

### Özet

Tüm dünyadaki üniversiteler, amaçlı öğrenmeyi sağlamak için bildirimsel hızlandırılmış harmanlanmış öğrenme (*declarative accelerated blended learning*, DABL) ve tersyüz sınıflar gibi yenilikçi yöntem arayışları içindedir. Pakistan'ın yükseköğretim kurumlarında şu ana kadar böyle bir etkileşimli teknoloji kullanılmamıştır. Temel İngilizce derslerindeki öğrenme üzerinde DABL'nin etkisini ölçmek için özel bir üniversitenin sosyal bilimler fakültesinde bir pilot uygulama yürütüldü. Bu niceliksel çalışmanın amacı, lisans düzeyindeki öğrencilere temel İngilizce öğretiminde Şeffaf Çevrimiçi Dil (*Transparent Language Online*, TLO) programı kullanarak yenilikçi öğrenme tasarımının ve tersyüz sınıfların etkinliğini araştırmaktır. Evrensel, herkese uyan bir model benimsemek yerine, bilgisayarlı teknoloji ile tümleştirme yoluna gidilerek öğrencilerin bireysel eksikliklerine etkili bir şekilde cevap verebilecek ihtiyaca özgü bir öğrenme tasarımı hazırlandı. Standart bir değerlendirme görevi (İngilizce dilinde 12 yaygın hatanın tanımlanması ve düzeltilmesini içeren) uygulandı. Çalışma her bir bölümde 90 öğrenci olmak üzere 3 bölümden toplam 270 öğrenci ile yürütüldü. Her bir derse katılan öğrenci bölümlerinin seçimi için rasgele tabakalı örnekleme ve her bölümden öğrenci seçimi için nüfus sayımı örnekleme kullanıldı. Sonuçlar, öğrenmeye olan ilginin ve motivasyonun arttığını ve bunun da akademik performansı artırdığını göstermektedir. Bu çalışma, lisans öğrencilerine temel İngilizce öğretiminde ihtiyaç temelli öğrenme tasarımı ile teknolojinin bütünleştirilmesinin en iyi sonucu verdiğini göstermektedir.

**Anahtar sözcükler:** Bilgisayar aracı teknoloji, bildirimsel hızlandırılmış harmanlanmış öğrenme (DABL), Şeffaf Çevrimiçi Dil (TLO), tersyüz sınıflar, yüksek öğretimde öğretim ve öğrenme.

Teaching at higher education to a multicultural society with a digital orientation has become tough. Students feel unhappy as passive learners in a black and white mode of classroom (Arif, 2012). Moreover, in modern 21st century diverse classrooms, people of all ages and experiences participate; their capacities to learn and engage in class activities dramatically differ from each other. To meet this challenge, the social scientists, educationists and IT specialists have come up

### Abstract

Universities all over the world are in search of innovative methods to ensure purposeful learning such as. Declarative accelerated blended learning (DABL) and flipped classrooms. No such interactive technology has so far been used in the higher education institutions of Pakistan. A pilot was carried out in the social sciences faculty of a private university to measure the effect of DABL on student learning in the Basic English courses. The aim of this quantitative study is to explore the effectiveness of innovative learning design and use of flipped classroom by using Transparent Language Online (TLO) in teaching of basic English courses to undergraduate students. A needs-specific learning design was crafted integrating pedagogy with computer-mediated technology that can effectively cater to students' individual deficiencies rather than adopting a universal, one-size-fits-all model. A standard assessment task (involving the identification and correction of 12 common errors in English language) was implemented. The study was conducted with 270 students, composed of 90 students from each of three different sections. Random stratified sampling was used for the selection of the student sections of each course, and census sampling was used for the selection of students from each section. The results reflected heightened student interest and motivation in learning, resulting in improved academic performance. The study concludes that need-based learning design with integration of technology works best to teach basic English courses to undergraduate students.

**Keywords:** Computer-mediated technology, declarative accelerated blended learning, flipped classrooms, teaching & learning at higher education, transparent language online (TLO).

with new techniques of teaching and learning in a flipped classroom organized in a blended learning format (Garrison & Kanuka, 2004). Such a teaching and learning technique is minimally practiced in Pakistan. While exploring case studies over the subject from all over the world, we decided to experiment with it in a local private university.

Emerging trends of technological integration in education and globalization with cultural diversity require rethink-

### İletişim / Correspondence:

Dr. Seema Arif  
University of Management and  
Technology, CII, Johar Town,  
Lahore 54660 Pakistan  
e-mail: seema.arif@umt.edu.pk

Yükseköğretim Dergisi / Journal of Higher Education (Turkey), Çevrimiçi Erken Baskı / Online Preprint Issue. © 2019 Deomed Geliş tarihi / Received: Mart / March 18, 2018; Kabul tarihi / Accepted: Ocak / January 5, 2019  
Bu çevrimiçi makalenin atf künyesi / Please cite this online article as: Arif, S., & Omar, I. (2019). Effectiveness of flipped classroom in teaching basic English courses. *Yükseköğretim Dergisi*, doi:10.2399/yod.19.003

ORCID ID: S. Arif 0000-0002-8032-4325; I. Omar 0000-0002-6567-4001



ing and remodeling the conventional teaching to maximize learning through personalized instruction, making it more active and collaborative (Bergmann, Overmyer, & Wilie, 2013; Davies, Dean, & Ball, 2013; Garrison & Kanuka, 2004). Current practices of teachers evidence either underuse of effective integration of educational technology to offer flexibility and diversity to the students (Doering, Koseoglu, Scharber, Henrickson, & Lanegran, 2014; Draeger & Price, 2011; Kirkwood & Price, 2005; Kirkwood & Price, 2008; Sadaf, Newby, & Ertmer, 2012; Tondeur, Kershaw, Vanderlinde, & Braak, 2013; Price & Kirkwood, 2013; Tondeur, Van, Siddiq, & Scherer, 2016) or replication of the traditional pedagogies with an aim to use technology as an end in itself (Ertmer & Ottenbreit-Leftwich, 2013; Prestridge, 2017; Tsai & Chai, 2012), resulting in a re-enactment of traditional activities using varied sources of media (Blin & Munro, 2008; Garrison & Kanuka, 2004).

The evidence have led the scholars to change the pedagogic practices to integrate technology into learning activities (Tondeur et al., 2013; 2016) and introduce the concept of blended learning as an attempt to flip the classroom (Bergmann et al., 2013; Cornelius & Gordon, 2008; Friedman & Friedman, 2011; Garrison & Kanuka, 2004; Patterson, 2012). The flipped classroom model is built on interconnected theories of pedagogy and learning. The underpinning concept of collaborative learning environment is drawn from Piaget's theory of active learning through acquisition of new ideas (Piaget, 1971); lower- and higher- level cognition is grounded in Bloom's influential taxonomy of thinking and learning whereby lower level cognitive work (i.e., to go through the reading material) is done outside the class prior to the session and higher-order thinking is developed through practical application of the knowledge to solve real life problems in the class (Anderson, Krathwohl, & Bloom, 2005; Bloom, Engelhart, Furst, Hill, & Krathwohi, 1956); transformation from passive listening to active learning is drawn from Mezirow's theory of transformative adult learning (Mezirow, 1991); and students' engagement is drawn from Habermas' theory of knowledge and human interest (Habermas, 1972).

The prominent feature of the flipped classroom model is to uncap access to varied learning resources (Woolf, 2010) and allow students to work at their own pace, time and location with a shift from synchronous in-class group learning to asynchronous individualized learning where no student is left behind (Bergmann & Sams, 2012; Strayer, 2012; Zhu, 2013). It has replaced the traditional after-lecture homework and offers the content and material before the session allowing sufficient time in the class to discuss the problems, work on

the assigned activities and engage in collaborative learning for the development of higher order thinking (Herreid & Schiller, 2013; Moravec, Williams, Aguilar-Roca, & Odowd, 2010; Tucker, 2012).

In the process of technology integration, two types of barriers, first- order and second-order, pop up (Bitner & Bitner, 2002; Ertmer, 2005; Roblyer, 2016; Roblyer & Doering, 2013); even if first-order barriers such as access to computer and net, teachers' knowledge, teachers' training, lack of management support, lack of time etc. (Bingimlas, 2009; Boulton, 2017; Fu, 2013; Koh, Chai, & Tay, 2014; Mouza & Karchmer-Klein, 2013; Zhao & Frank, 2003) are controlled, the second-order barriers such as teachers' attitudes, beliefs, confidence in using technology, value to ICT, resistance to change (Ertmer, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Kim, Kim, Lee, & Spector, 2013) pose a greater challenge and block the way to foster positive learning environment (Ertmer et al., 2010; 2013; Talbert, 2012).

Teachers mostly prefer the neutral nature of technology shaped by their beliefs and practices. Even the teachers with technological orientation use technology differently in an orthodox manner; they avail technology resources as a passive tool in their classrooms, such as using multimedia or smart board. Teachers are neither well informed nor trained in adept use of technology beyond the classroom, e.g., in form of audio video lectures, podcasts, vodcasts, online quizzes, and practice exercises (Kim et al., 2013). The flipped classroom model with blended pedagogical approach is a solution to respond to the differences between espoused student-centered beliefs and enacted teacher-centered beliefs. Many researchers voice the use of both technology and inverted classroom with a blended learning approach (Bonk & Graham, 2006; Fulton, 2012; Hughes, 2012; Novak, 2011; Talbert, 2012).

Fulton (2012) enlisted the following among the advantages of the flipped classroom: (1) students move at their own pace; (2) doing homework in class gives teachers better insight into student difficulties and learning styles; (3) teachers can more easily customize and update the curriculum and provide it to students 24/7; (4) classroom time can be used more effectively and creatively; (5) teachers using the method report seeing increased levels of student achievement, interest, and engagement; (6) learning theory supports the new approaches; and (7) the use of technology is flexible and appropriate for the 21st century learning. In such interactive learning environments, students not only develop an active interest but they become more receptive towards other interactive learning techniques like cooperative learning (Strayer, 2012).



Research also reports that it is difficult to hold attention of students in higher learning classrooms (McLaughlin et al., 2014). Using the blended learning approach keeps holding student attention not only in the classroom but outside as well, as it keeps student connected with the learning tasks. Moreover, it supplies them quick feedback on their learning without any punishment or shame associated with it. To correct a mistake is not a onetime chance; students can repeat their learning practice as many times as they want. Students learn to spend more time on learning activities by developing the concentration and stamina to work hard. Systematic feedback and the way it is constructed has a huge role in the success of any blended learning program. Both formative feedback and course evaluations at the end of course are necessary elements to make blended learning courses successful. Some teachers also prefer to carry out a student survey to learn about student engagement.

Flipping the classroom will also answer the challenge of passive and lazy attitude of students through a shift in the role of students from passive to active members in the learning process; they work in a more creative and collaborative learning environment (Chai, Koh, & Tsai, 2010; Fu, 2013) and focus on higher-level concepts for acquisition of critical thinking skills (Levin & Wadmany, 2006; McMahon, 2009). The model has also changed the role of teachers, from authoritative to flexible and innovative, who are interested to use varied teaching strategies to motivate students to learn (Cuban, 2002; Lopata, Miller, & Miller, 2003).

The research also shows that students' willingness to learn is under threat due to the direct instructional method where the whole responsibility lies with the teacher (Price, 2012). Flipping the classroom provides room for student engagement (Tucker, 2012), develops the responsibility to attend the class prepared, and promotes a culture of willingness to learn in a supportive learning community culture (Alvarez, 2011; Fulton, 2012). There has been limited research focusing on the use of flipped classroom model at Higher Education Institutions in Pakistan. Most of the teachers are yet not competent to integrate technology into teaching at higher education (Brun & Hinojosa, 2014; Tømte, Enochsson, Buskqvist, & Kårstein, 2015), and those who are skilled have intuitively developed it through experience (Kali, Markauskaite, Goodyear, & Ward, 2011; Mckenney, Kali, Markauskaite, & Voogt, 2015; Shamir-Inbal, Dayan, & Kali, 2009) without supportive frameworks provided by the educational institutions.

The purpose of the current study is to examine the effectiveness of flipped classroom instructional model in teaching

basic english courses to undergraduate students. The effectiveness was measured by assessment of the outcomes of the course, (1) The impact of learning design was assessed through results of achievement in writing task; (2) Student satisfaction with the innovative flipped classroom approach through Transparent Language Online (TLO) was also examined.

### Research Questions

- What is the impact of flipped classroom instructional model on learning effectiveness of undergraduate students taking Basic English Courses?
- What is the level of student satisfaction with the innovative approach used in flipped classroom?
- Which factor has the highest contribution to the overall satisfaction and engagement of students with teaching and learning in a flipped classroom?

### Methodology

The quantitative approach was used to collect data in a post positivist paradigm. Descriptive analysis was used to find differences in the assessment scores of students from all three courses, and inferential statistics was used to analyze the results of student satisfaction survey data.

### Sampling

Three basic courses of English, namely, *English I: Functional English*, *English II: Communication Skills*, and *English III: Technical and Report Writing* are taught to students enrolled in Semesters, I, II, and III, respectively. There were 8-10 sections of Teaching of Basic English courses at three levels. 35-50 students were enrolled in each section. Out of a total of 25 sections, 9 sections were randomly selected (3 sections from each level). Census sampling was used to select students from each section randomly. The same student sample was used for the satisfaction survey.

### Instrumentation

Firstly, an English writing test was administered near the completion of the course. The test included IELTS Writing Task samples. The tests were formed for each course with the mutual consensus and approval of all teachers that were teaching the Basic English courses. The scores for this test were used as data to answer the first research question.

Secondly, a student satisfaction survey was created to measure the overall satisfaction and engagement with the Basic English courses. An achievement test only does not prove effectiveness, therefore, the student satisfaction survey was used as an added measure of effectiveness. There were 22 items in the sur-



vey questionnaire designed on 5-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire had three sections: (1) Perceptions of enhanced capabilities (8 items), (2) Perceptions of healthy teaching and learning (8 items), and (3) Overall satisfaction and engagement (6 items).

### Validity and Reliability

Validity is the extent to which a measure or a set of measures correctly represents the concept of study. The use of reliable measure of IELTS Writing Task 2 ensured the validity of measures used in the research. Moreover, the results of writing tests were validated against satisfaction survey results. The face validity was ensured through peer review, and content validity of the survey was sought through expert review. A panel of five senior professors constituted the expert panel, two professors of English, two of education, and one from management reviewed the questionnaire for its appropriateness. Originally, 30 items were proposed, but 10 were changed and eight were removed by following the expert suggestions. The final survey form comprised 22 items only.

The reliability of the questionnaire was measured by computing Cronbach's alpha, which was found to be 0.956. The construct validity was determined through factor analysis. Further explanations on the factor analysis are made in the data analysis section.

### Course Design and Structure

The content of each course aligns with what is prescribed by Pakistan's Higher Education Commission for the undergraduate basic English courses, I, II, and III. The number of quizzes, assignments and projects was also the same for all courses; however, content differed in difficulty level according to prescribed syllabi of each course.

Different instructional models were used for the participants of three courses. Students of English I experienced flipped classroom instructional model for the first time whereas students of English II experienced flipped classroom for the second time because they had already been taught through same technology previously in English I. Both courses offered reading materials, videos, audios, websites, peer discussion activities through two technology integrated forums: (1) language software, Transparent Language Online (TLO), and, (2) a well-established Learning Management System (LMS) designed and structured by a team of experts from language, technology and psychology at Faculty of Information and Technology. On the other hand, students of English III studied the contents through traditional model using a course pack followed by lecture method without any technology integration.

### Class Process

The students were offered level-appropriate reading materials, videos, audios and websites to study and practice. In English I and English II, the flipped classroom approach was used where students were supposed to go through the learning material, videos and audios outside the class and come to the session prepared to do learning activities on the Learning Management System (LMS). In the first session, a brief discussion was held by the instructor to respond to the queries of the students and then all the students were engaged in the learning activities individually, in pairs or groups following their own pace and time for a better understanding.

These activities were not graded and the students could have multiple attempts without the fear of making mistakes though instructor's portal recorded number of mistakes and attempts for each student to provide individual feedback for better learning. The students, who were unable to finish the task or wanted to reattempt the task, could also access and work on these learning activities outside the campus which further freed them to engage in the learning process from their convenient location till the next session. For each module, students were to finish at least three different types of learning activities to ensure their presence for graded quizzes in the second session where they attempted one quiz in pair or group form and the second quiz individually.

In English III, traditional instructional approach was used in which the teacher provided direct instruction through lecture method to make the concept clear in the first session. The students were supposed to learn the taught content at home before they enter for the second session to attempt quizzes on the learnt module.

An English writing test was taken by all three sections at one point of time near ending of semester to assess learning of language in the Basic English Courses. The test was formed by combining selections of some sample IELTS Writing Tasks. The objective of this writing test was "occurrence of Common English language mistakes in the construction of simple sentences". The students were given 20 minutes to write a descriptive paragraph (150 words) on one topic. English Language instructors of the faculty (both visiting and permanent) marked the test, following the same predefined standard. The student scores were tabulated on an excel sheet to find out any differences.

### Results

Overall, 272 students took the achievement tests. 73% were male and 27% female. The results of the achievement test



taken by the undergraduate student sample in the Basic English Courses are shared below. The purpose was to distinguish performance in writing skills of the students through picking the occurrence of common errors in English in their written paragraph. It was necessary because the students of English I course studied through the software (TLO) only once, and students of English II studied through TLO twice; whereas, the students of English III were taught through traditional method and they were never exposed to flipped classroom environment through TLO. The findings section is divided into two parts: (a) the achievement test results, and (b) the student satisfaction survey results.

### Findings Regarding the Impact of Flipped Classroom Instructional Model on Learning

The descriptive statistics regarding number of errors committed by students in the tests are given in Table 1.

Table 1 exhibits that there was a difference in the number of errors produced by students of English III (64%) and English II (48%) for the error-type, 'Phrasal verb'. Similarly, more errors were identified in the test of English III students (32%) as compared to English I students (17%). For the error-type, 'Subject-verb agreement' for the students of English I, English II, and English III is 24%, 36%, and 43% respectively. In addition, data on error-type, 'Determiner', 'Pronoun', and 'Article' brought forth a high percentage of errors by English III students (34%, 37%, 66%) than English II (17%, 34%, 57%), and English I (20%, 33%, 56%). However, percentage in error-types, 'Conjunctions', 'Adjectives' & 'Adverbs' for

English III students (48%, 28%) and English II students (49%, 31%) remains minimal, therefore, insignificant. Further details are illustrated in Figure 1.

### Findings Regarding Student Satisfaction

A student satisfaction survey was conducted at the end of the course to triangulate results with the findings of the test scores. Factor analysis was done to confirm the stated factors in the questionnaire. Pearson correlation formula was applied to check the strength of association between the factors; Regression analysis was performed to find out which of the factors is a strong predictor of overall students satisfaction and engagement for receiving instruction in a flipped class environment. ANOVA tests helped us to find out the difference of satisfaction level among students of various levels, English I, English II and English III.

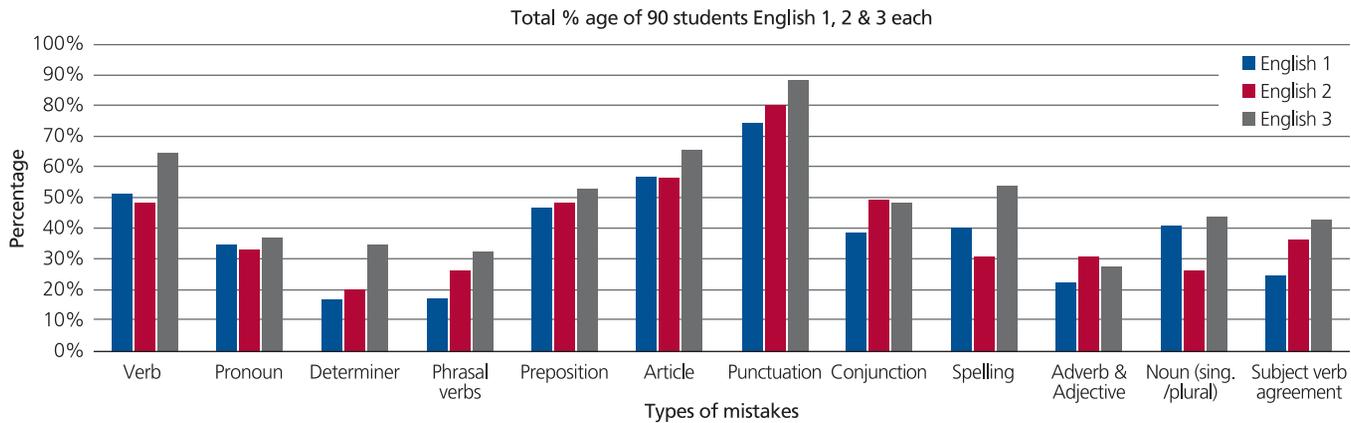
All students participating in the courses were given the survey. The survey questionnaire was distributed among all 272 students, but only 216 questionnaires were returned with complete information and was included in our final data analysis. Table 2 shows the frequency of students enrolled in English I, II, and III in this study. Out of 216 respondents, 80 were enrolled in English II, 76 were enrolled in English I, while 60 were enrolled in English III.

### Factor Analysis of the Satisfaction Survey

There were 22 items in the survey questionnaire, which were further reduced to 3 factors by using principle axis factoring

Table 1. The number of errors committed by students in English writing test.

		No. of Students	Verb	Pronoun	Determiner	Phrasal verbs	Preposition	Article	Punctuation	Conjunction	Spelling	Adverb & adjective	Noun (sing. / plural)	Subject verb agreement
English I	Eng. 1, S-F	52	24	15	4	3	22	26	31	19	23	8	21	9
	Eng. 1, S-H	38	22	16	11	12	20	25	36	16	13	12	16	13
	Sum	90	46	31	15	15	42	51	67	35	36	20	37	22
	Total % age	100%	51%	34%	17%	17%	47%	57%	74%	39%	40%	22%	41%	24%
English II	Eng. 2, S-B	55	21	13	7	10	25	26	39	24	19	16	14	19
	Eng. 2, S-C	36	23	17	11	14	19	25	34	21	9	12	10	14
	Sum	91	44	30	18	24	44	51	73	45	28	28	24	33
	Total % age	100%	48%	33%	20%	26%	48%	56%	80%	49%	31%	31%	26%	36%
English III	Eng. 3, S-A	30	26	9	12	7	15	21	29	17	22	5	10	13
	Eng. 3, S-B	40	22	16	13	14	21	24	34	18	21	13	21	15
	Eng. 3, S-C	17	8	7	5	7	10	12	14	7	4	6	7	9
	Sum	87	56	32	30	28	46	57	77	42	47	24	38	37
Total % age	100%	64%	37%	34%	32%	53%	66%	89%	48%	54%	28%	44%	43%	



■ **Figure 1.** Occurrence of common errors in English.

■ **Table 2.** Demographic distribution of data.

	<i>f</i>	%
English III	76	35.2%
English II	80	37.0%
English I	60	27.8%
Total	216	100.0%

followed by varimax rotation. These are: (1) Perceptions of enhanced capabilities; (2) Perceptions of healthy teaching and learning environment; and (3) Perceptions of overall satisfaction and engagement (■ Appendix 1). All items show factor loadings of more than 0.5 and, fulfilling the minimum identifiability criteria of at least three items per factor (Fava & Velicer, 1996; Costello & Osborne, 2005). The scores of KMO and Bartlett’s sphericity test ( $KMO=0.834$ ,  $\chi^2=4058.534$ ,  $p<0.000$ ) showed that the items included in the common factors fit well, making exploratory factor analysis worthwhile. Cronbach’s alpha was computed for each subscale (factor) to measure its internal consistency, which was found to be higher than 0.8 for all factors meeting the minimum cut point (Wang, 2003).

■ **Table 3.** Correlation matrix showing associations between the variables of the study.

	Capabilities	TL Environment	Satisfaction
Capabilities	1	.785**	.795**
TL Environment		1	.807**
Satisfaction			1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### Pearson Product Moment Correlation

Pearson product moment correlation ( $\rho$ ) was calculated to observe whether or not these three factors were related to each other (■ Table 3).

The correlation table confirms that perceptions for enhanced capabilities, healthy teaching and learning environment, and overall satisfaction with the course have strong and positive correlations with each other ( $n=216$ ,  $p<0.000$ ). The strongest positive correlation is between healthy teaching and learning environment and overall satisfaction ( $r=.807^{**}$ ) and healthy teaching and learning environment and perceptions for enhanced capabilities ( $r=.785^{**}$ ).

### Regression Analysis

Stepwise regression was conducted to know which of the two factors was comparatively a stronger predictor of overall student satisfaction and engagement of the students studying Basic English courses in flipped classroom environment. The constant predictor factors are perceptions of enhanced capabilities and healthy teaching and learning environment to explain the variance in satisfaction (dependent factor) with English teaching course. The analysis of this stepwise regression resulted in two different models (■ Table 4).

The first model highlighted that healthy teaching learning environment was singularly responsible for 80% of the variation in perceptions of satisfaction ( $\beta=.807^{**}$ ,  $p<0.000$ ), the dependent variable.

The second model explained that both healthy teaching learning environment and perceptions of enhanced capabilities may collectively cause (99%) of variance in satisfaction behaviors of students studying in a flipped classroom environment ( $\beta=.477$ ,  $p<0.000$ ;  $\beta=.421$ ,  $p<0.000$ ).



**Table 4.** Stepwise regression results with student satisfaction as dependent variable.

No.	Predictor variables	Beta co-efficient ( $\beta$ )	t-value	p-value	Collinearity statistics	
					Tolerance	VIF
1	Model - 1 Healthy teaching and learning environment	.807	20.017	.000	1.000	1.000
2	Model - 2 Healthy teaching and learning environment Enhanced capabilities	.477 .421	8.138 7.185	.000 .000	.383 .383	2.609 2.609

### One-way ANOVA

One-way ANOVA was conducted to determine the level of satisfaction with perception of enhanced capabilities and teaching and learning environment. The group differences for teaching and learning environment were not found to be significant, thus, they were excluded from reporting.

### ANOVA Comparisons of Perceptions of Enhanced Capabilities

The differentiated effect of satisfaction with perceptions of enhanced capabilities was calculated through applying post-hoc test. The ANOVA results indicated that there are significant differences between means of different groups ( $M=68.551$ ,  $p \geq .000$ ) (Table 5a).

However, post-hoc test reveals that maximum satisfaction level is achieved by English II students ( $M=4.2961$ ) and minimum level of satisfaction is achieved by English III students ( $M=2.2750$ ) (Table 5b).

**Table 5a.** ANOVA comparisons of perceptions of enhanced capabilities.

	Sum of Squares	df	M	t-value	p-value
Between groups	75.446	2	68.551	208.770	.000
Within groups	75.441	1	136.956	417.094	.000
Total	74.961	1	135.606	412.983	.000

**Table 5b.** Post-hoc tests of analysis of variance among three sections of basic English students.

Group	N	M	SD	Tukey's HSD comparisons		
				English I	English II	English III
English II	76	3.968	.58350	.005		
English I	60	3.317	.71350	<.001	<.001	
English III	80	2.468	.74027	<.001	<.001	<.032

### ANOVA Comparisons of Perceptions of Overall Satisfaction with Teaching of English with Technology

One way ANOVA was conducted to determine the overall level of satisfaction with the teaching of English with technology. The differentiated effect of satisfaction is calculated through applying Tukey's post-hoc test. The ANOVA results indicated that there are significant differences between the means of different groups ( $M=68.551$ ,  $p \geq .000$ ) (Table 6a).

However, post-hoc test reveals that maximum satisfaction level has been achieved by English II students ( $M=4.2961$ ) and minimum level of satisfaction has been achieved by English III students ( $M=2.2750$ ) (Table 6b).

### Discussion

The overall impact of flipped classrooms was determined through the results of IELTS Writing Task. The results demonstrate that English III students, who were not taught through blended pedagogical approach using technology, pro-

**Table 6a.** ANOVA comparisons of perceptions of overall satisfaction with teaching of basic English.

Group	N	M	SD	ANOVA
English I	60	3.4583	.51524	
English II	76	4.2961	.53305	Eng I $\leq$ Eng II
English III	80	2.2750	.68466	Eng III $\leq$ Eng II

Shared subscripts represent statistically significant differences: a= $p < .05$ , b= $p < .01$ , c= $p < .001$

**Table 6b.** Post-hoc tests of analysis of variance among three sections of basic English students.

Group	N	M	SD	Tukey's HSD comparisons		
				English I	English II	English III
English II	60	3.4583	.51524	.005		
English I	76	4.2961	.53305	<.001	<.001	
English III	80	2.2750	.68466	<.001	<.001	<.032

duced the highest number of errors under each error-type. They are followed by English I students who produced a lower number of errors than English III students after studying for only one semester in a technology-integrated flipped classroom blended learning atmosphere. The lowest number of errors was identified in English II students' work, who studied in a blended learning environment for two consecutive semesters.

Descriptive analysis of ■ Table 2 verifies that relatively more errors were identified in the writing test of English III students as compared to English I & English II students, demonstrating clear evidence of lack of knowledge and practice on behalf of English III students. The results also highlight lack of conceptual understanding of English Grammar by English III students resulting in more common errors, although they were mature (5th semester students) as compared to English I (1st semester students) and English II (2nd semester students) students.

Moreover, a steep learning curve in the scores of English I and English II students accentuates the fact that positive change in the learning process results in improved academic achievement but it requires a length of experiences to reach maturity (Roblyer, 2016). Hence, it is established through the results of present study that blended pedagogical approach, using traditional and constructivist practices, with integration of technology is a solution to the individualized needs of the present day learners of basic English courses (Fu, 2013; Fulton, 2012; Novak, 2011; Talbert, 2012).

The findings also indicate a strong relationship between instructional practices, pedagogical beliefs, and learning environment as they enhance student satisfaction. All the instructors of English I and English II were committed to prepare the learners for self-directed and life-long learning by leveraging the technology that students were already using in their lives. It not only enhanced student engagement but also provided access to information which led to greater level of collaboration and participation resulting in knowledge construction among students (Alvarez, 2011; Hsu, 2016). The experience also provided a new learning platform to the students to connect to their peers and the world using an abundance of resources available to enhance their capabilities to learn and grow. Works of Tømte et al. (2015) and Tondeur et al. (2016) also emphasize that blended pedagogical approach opens access to unlimited support through internet to try new ideas thus providing more opportunities to teachers to experiment, implement and refine the new approaches in the teaching learning process.

The results of satisfaction survey complement the observed mismatch in the academic achievement of English I

and English II students as compared to ENGLISH III students. Post-test reveals that maximum satisfaction level was achieved by the English II students ( $M=4.2961$ ) and minimum level of satisfaction was achieved by the English III students ( $M=2.2750$ ) which parallels the lower number of errors (442) produced by the English II students and higher number of errors (514) by the English III students. Moreover, the correlation table (■ Table 3) reflects that perceptions for enhanced capabilities, healthy teaching and learning environment, and overall satisfaction with the course correlate strongly and positively ( $n=216, p<.000$ ). It shows that constructivist beliefs of teachers bring positive change to the learning environment and enhance students' capabilities through engagement resulting in meaningful learning outcomes. Student-centered learning environment results in optimization of student capabilities which enhances student satisfaction in attending a course.

## Conclusions

The findings discussed above indicate that the flipped classrooms enriched by blended learning from various sources positively affect students' motivation and engagement in learning English. However, a healthy interactive teaching and learning environment must be maintained in the classroom for this purpose. Flipped classroom experiences lead to better overall student satisfaction when students feel that their basic capacity of using English has been enhanced.

It can be safely concluded that innovative approach (flipped classroom) positively impacts student learning and achievement, enhancing their self-efficacy to use English, as students can undergo repeated practice without fear of failure or immediate negative feedback. Positive learning experiences result in enhanced student satisfaction and better teaching and learning environment as teachers can spend more time on solving individual problems, and are spared the drudgery of checking quizzes and assignments by using TLO. This way, teachers can invest more time in building creative exercises to teach English.

## Implications

The study implies that integration of technology not only uncaps access to education but also provides 'potentiating learning environment' to stretch academic experiences into successful life-long learning experiences. For epistemological access to existing resources, we shall not use technology as an end in itself rather carefully design courses for enhanced customer satisfaction.

The flipped classroom technique is a promising innovation (Herreid & Schiller, 2013; Ozdamli & Asiksoy, 2016).



Therefore, we need much more research on the topic to follow covering its technical and psychological aspects. Creating a flipped classroom environment requires lot of planning regarding the preparation of materials, such as handouts, practice exercises, quizzes, videos, and audios. Our research team did not depend solely on already existing materials on the web, but created lot of culturally-relevant testing and practice materials for the students. It is highly advisable that videos or any other learning or testing material must be carefully crafted.

All over the world, the blended learning approach is becoming increasingly popular in teaching science, engineering, and medical subjects; however, we experimented with using it in the teaching of English. Finding relevant quality materials can be hard, and teachers sometimes may lack the time and knowledge to create such materials; therefore, online resources such as Khan Academy, Coursera, and other MOOCs of privileged universities might be used to enrich the local classrooms.

We cannot overlook faculty professional development needed to meet the unique requirements of using the TLO and efficaciously creating a flipped classroom environment. It was also observed during this research that creating an innovative teaching and learning environment calls for collaborative teamwork (English teachers, IT professionals and psychologists in our case). Upper management support is necessary to create professional learning networks in higher education institutions. Furthermore, successful experiences and exemplary practices should be shared and disseminated through appropriate forums, thus leading teachers to rethink and remodel their pedagogy to meet the needs of the post-modern world.

## Limitations

The achievement test measured the students' writing skills by counting the mistakes that they had made. The descriptive results show meaningful differences in the number of errors. However, this difference might have stemmed from the interaction effect of other subjects and different teachers. This threat was overcome by the use of similar course content, material and assessment and choosing a diverse body of students from three sections.

## Acknowledgements

I am most humbly thankful to the Dean, Faculty of Information Technology, IT specialists and lab staff, and my colleagues teaching English and my students of University of Central Punjab, Lahore, Pakistan. Much effort was made by the whole

team of experts, IT specialists, my colleagues, and mentors in the development of this project. I acknowledge their contribution and efforts in making this project successful and fruitful.

## References

- Alvarez, B. (2011). Flipping the Classroom: Homework in Class, Lessons at Home. Accessed through <<http://www.learningfirst.org/success-story/flipping-classroom-homework-class-lessons-home>> on 6th April, 2017.
- Anderson, L. W., Krathwohl, D. R., & Bloom, B. S. (2005). *A taxonomy for learning, teaching, and assessing*. New York, NY: Longman.
- Bergmann, J., Overmyer, J., & Wilie, B. (2013). The flipped class: Myths versus reality. *The Daily Riff*, July 9.
- Bergmann, J., & Sams, A. (2012). Before you flip, consider this. *Phi Delta Kappan*, 94(02), 1–25.
- Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education*, 5(3), 235–245.
- Bitner, N., & Bitner, J. (2002). Integrating technology into the classroom: Eight keys to success. *Journal of Technology & Teacher Education*, 10(1), 95–100.
- Blin, F., & Munro, M. (2008). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education*, 50(2), 475–490.
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive domain*. New York, NY: Longman.
- Bonk, C. J., & Graham, C. R. (2006). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk, & C. R. Graham (Eds.), *The handbook of blended learning: Global perspectives, local designs*. San Francisco, CA: Pfeiffer.
- Boulton, H. (2017). Exploring the effectiveness of new technologies: Improving literacy and engaging learners at risk of social exclusion in the UK. *Teaching and Teacher Education*, 63, 73–81.
- Brun, M., & Hinostroza, J. (2014). Learning to become a teacher in the 21st century: ICT integration in initial teacher education in Chile. *Educational Technology and Society*, 17(3), 222–238.
- Chai, C. S., Koh, J. H., & Tsai, C. (2010). Facilitating preservice teachers' development of technological, pedagogical, and content knowledge (TPACK). *Educational Technology and Society*, 13, 63–73.
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1–9.
- Cuban, L. (2002). Oversold and underused: Computers in the classroom. *Technology, Pedagogy and Education*, 11(1), 111–112.
- Davies, R. S., Dean, D. L., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development*, 61(4), 563–580.
- Doering, A., Koseoglu, S., Scharber, C., Henrickson, J., & Lanegran, D. (2014). Technology integration in K-12 geography. *Journal of Geography*, 113(6), 223–237.
- Draeger, J. D., & Price, L. (2011). Which way to SoTL utopia? *International Journal for the Scholarship of Teaching and Learning*, 5(1), 1–13.



- Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for. *Educational Technology Research and Development*, 53(4), 25–39.
- Ertmer, P. A., & Ottenbreit-Leftwich, A. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, 42(3), 255–284.
- Ertmer, P. A., & Ottenbreit-Leftwich, A. (2013). Removing obstacles to the pedagogical changes required by Jonassens vision of authentic technology-enabled learning. *Computers & Education*, 64, 175–182.
- Fava, J. L., & Velicer, W. F. (1996). The effects of underextraction in factor and component analyses. *Educational and Psychological Measurement*, 56(6), 907–929.
- Friedman, H. H., & Friedman, L. W. (2011). Crises in education: Online learning as a solution. *Creative Education*, 2(3), 156–163.
- Fu, J. S. (2013). ICT in education: A critical literature review and its implications. *International Journal of Education and Development using Information and Communication Technology*, 9(1), 112–125.
- Fulton, K. P. (2012). 10 reasons to flip. *Phi Delta Kappan*, 94(2), 20–24.
- Garrison, D., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(5), 95–105.
- Habermas, J. (1972). *Knowledge and human interests*. Boston, MA: Beacon Press.
- Herred, C., & Schiller, N. (2013). Case studies and the flipped classroom. *Journal of College Science Teaching*, 42, 62–66.
- Hughes, H. (2012). Proceedings from world conference on educational multimedia, hypermedia and telecommunications 2012. In T. Amiel, & B. Wilson (Eds.), *Introduction to flipping the college classroom* (pp. 2434–2438). New York, NY: Chesapeake.
- Kali, Y., Markauskaite, L., Goodyear, P., & Ward, M. H. (2011). Bridging multiple expertise in collaborative. In *Proceedings of the Computer Supported Collaborative* (pp. 831–835). Hong Kong: ISLS.
- Kim, C., Kim, M. K., Lee, C., & Spector, J. M. (2013). Teacher beliefs and technology integration. *Teaching and Teacher Education*, 29, 76–85.
- Kirkwood, L. A., & Price, L. (2005). Learners and learning in the twenty-first century: What do we know about students' attitudes towards and experiences of information and communication technologies that will help us design courses? *Studies in Higher Education*, 30(3), 257–274.
- Kirkwood, L. A., & Price, L. (2008). Technology in the United Kingdom's higher education context. In: S. Scott, & K. C. Dixon (Eds.), *The globalised university: Trends and challenges* (pp. 83–113). Perth, WA: Black Swan Press.
- Koh, J. H., Chai, C. S., & Tay, L. Y. (2014). TPACK-in-action: Unpacking the contextual influences of teachers construction of technological pedagogical content knowledge (TPACK). *Computers & Education*, 78, 20–29.
- Levin, T., & Wadmany, R. (2006). Teachers' beliefs and practices in technology-based classrooms: A developmental view. *Journal of Research on Technology in Education*, 39, 417–441.
- Lopata, C., Miller, K. A., & Miller, R. H. (2003). Survey of actual and preferred use of cooperative learning among exemplar teachers. *The Journal of Educational Research*, 96(4), 232–239.
- Mckenney, S., Kali, Y., Markauskaite, L., & Voogt, J. (2015). Teacher design knowledge for technology enhanced. *Instructional Science*, 43(2), 181–202.
- McLaughlin, J. E., Roth, M. T., Glatt, D. M. Gharkholonarehe, N., Davidson, C. A., Griffin L.M., ... Mumper, R. J. (2014). The flipped classroom: A course redesign to foster learning and engagement in a health professions school. *Academic Medicine*, 89(2), 236–243.
- McMahon, G. (2009). Critical thinking and ICT integration in a Western Australian secondary school. *Educational Technology and Society*, 12, 269–281.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco, CA: Jossey-Bass.
- Moravec, M., Williams, A., Aguilar-Roca, N., & Odowd, D. K. (2010). Learn before lecture: A strategy that improves learning outcomes in a large introductory biology class. *Cell Biology Education*, 9(4), 473–481.
- Mouza, C., & Karchmer-Klein, R. (2013). Promoting and assessing pre-service teachers' technological pedagogical content knowledge (TPACK) in the context of case development. *Journal of Educational Computing Research*, 48(2), 127–152.
- Novak, G. M. (2011). Just-in-time teaching. *New Directions for Teaching and Learning*, 2011(128), 63–73.
- Ozdamlı, F., & Asiksoy, G. (2016). Flipped classroom approach. *World Journal on Educational Technology: Current Issues*, 8(2), 98–105.
- Patterson, G. A. (2012). An interview with Michael Horn blending education for high-octane motivation. *Phi Delta Kappan*, 94(2), 14–18.
- Piaget, J. (1971). *Genetic epistemology*. New York, NY: W.W. Norton.
- Prestridge, S. (2017). Examining the shaping of teachers' pedagogical orientation for the use of technology. *Technology, Pedagogy and Education*, 1(9), 1–15.
- Price, J. (2012). *Textbook bling: An evaluation of textbook quality and usability in open educational resources versus traditionally published textbooks*. Unpublished MSc thesis, Brigham Young University, Provo, UT, USA.
- Price, L., & Kirkwood, A. (2013). Using technology for teaching and learning in higher education: A critical review of the role of evidence in informing practice. *Higher Education Research & Development*, 33(3), 549–564.
- Roblyer, M. D. (2016). *Integrating educational technology into teaching* (6 ed.). Boston, MA: Allyn & Bacon.
- Roblyer, M. D., & Doering, A. H. (2013). *Integrating educational technology into teaching*. Harlow: Pearson.
- Sadaf, A., Newby, T. J., & Ertmer, P. A. (2012). Exploring pre-service teachers beliefs about using Web 2.0 technologies in K-12 classroom. *Computers & Education*, 59(3), 937–945.
- Shamir-Inbal, T., Dayan, J., & Kali, Y. (2009). Assimilating online technologies into school culture. *Interdisciplinary Journal of E-Learning and Learning Objects*, 5, 207–334.
- Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research*, 15(2), 171–193.
- Talbert, R. (2012). Inverted classroom. *Colleagues*, 9(1), 18–19, Article 7.
- Tømte, C., Enochsson, A.-B., Buskqvist, U., & Kårstein, A. (2015). Educating online student teachers to master professional digital competence: The TPACK-framework goes online. *Computers & Education*, 84, 26–35.
- Tondeur, J., Kershaw, L. H., Vanderlinde, R. R., & Braak, J. V. (2013). Getting inside the black box of technology integration in education:



- Teachers stimulated recall of classroom observations. *Australasian Journal of Educational Technology*, 29(3), 434–449.
- Tondeur, J., Van, J. V., Siddiq, F., & Scherer, R. (2016). Time for a new approach to prepare future teachers for educational technology use: Its meaning and measurement. *Computers & Education*, 94, 134–150.
- Tucker, B. (2012). The flipped classroom. *Education Next*, 12(1), 82–83.
- Wang, Y. S. (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. *Information & Management*, 41, 75–86.
- Woolf, B. P. (2010). *A roadmap for education technology*. Accessed through <<http://www.coe.uga.edu/itt/files/2010/12/educ-tech-roadmap-nsf.pdf>> on 4th June, 2017.
- Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American Educational Research Journal*, 40(4), 807–840.
- Zhu, C. (2013). Organisational culture and technology-enhanced innovation in higher education. *Technology, Pedagogy and Education*, 24(1), 65–79.

### ■ Appendix 1. Factor analysis.

Factors	Items	Factor loadings	Alpha value
1 Satisfaction with capability enhancement	This course has developed in me the capability of Critical thinking Creative thinking Self-managed learning Adaptability Problem solving Communication skills Interpersonal skills and group work Computer literacy	.456 .548 .571 .545 .562 .445 .425 .529	.885
2 Satisfaction with teaching and learning environment	The teaching & learning environment of this course has kept me engaged in Active learning Teaching for understanding Feedback to assist learning Cooperative learning Positive relationships with my teachers and peers Learning to manage my workload Self-assessment of my learning Future planning of my learning	.528 .592 .506 .500 .587 .565 .544 .546	.903
3 Overall satisfaction	Most of my expectations have been met by this course I have been able to engage myself in daily learning activities planned by my instructors. I advise and recommend my friends and juniors to take this course I see definite improvement in my English Language Skills I am confident that I will be able to apply the skills acquired in this course in my academic career. I am confident that I will be able to transfer the skills acquired in this course in my professional life.	.489 .611 .510 .639 .601 .594	.903

Bu makalenin kullanım izni Creative Commons Attribution-NoCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND3.0) lisansı aracılığıyla bedelsiz sunulmaktadır. / This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported (CC BY-NC-ND3.0) License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/3.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.