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Flipping the classroom for English language learners to foster active learning

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This paper describes a structured attempt to integrate flip teaching into language classrooms using a WebQuest active learning strategy. The purpose of this study is to examine the possible impacts of flipping the classroom on English language learners' academic performance, learning attitudes, and participation levels. Adopting a quasi-experimental design, three different formats for flip teaching were developed in this study. The results indicate that the structured and semi-structured flip lessons were more effective instructional designs than the non-flip lessons. With a varying extent, both the structured and semi-structured flip lessons helped the students attain better learning outcomes, develop better attitudes toward their learning experiences, and devote more effort in the learning process. Given the positive results, this paper concludes with a call for more research into this promising pedagogy to contribute to its knowledge base across disciplines.

Keywords: flipped classroom; active learning; WebQuest

Introduction

Flip teaching is growing rapidly in popularity (Bergmann & Sams, 2012), with blended learning now taking hold in e-learning contexts (Graham, 2006). By definition, flip teaching can be viewed as a pedagogical approach to blended learning in which the typical activities of classroom lectures followed by homework in traditional teaching procedures are reversed in order, and often supplemented or integrated with instructional videos (Garrison & Vaughan, 2008; Khan, 2012; Tucker, 2012). Graham (2006) articulated three blended learning levels on a continuum of technology integration, from enabling blends to enhancing blends, through to transforming blends. Current implementations of flip teaching fall into the category of enhancing blends that, as implied by its name, aims to provide enhanced rather than equivalent experiences of traditional classroom teaching with the use of technology in blended learning environments.

While the term flip teaching is relatively new in education, it is not a fundamentally novel teaching method (Berrett, 2012). Over the past decade, a number of corresponding terms, such as inverted classroom (Lage & Platt, 2000), just-in-time teaching (Novak, 2011), flipped classroom (Bergmann & Sams, 2012), and inverted learning (Davis, 2013), have been presented in the literature to describe this evolving method or approach, which emphasizes student preparation before class.

How to flip a classroom can be approached differently in practice. To begin, teachers adopting a flipped classroom approach can convert traditional face-to-face lectures into narrated PowerPoint videos (see, e.g., Moravec, Williams, Aguilar-Roca, & O'Dowd,

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2010), create instructional videos using any lecture capture tools (as in McGivney-Burelle & Xue, 2013), or select ready-made educational videos from websites or networks (e.g., Kahn Academy, TED, iTunes U, and YouTubeEDU) for learners to study prior to class as lecture replacements, in order to free up class time for active learning activities. Simply put, flip teaching can be conducted with many kinds of instructional videos, and other forms of pre-class assignments, such as reading quizzes or worksheets, are often presented together to help students better prepare for in-class participation.

The principles supporting the flipped classroom approach are grounded in theoretical understandings of active learning (e.g., Bonnell & Eison, 1991; Meyers & Jones, 1993; Silberman, 1996). Conceptually, active learning is an umbrella term that "involves students in doing things and thinking about the things they are doing" (Bonnell & Eison, 1991, p. 2). This broad but widely accepted definition links active learning to a vast range of learning activities, instructional strategies, teaching methods, and any pedagogical approach that is intended to activate or develop the students' thinking in the learning process. Examples of these include, but are not limited to: group discussions, case studies, collaborative learning, problem-based learning, and inquiry-based learning. In practice, a more specific conceptualization of active learning should yield greater consistency in its educational applications. This paper thus focuses the discussion on an active learning strategy called WebQuest that belongs to the camp of inquiry-based learning, among various subsets of active learning. Since it was first introduced in 1995, WebQuest has received praise for its affordances to guide students to look for and inquire into web-based materials (Dodge, 2001; Halat, 2008). Applying WebQuests to support students' active learning has also been promoted by many foreign language educators (e.g., Altstaedter & Jones, 2009; Godwin-Jones, 2004; Sox & Rubinstein-Avila, 2009). Although the concept of WebQuest was originally defined as an inquiry-oriented activity (Dodge, 2001), numerous researchers have modified this concept to better suit their own research purposes. Following Maddux and Cummings (2007), a WebQuest in the present study "could be described more accurately as a lesson plan format" (p. 120), which contains five major components: Introduction, Task, Process, Evaluation, and Conclusion.

While the term "thinking", as noted in the definition of active learning above, is not clearly specified, it is helpful to consider Bloom's (1984) taxonomy of educational objectives, ranging from lower to higher and simple to complex levels of cognitive thinking (i.e., knowledge, comprehension, application, analysis, synthesis, and evaluation). In parallel, Bonwell and Sutherland (1996) proposed "an active learning continuum that moves from simple tasks on one end to complex tasks on the other" (p. 5) as a conceptual framework to help instructors map out active learning strategies that cater to their teaching objectives. It follows that, for any learning to be effective, care should be taken to ensure that students are properly and gradually guided in the learning process to achieve higher order thinking in an active manner.

One of the benefits often cited for flip teaching is that students in the flipped classroom are given more opportunities to develop higher order thinking under teacher guidance and with peer support as needed, because in-class lectures that often require only lower levels of thinking skills in Bloom's (1984) taxonomy are replaced with instructional videos, without the cost of sacrificing learning content (Berrett, 2012). Given the prospect for enhancing lecture delivery, STEM disciplines (i.e., science, technology, engineering, and mathematics) that are traditionally taught deductively, with a heavy reliance on lecturing, appear to have received the most research attention among early adopters of flip teaching at universities (see examples of a biology course in Marrs & Novak, 2004; a Microsoft Excel course in Davies, Dean & Ball, 2013; a statistics course in

Strayer, 2012). These studies have generally reported the educational value of flip teaching in relation to enhanced class preparation, increased classroom interactivity, and improved academic performance. By contrast, the use of lectures for transmitting knowledge tends to be of little significance to humanities disciplines that commonly favor inductive teaching methods to encourage students to assimilate information and construct knowledge. This may explain in part why the flipped classroom approach, featuring lecture enhancement, has attracted relatively less interest among educational researchers in the humanities. Accordingly, in the field of language education, little or no research to date has rigorously studied whether and how flipping the language classroom can enhance student learning.

Despite sporadic evidence reported by a few pioneering studies in STEM fields, no conclusive or generalizable findings on flip teaching can be derived from the currently available literature, due to insufficient empirical validation across contexts. Furthermore, although flip teaching is claimed to be applicable to any subject and at any level, its current practice mainly lies in K-12 education (Horn, 2013; Khan, 2012), which reinforces the need to investigate whether expanding in non-STEM higher education settings would yield benefits. The present study thus sets out to flip the classroom for English language learners at a university in Taiwan to examine its pedagogical potential in language education, as a means to contribute to the growing line of research on flip teaching. The research questions that guided this work are as follows: (1) How did flip teaching influence the students' academic performance? (2) What were the students' perceptions of and attitudes toward their learning experiences in the flipped classroom? (3) What were the students' participation levels in the flipped classroom?

Methodology

Research design

This study adopted a posttest-only quasi-experimental design to examine the impacts of flip teaching on student learning, with a particular focus on engaging students in the flipped classroom through a WebQuest active learning strategy. The independent variable was the flipped classroom approach with three different formats of instructional design: structured units of flip lessons in the form of WebQuests (experimental group I), semi-structured units of flip lessons (experimental group II), and non-flip lessons conducted in a relatively traditional manner (control group). The dependent variables were the students' academic performance (as measured by the end-of-lesson assessments), learning attitudes (as measured by the post-intervention learning experience questionnaire and semi-structured interviews), and participation levels (as measured by the lesson study logs on the students' out-of-class study time and effort). Both quantitative and qualitative data were analyzed in this study to gain insights into the English language learners' flipped classroom experiences.

Participants

The participants of the study ($N = 75$) were recruited from three intact classes of foreign language learners taking a communicative English course at a Taiwanese university. The students enrolled in this course met weekly for three 50-minute class periods in a multimedia laboratory, where each of them had access to a desktop computer. All participants were first-year English majors, aged 18−19 years old, who had learned English for an

average of 10 years. None of the participants had any flipped classroom experiences prior to this study, and approximately one-third of them had blended learning experiences in their high school years.

Before the instructional intervention, all the enrolled students took a simulated Test of English as International Communication (TOEIC) to measure their receptive skills. Based on the Common European Framework of Reference for Languages (CEFR), the results (Mean = 557.68; SD = 41.37) showed that the majority of the 75 participants (80%) were intermediate English language learners at the CEFR B1 level. Given that there were no significant group differences with regard to the students' English proficiency levels, the three intact classes (with an average size of 25) were randomly assigned to the experimental and control groups. Brief descriptions of each instructional condition of this study are provided below.

The structured flipped classroom was specifically set out for experimental group I with WebQuests. In this study, three WebQuests were created using a wiki tool, Google Sites (http://sites.google.com/). Since WebQuest has been used to empirically test the provision of a structured and enriched learning environment for foreign language learners, it was chosen as an active learning strategy for instructional design to organize the relevant learning materials systematically for this study. Interested teachers can also find more WebQuest guidelines and best practices in various online learning networks, such as WebQuest.org, QuestGarden.com, and Zunal.com.

The second experimental condition was assigned to the semi-structured flipped classroom (experimental group II), established using the tool called TED-Ed (http://ed.ted.com). The TED-Ed site, launched by the world-renowned TED conferences in 2012, is a video-sharing platform that allows users to customize or flip a lesson based on a range of selectable videos by adding quiz questions and supplementary information for self-study or teaching purposes. As one initiative for supporting the flipped classroom approach, the TED-Ed site is gaining attention from flip teaching advocates. In light of its affordances, incorporating TED-Ed into the semi-structured flipped classroom in this instructional intervention was deemed appropriate.

The condition created for the control group was the non-flipped classroom that adopted task-based learning activities in class and assigned homework to be completed in a conventional manner. Unlike the two experimental groups that incorporated e-learning materials, the learning materials presented to the control group were in the traditional print format, although the content remained identical. In other words, the three conditions mainly differed with regard to the structure and delivery of the respective learning materials, as well as the ways these materials were used to support teaching and learning.

Procedure

As illustrated in Figure 1, this research was carried out in a period of eight weeks and divided into three major phases, including (1) a preparation phase for technology orientation, (2) an instruction phase for the implementation of flip teaching, and (3) an evaluation phase for overall assessment of teaching and learning.

To start with, the preparation phase took place in the first week of this intervention, in which experimental group I received an orientation in the use of WebQuests, while experimental group II was introduced to the TED-Ed site. Next, the instruction phase covered three English teaching lessons that were evenly distributed over a six-week period, and the lesson themes were as follows: (1) learning English with movies, (2) learning English with music, and (3) learning English with comics. As an example, Table 1 illustrates the

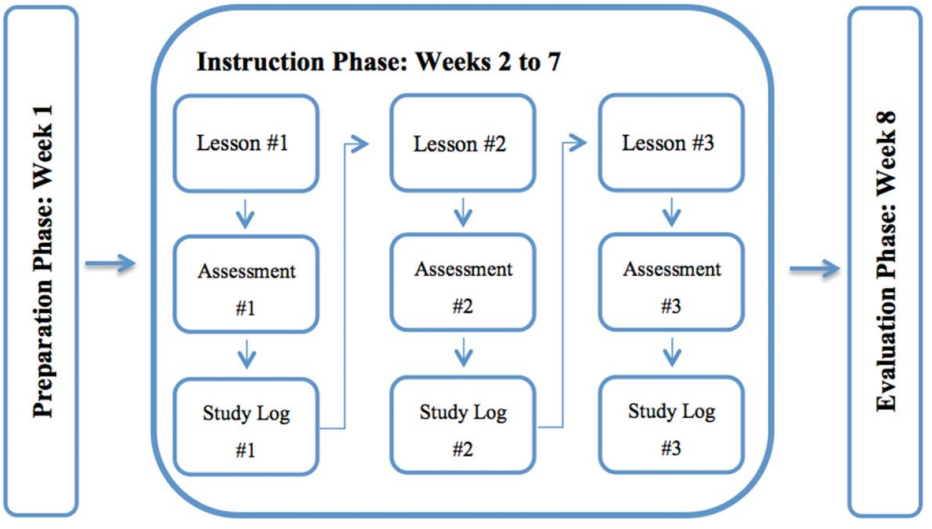

Figure 1. Research phases and procedure

first lesson, or WebQuest, designed for this study. Each lesson took up two 50-minute class periods per week for two consecutive weeks, with one focusing on learning and instruction and the other on assessment and presentation of student work. With regard to teaching procedures, in each lesson the students typically were directed to (1) explore useful English learning websites and online materials, such as the Internet Movie Database, Lyrics Training, and Go Comics; (2) watch some video clips as discussion prompts, and then share their thoughts with each other; and (3) work in pairs or small groups to complete a communicative task in oral or written forms. Given the quasi-experimental design of this study, these lessons were developed into three different formats for flip teaching. Table 2 provides an outline of this instructional intervention, using the first flip

Table 1. An illustrative example of a WebQuest designed for this study.

Component	Activity
Introduction	The students were provided with a rationale for using movies to learn English and were encouraged to make use of this learning strategy.
Task	The students were informed of their expected outcome in the major task, movie-based digital storytelling, which required them to take part in a series of subtasks.
Process	To complete the complex task of digital storytelling, the students were guided step by step to (1) watch a series of movie trailers and get to know a variety of movie genres, (2) learn to use Internet Movie Database (IMDb) and explore background information about any movies of their interest, (3) discuss what they found on IMDb and then engage in conversational activities, and (4) work in pairs to compose a digital story with Microsoft PowerPoint based on a chosen movie which could then be presented to the class.
Evaluation	A rubric of digital storytelling was adopted in this lesson to assess the students' task performance and English communicative competence. The students were made aware of this assessment prior to their task collaboration.
Conclusion	This lesson concluded with a reinforcement of how movies can be strategically used to enrich and enhance English learning.

Table 2. A summary of instructional design based on three instructional conditions.

	Experimental group I ($N = 26$)	Experimental group II ($N = 24$)	Control group ($N = 25$)
Flip structure	Structured flipped classroom (also referred to as the flip group)	Semi-structured flipped classroom (also referred to as the semi-flip group)	Non-flipped classroom (also referred to as the non-flip group)
Flip tool	Google Sites (for creating WebQuests)	TED-Ed	None
Material delivery	In- and out-of-class learning materials were organized in the WebQuest format, and were delivered before each lesson to facilitate the students' lesson preparation	Out-of-class learning materials were made available before each lesson in the electronic format to supplement the students' lesson preparation, while worksheets associated with in-class activities were provided in written format	In- and out-of-class learning materials were presented in the print format, and were delivered when appropriate during in-class activities
Flip teaching	*Before class* Watch 5 movie trailers and complete 10 vocabulary and comprehension questions *In class: 100 minutes* (1) 15-minute introduction to movie genres (2) 15-minute tutorial on IMDb and strategy training (3) 20-minute conversation activity (4) 15-minute interactive feedback session based on the five movie trailers (5) 15-minute scaffolding activities to prepare the students for the digital storytelling task, in which examples were shown to the students (6) 20-minute interactive feedback session, in which the students worked in pairs while the teacher assisted them in designing digital stories and follow-up presentations over the following week	*Before class* Watch 5 movie trailers and complete 10 vocabulary and comprehension questions *In class: 100 minutes* (1) 15-minute introduction to movie genres (2) 15-minute tutorial on IMDb and strategy training (3) 20-minute conversation activity (4) 15-minute interactive feedback session based on the five movie trailers (5) 15-minute scaffolding activities to prepare the students for the digital storytelling task, in which examples were shown to the students (6) 20-minute interactive feedback session, in which the students worked in pairs while the teacher assisted them in designing digital stories and follow-up presentations over the following week	*In class: 100 minutes* (1) 50-minute listening and speaking exercises based on five movie trailers and conclude with a 10-item vocabulary and comprehension exercise (2) 15-minute introduction to movie genres (3) 15-minute tutorial on IMDb and strategy training (4) 20-minute conversation activity *After class* Compose a movie-based digital story in pairs as homework and present to the class over the following week

lesson as an illustrative example. Data collected during the instruction phase included three sets of lesson assessments and lesson study logs. Finally, in the evaluation phase, all the participants were asked to fill out a learning experience questionnaire, and some focal participants were invited to take part in follow-up interviews on an individual basis at the end of the course.

Data collection and analysis

The data collection and analysis methods for this research are briefly described below.

Lesson assessment

Each lesson designed for this study concluded with an assessment which was designed to assess the students' comprehension of the learning materials and their overall task performance. The lesson assessments were given in the second week of each lesson and consisted of three types of test items, which included vocabulary quizzes (30%), multiple-choice questions for video comprehension (30%), and an oral presentation or writing performance (40%) that reflected the learning points of the communicative task covered in a particular lesson. Among which, the students' oral presentation or writing performance was assessed independently by two raters from the research team, using a rubric designed by the researcher. The summed scores of each lesson assessment at 100-point intervals were used as a measure of the academic performance variable in the statistical analysis.

Lesson study log

All the students were required to keep study logs and submit them to the instructor upon the completion of each lesson. The study logs with three reflection questions (see Appendix 1) were designed to guide the students to self-monitor and regulate their learning, while also providing the researcher with a window to understand their out-of-class participation. The students' participation levels were mainly measured by the lesson study logs, which were self-reported to reveal the estimated time in minutes and the number of times they watched related videos as they studied for each lesson outside the classroom.

Learning experience questionnaire

A 26-item questionnaire was administered to all the participants at the end of this instructional intervention (see Appendix 2) to gauge their learning experiences throughout this process. The first part of the questionnaire (items 1−20) was adapted from the widely used instrument of Study Process Questionnaire (SPQ) developed by Biggs, Kember, and Leung (2001), which makes a distinction between deep and surface learning. These items were slightly reworded to fit the research context and modified into five-point Likert scale items. The second part of the questionnaire (items 21−26) contained a series of five-point Likert scale items and one open-ended question developed by the researcher to assess the students' learning satisfaction, with a focus on material design.

Semi-structured interview

To elicit the students' perceptions of flipped classroom experiences, the researcher conducted individual interviews with 18 focal participants chosen from the 75 participating

students, using a criterion sampling technique (see Appendix 3 for the semi-structured interview questions). Drawing on the deep/surface dichotomy as measured by the SPQ-related items (Biggs et al., 2001) in the learning experience questionnaire used in this work, all the participants were first categorized based on whether they reported using surface or deep learning approaches. Simply stated, surface learners are students who intend to meet the task requirements with minimum effort, whereas deep learners are relatively motivated students who have the intention of engaging in the in-depth processing of information or knowledge seeking. After the initial classification of the participants, three deep learners and three surface learners in each of the experimental settings (i.e., structured flipped classroom, semi-structured flipped classroom, and non-flipped classroom) were randomly selected as the focal participants to ensure that different groups of students were equally represented. These 18 focal participants were then invited to voluntarily take part in the follow-up interviews at the end of the research period. Each interview lasted for approximately 15 minutes, and was audio-recorded for subsequent transcription and analysis.

With respect to data analysis methods, the quantitative data (i.e., 225 lesson assessment scores, 225 records of study logs, and 75 questionnaire responses) were analyzed using the SPSS 17.0 statistical software with a significance level of 0.05, while the qualitative data (i.e., 18 interview transcripts and the responses to the open-ended items extracted from the questionnaires and study logs) were coded based on content analysis procedures to generate possible themes pertaining to the research questions. These analytical results were also triangulated across all the data sources, and then verified with a member-checking technique to assure the validity and reliability of this research.

Results

Academic learning outcomes resulting from flip teaching

The study's first research question sought to determine whether flip teaching impacted the students' academic performance in any way, using the three end-of-lesson assessments as the primary measurement. Table 3 provides descriptive statistics of each group's lesson assessments and summarizes the group comparison results to depict the participants' quality of academic performance in this study. One-way analyses of variance (ANOVA) were performed to examine any differences in academic learning outcomes due to the varying approaches or structured attempts to flip the classroom. Significant differences in

Table 3. Comparison of group differences on academic performance for each lesson based on one-way ANOVA and post-hoc Tukey tests.

		Lesson assessment I		Lesson assessment II		Lesson assessment III	
Group	*N*	Mean	SD	Mean	SD	Mean	SD
(a) Flip group	26	72.88	7.15	81.69	4.52	83.31	5.24
(b) Semi-flip group	24	74.71	6.41	77.46	7.28	78.88	6.71
(c) Non-flip group	25	73.76	6.25	73.08	6.39	75.52	4.87
ANOVA		$F = 0.47, p = .625$		$F = 12.56, p = .000^*$		$F = 12.24, p = .000^*$	
Post-hoc Tukey				(a) > (b)*, (a) > (c)* (b) > (c)*		(a) > (b)*, (a) > (c)*	

Note: significance $^*p < .05$.

the mean scores of lesson assessments II and III were found among the three groups ($F = 12.56$, $p < .05$ and $F = 12.24$, $p < .05$, respectively) but not in those of lesson assessment I ($F = 0.47$, $p = .625$). This might be partly due to the fact that, at the beginning of the intervention, none of the participants were very familiar with the instruction and initial assessment, and thus the two subsequent assessments are expected to more accurately reflect the students' academic performance as the instructional cycle repeated itself.

Post-hoc Tukey tests were further conducted to detect which pairs of means were significantly different. In lesson assessment II, the mean scores of participants from the structured flipped classroom were significantly higher than those measured for the semi-structured flipped classroom and non-flipped classroom (flip > semi-flip, flip > non-flip, $p < .05$), and the participants from the semi-structured flipped classroom also significantly outperformed those from the non-flipped classroom (semi-flip > non-flip, $p < .05$). In lesson assessment III the group differences were not consistently found, in that the academic performance of participants from the structured flipped classroom was significantly better than that of participants from the semi-structured flipped classroom and non-flipped classroom (flip > semi-flip, flip > non-flip, $p < .05$), but the academic performance between the participants from the semi-structured flipped classroom and non-flipped classroom did not differ significantly (semi-flip < non-flip, $p = 1.01$).

These results regarding student academic performance suggested that, in general terms, the structured flipped classroom better facilitated student learning in coursework compared with the traditional classroom. Although significant group differences were not consistently found across all the three assessments, the participants from the structured flipped classroom demonstrated the most improvement from lesson assessment I to lesson assessment III, and earned the highest mean scores on lesson assessments as a whole among the three groups.

Learners' perceptions of and attitudes toward the flipped classroom

The second research question in the study examined the students' perceptions of and attitudes toward flip teaching, as measured by the learning experience questionnaire and supplemented with the interview comments. To this end, the students' responses to the SPQ-related items in the questionnaire (items 1−20) were analyzed to represent their perceived learning engagement, and their satisfaction associated with the learning experience as a whole was assessed based on their responses to item 25. Table 4 summarizes the

Table 4. Comparison of group differences on perceived learning engagement and overall learning satisfaction based on one-way ANOVA and post-hoc Tukey tests.

			Descriptive statistics				
	Group	*N*	Mean	SD	*F*	*p*	Post-hoc Tukey
Perceived learning engagement	(a) Flip	26	4.20	0.45	10.08	.000*	(a) > (c)*
	(b) Semi-flip	24	3.93	0.36			
	(c) Non-flip	25	3.64	0.51			
Overall learning satisfaction	(a) Flip	26	4.65	0.56	9.88	.000*	(a) > (c)* (b) > (c)*
	(b) Semi-flip	24	4.58	0.50			
	(c) Non-flip	25	3.96	0.74			

Note: significance *$p < .05$.

descriptive statistics of the students' learning perceptions, along with a comparison of the results from the three groups using one-way ANOVA and post-hoc Tukey tests.

As shown in Table 4, the ANOVA results indicated that the independent variable investigated in this study (i.e., varying approaches to flipping the classroom) had a significant effect on the participants' perceived learning engagement ($F = 10.08$, $p < .05$) and their overall learning satisfaction ($F = 9.88$, $p < .05$). In terms of pairwise comparisons, the participants from the structured flipped classroom were more engaged in out-of-class study and more likely to adopt deep learning approaches than those from the traditional classroom (flip > non-flip, $p < .05$). However, there was no significant difference between the structured flipped classroom and semi-structured flipped classroom ($p = .086$), as well as between the semi-structured flipped classroom and non-flipped classroom ($p = .067$), although the mean scores for the two experimental groups that received flip teaching were higher than that of the control group (flip > semi-flip > non-flip). These findings suggest that exposing students to the structured flipped classroom, in comparison to the traditional classroom, could effectively engage them in deep learning, but the semi-structured flipped classroom might not lead to equivalent positive results in comparison to the structured one.

With regard to the group comparison results of overall learning satisfaction, the participants from the structured and semi-structured flipped classrooms both expressed significantly higher levels of satisfaction than those from the traditional classroom (flip > non-flip, semi-flip > non-flip, $p < .05$), but the overall satisfaction levels between the structured and semi-structured flipped classrooms did not differ significantly ($p = .912$). These findings indicate that flip teaching, regardless of whether a structured or semi-structured format was used, was very well received by the participants, with high ratings of overall learning satisfaction (flip: $M = 4.65$, SD = 0.56; semi-flip: $M = 4.58$, SD = 0.50).

Given the positive results of overall satisfaction, this study took a step further to examine the participants' levels of satisfaction with material design in both the structured and semi-structured flipped classrooms. Table 5 presents the descriptive statistics of the two experimental groups' opinions gathered from items 21 to 24 regarding material design in the learning experience questionnaire, along with a comparison of the results of independent samples *t*-tests. All the participants from both the structured and

Table 5. Descriptive statistics and independent samples *t*-test results for comparing students' learning satisfaction with regard to material design in the structured versus semi-structured flipped classrooms.

			Descriptive statistics			
	Group	*N*	Mean	SD	*t*	*p*
Item 21	Flip	26	4.42	.70	−2.20	.841
	Semi-flip	24	4.46	.51		
Item 22	Flip	26	4.73	.45	5.92	.000*
	Semi-flip	24	3.79	.66		
Item 23	Flip	26	4.15	.73	−.07	.945
	Semi-flip	24	4.17	.57		
Item 24	Flip	26	3.96	.53	.78	.441
	Semi-flip	24	3.83	.64		

Note: significance *$p < .05$.

semi-structured flipped classrooms were satisfied with the design of instructional materials in flip teaching, based on the results of items 21−24 (minimum = 3: somewhat agree, median = 4: agree, maximum = 5: strongly agree). More specifically, the two experimental groups expressed that they were satisfied with the content and topics of the learning materials (item 21), the format and structure of the learning materials (item 22), the integration of technology and multimedia resources (item 23), as well as the control and freedom of choosing what and how to learn (item 24). As shown in Table 5, while the analyses of the independent samples *t*-tests showed no meaningful differences on most of the items, a notable difference between the two experimental groups was found on item 22, suggesting that the format and structure of learning materials in the flipped classroom contributed significantly to the students' satisfaction with their flipped learning experiences ($t = 5.92$, $p < .05$). This implies that the learning materials designed and presented in the form of WebQuests might have greatly assisted the students in following a structured and logical path for learning in and out of class.

Moreover, the qualitative results yielded supportive evidence for the highly rated effectiveness of flip teaching. Many students (54 out of 75 participants, 72%) cited several satisfying aspects of their flipped learning experiences in the questionnaires, with the structured design of the learning materials being the most common reason why they valued this pedagogical approach. As one student reported in the interview, "My favorite part of this learning experience was being able to study the materials at my own pace, and the way that the materials were organized was very easy to follow." The second most satisfying aspect reported by 48 out of 75 participants (64%) was enhanced interaction with the instructor and classmates. Several students mentioned in the interviews that it was less intimidating to bring their own questions to the instructor during the feedback sessions in the flipped classroom, in contrast to traditional whole-class instruction. Another student commented, "I like that we watch videos and self-study vocabulary at home prior to class, so when we get to class, we can practice what we have learned with our classmates and actually use English for communicative purposes." In short, the participants generally expressed a preference for flip teaching over traditional classroom teaching.

Students' participation levels in the flipped classroom

The third research question explored the students' participation levels as reflected in their average study time and number of times they watched related videos for each flip lesson while they were involved in either the structured or semi-structured flipped classrooms. Table 6 presents the means and standard deviations of the two experimental groups'

Table 6. Descriptive statistics and independent samples *t*-test results for comparing students' study time and effort in the structured versus semi-structured flipped classrooms.

			Descriptive statistics			
	Group	*N*	Mean	SD	*t*	*p*
Study time in minutes	Flip	26	68.08	24.98	2.78	.008*
	Semi-flip	24	53.33	19.71		
Number of attempts for videos	Flip	26	2.31	0.68	2.30	.026*
	Semi-flip	24	1.75	0.74		

Note: significance $^{*}p < .05$.

participation levels, along with the statistical results of group comparison using independent samples *t*-tests. On average, the participants from the structured flipped classroom reported that they spent approximately 68 minutes studying the learning material for each lesson outside of the class, and the average study time of participants from the semi-structured flipped classroom was about 15 minutes shorter. In the structured flipped classroom, the participants' average number of times they watched videos that were related to each lesson was 2.31 times, which was slightly more than that of participants from the semi-structured flipped classroom. As can be seen in Table 6, both aspects of participation levels were higher for the students from the structured flipped classroom than for those from the semi-structured flipped classroom at the .05 confidence level, suggesting that there are advantages with regard to flip teaching in language classrooms that uses a structured design.

The results of the qualitative analysis supported these quantitative findings, providing additional insights into the students' learning approaches. In the interviews, over 80% of the focal participants from both the structured and semi-structured flipped classrooms reported that they spent relatively more time and effort on this course than more traditionally structured courses, because the instructional design prompted them to preview the learning materials for better in-class participation, and made it easier for them to review the lessons if they wanted to. When asked how they went about studying for lessons, a typical response was: "I would focus on getting the main ideas of the videos and jotting down new words that came up during my previews, and I would explore the suggested materials and video resources when reviewing the lessons if I found the content and topics interesting." As expected, the qualitative and quantitative results were consistent in demonstrating that students in the flipped classroom were more likely to review the learning materials compared with students in traditional classrooms.

In addition, the qualitative findings generally revealed that the students from either the structured or semi-structured flipped classrooms were stimulated to become more active in learning due to flip teaching. As one student put it, "I found more and more classmates coming to this English class prepared, and they are becoming more expressive in our English conversation activities." According to the interviews, the students with different proficiency levels and study approaches appeared to appreciate and benefit from flip teaching. A high-performing student from the structured flipped classroom commented on the helpfulness of having access to the learning materials, stating that "Thanks to the online lessons – whenever the teacher or my classmates mention something important that I missed during my lesson preview, I can always go back to study them in depth after class." One student who claimed that English listening was her weakness noted that: "I often feel anxious in English classes, particularly when we are going to watch some videos and immediately have a discussion on them, but in this course I feel more comfortable and confident to interact with others, because I can watch the videos before class as many times as I need to until I gain full comprehension." On that account, flip teaching appears to offer more flexible learning opportunities for preview and review, and thus better meets the students' individual needs.

Concluding discussion

The aim of flipping the classroom is to engage students in pre-class study to enhance involvement in class, and ultimately to achieve more satisfying learning outcomes. As an initial effort to flip the language classroom, the research reported here describes: (1) how language teachers can develop flip lessons with available technological tools, such as

Google Sites and Ted-Ed, and (2) how flip teaching coupled with the WebQuest active learning strategy can better benefit student learning. The positive results of this study are thus restricted to the specific research context and the particular technological tools used in the learning environment. Given that the main objective of this study was to experiment with the flipped classroom approach for English language learners, the findings from this work are not meant to be generalized due to limited sample size. Rather, the major strengths of this research are its scope and the instructional design in relation to the use of the flipped classroom approach, as discussed below.

This study contributes to the literature by expanding the application of the flipped classroom approach to non-STEM disciplines. Similar to other empirical studies grounded in large-scale, lecture-based classrooms (e.g., Davies, Dean, & Ball, 2013; Moravec et al., 2010), this research has demonstrated the feasibility of the flipped classroom approach to facilitate small groups of English language learners in blended learning contexts, suggesting that this pedagogical approach is applicable to transform courses that are usually taught either deductively or inductively and for varying class sizes. Concerning the specific impacts of this pedagogical approach on student learning, the present study has yielded generally positive results on the students' participation, satisfaction, and performance. First, the findings of this study mirror much of the research conducted in STEM fields about active learner involvement and participation (e.g., Guertin, Zappe, & Kim, 2007; Moravec et al., 2010), in that flip teaching enabled the English language learners to preview and review the content based on their needs and at their own pace, such as looking up words, studying unfamiliar concepts, and reading additional resources. Second, the findings of McGivney-Burelle and Xue (2013) and Frydenberg (2013) provide convincing evidence that most learners are more satisfied with learning in a flipped classroom as opposed to a traditional one, and the same was found in the current work. Third, this study confirms the finding reported in Davies, Dean, and Ball (2013) that the flipped classroom is associated with better academic performance, while regular classrooms are comparatively less effective. Taken together, it is evident that although the flipped classroom approach has mainly been conducted in STEM fields, its feasibility across disciplines (in this case, language education) should not be underestimated.

Another strength of this study is that it represents a structured attempt to flip English lessons using the WebQuest active learning strategy. The findings of this study showed that the structure of learning materials, augmented by the use of WebQuests, had a positive impact on how students perceived the learning environment and engaged in the learning process, but how strong the impact was and whether it directly influenced student learning outcomes was difficult to tell. Previous studies have also shown positive effects from using course websites as supplementary learning materials to create an organized learning environment for active learning (e.g., Lage, Platt, & Treglia, 2000; Marrs & Novak, 2004). While such studies and the present research differ in the actual content and structure of learning materials, they share the same belief that supplementary resources for flipped classrooms should be designed to connect students' in-class activities and out-of-class efforts in an integrated fashion with the mediation of technology. Drawing on the findings of this research, it can be argued that structuring the learning materials based on the five essential elements of WebQuest (i.e., Introduction, Process, Task, Evaluation, and Conclusion) is an effective active learning strategy for flip teaching. Language educators could thus utilize a WebQuest strategy to guide their flip teaching practices and the design of the associated learning materials.

Educators in the twenty-first century are constantly adopting new technologies and pedagogies. Flip teaching is arguably one of the most promising approaches to

transforming learning experiences (Fulton, 2012; Millard, 2012), with a holistic integration of technology and active learning strategies. Future research may build on the lessons learned from this study and probe into the effects of well-structured versus ill-structured or guided versus unguided flip lessons on student learning, using different instructional design techniques or active learning strategies. Variations of this pedagogy in combination with other innovative applications of technology can also contribute to the current knowledge base of flip teaching, helping it grow in both scope and depth.

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Appendix 1. Lesson study log

(1) How many minutes did you study the lesson material out of class?
(2) How many times did you watch the videos that go with this lesson?
(3) What useful vocabulary and concepts did you learn from this lesson?

Appendix 2. Learning experience questionnaire

Part one: Learning engagement

(1) I find that at times studying gives me a feeling of deep personal satisfaction.
(2) I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.
(3) My aim is to pass the course while doing as little work as possible.
(4) I only study seriously what is given out in class.

(5) I feel that virtually any topic can be highly interesting once I get into it.
(6) I find most new topics interesting, and often spend extra time trying to obtain more information about them.
(7) I do not find the lessons and class activities very interesting, so I keep my work to a minimum.
(8) I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.
(9) I find that studying academic topics can at times be very enjoyable.
(10) I test myself on important topics until I understand them completely.
(11) I find I can get by in most assessments by memorizing key points rather than trying to understand them.
(12) I generally restrict my study to what is specifically set, as I think it is unnecessary to do anything extra.
(13) I work hard at my studies because I find the material interesting and worth the effort.
(14) I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.
(15) I find it is not helpful and even wastes time to study topics in depth that are not being taught in class.
(16) I believe that instructors shouldn't expect students to spend significant amounts of time studying material that they will not be examined on.
(17) I come to most classes with questions in mind that I want answering.
(18) I make a point of looking at most of the suggested materials and videos that go with the lessons.
(19) I see no point in learning material that is not likely to be covered in examinations.
(20) I find the best way to pass examinations is to try to remember answers to likely questions.

Part two: Learning satisfaction

(1) I am satisfied with the content and topics of the learning material.
(2) I am satisfied with the format and structure of the learning material.
(3) I am satisfied with the integration of technology and multimedia resources.
(4) I am satisfied with the control and freedom of choosing what and how to learn.
(5) Overall, I am satisfied with this learning experience.
(6) What do you think are the most and least satisfying aspects of this learning experience?

Appendix 3. Interview questions

(1) What was something specific that you enjoyed about this learning experience?
(2) What were some specific concerns or difficulties that you had during this learning experience?
(3) What were your typical approaches to studying and the average effort you put into each lesson?
(4) Did you observe any changes in your or others' attitudes toward this learning experience? What are some specific examples? How did they happen, and why?