*LANGUAGE TEACHING AND TECHNOLOGY FORUM*

# THE INTEGRATION OF A STUDENT RESPONSE SYSTEM IN FLIPPED CLASSROOMS

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The present study incorporates a student response system (SRS) as a means to engage students in a flipped classroom and promote active learning. While the effectiveness of such systems with regard to student learning has been well documented in disciplines that are dominated by lecture-based instruction, no studies have compared the effectiveness of SRS-integrated flipped classrooms in English language teaching contexts, as supported by the two different techniques of just-in-time teaching (JiTT) and peer instruction (PI). This study thus aims to fill this gap in the literature by examining the effects of SRS-integrated flipped classrooms on English language learners' speaking skills, willingness to communicate, and satisfaction with the flipped learning experiences. Using a quasi-experimental design, the overall results indicate that SRS-integrated flipped classrooms are capable of providing interactive learning opportunities that enhance learners' willingness to communicate, aiding their development of speaking skills and increasing their satisfaction with such learning experiences. The findings further suggest that the proposed approach has an additional advantage for motivating learners with low willingness to communicate to interact with the teacher and their peers in class activities, especially when facilitated by the PI technique.

## INTRODUCTION

A recent review shows that the concept of flipped classrooms, which emerged from K–12 education, has spread to higher education, with most studies conducted in the United States (O'Flaherty & Phillips, 2015). The *Horizon Report for Higher Education* in 2015 confirms this trend and details the continually growing application of flipped classrooms as "part of a larger pedagogical movement that overlaps with blended learning" (Johnson, Adams Becker, Estrada, & Freeman, 2015, p. 38). Consistent with these educational efforts, the present study represents an early attempt to examine university students' flipped learning experiences in the context of English language teaching.

### Understanding the Flipped Classroom Approach

By its very nature, the flipped classroom approach redefines the instructional procedure by (1) having students self-study lecture or learning materials out of class in order to preview and acquire new knowledge and then (2) guiding students to complete homework or follow-up assignments in class in order to help them review and put the newly learned knowledge into practice (Bergmann & Sams, 2012). Briefly, this approach highlights the spirit of student-centered pedagogies, encouraging students to take on a more active learning role in the flipped classroom, as compared to the traditional lecture-based approach.

Such reversed instruction has been implemented in various disciplines, with research showing promising

results (O'Flaherty & Phillips, 2015). In the field of language education, however, empirical evidence on the effectiveness of flipped classrooms is relatively scarce, largely due to the fact that most contemporary language courses are not taught using teacher-centered approaches (Kostka & Brinks Lockwood, 2015). Many proponents have claimed numerous advantages for the flipped classroom approach when applied in language teaching contexts, and one major benefit of flipping a language classroom is that teachers can reduce class time spent on input-oriented tasks (e.g., explaining vocabulary to enhance students' video comprehension) and increase that spent on output-oriented tasks (e.g., having students work in small groups for video-based discussion).

The body of literature on flipped language classrooms, while still limited, has started to grow in recent years. Within these pioneering studies, various technological tools are employed to facilitate the teaching of different aspects of language. For example, Huang and Hong (2016) conducted a mixed-methods study to investigate high school students' development of reading ability, in which digital videos and web-based technologies were employed for the design of the flipped English classroom. It was found that the students made significant improvements in English reading comprehension during the intervention. Hung (2015) adopted the flipped classroom approach to construct a technology-enhanced language learning environment, featuring online lessons in the format of WebQuests, as a means to facilitate university students' learning in an English communication course. The results suggested that, when structured and done well, flipped language classrooms could enhance students' academic performance, participation levels, and learning attitudes in comparison to those seen in their counterparts in a control group. Arguably, technology plays an integral role in flipped language classrooms, with its potential to increase opportunities for learners to use the second language (L2) during the language learning process, both in and out of class. It is thus reasonable to envision that further advances in technology can contribute to the proliferation of the flipped classroom approach, both in language courses and in content courses more generally.

**Integrating Student Response Systems in Classrooms**

Student response systems (SRSs), also known as clickers, are an integrated technology solution that has been used to create interactive classrooms in higher education over the past decades. In its simplest form, a SRS is a polling system through which a teacher poses questions and then collects students' responses in the classroom, with the results instantly shown to the whole class. In terms of availability, SRSs have evolved into web-based applications that allow students to use any computing devices with Internet connection capabilities to do the clicking required to take part in the activities. Alongside the ease of use and widespread availability of this evolving technology, SRS-integrated or clicker-integrated instruction is now widely acclaimed, with several literature reviews noting its benefits and positive effects on student learning, such as providing immediate feedback, increasing participation in class, and improving retention of the focal material (e.g., Chien, Chang, & Chang, 2016; Hunsu, Adesope, & Bayly, 2016).

The effectiveness of SRSs in fostering the active learning of students has been well documented in disciplines that are dominated by lecture-based instruction, such as physics. In comparison, SRSs are less commonly implemented in language classrooms, where class sizes are relatively small and classroom interactions are generally enacted by approaches to communicative language teaching (Cardoso, 2011). Still, there is some evidence showing the positive effects on language education that can arise with the use of SRSs. For example, Agbatogun (2014) carried out a quasi-experimental study to examine the effects of a SRS on L2 learners' communicative competence development under three different conditions: communicative language teaching in combination with clicker use (the clicker group), communicative language teaching (the communicative group), and language teaching via the lecture method (the control group). The results revealed that the clicker group outperformed their counterparts in listening and speaking tests, suggesting the superior effects of SRS-integrated instruction compared to conventional approaches to English language teaching. Cardoso (2011) investigated the perceived effects of a SRS used in a communicative learning environment, based on the views of 30 English language learners in Brazil. Drawing on the survey and interview results, enhanced learning motivation and increased participation in

class were found to be the major strengths of using SRSs in the language classroom.

Pedagogically, a typical use of SRSs is supported by a just-in-time teaching (JiTT) technique, through which the teacher assesses the students' prior knowledge based on the aggregated student responses, and then adjusts the instruction or feedback to meet the students' needs (Novak, Patterson, Gavrin, & Christian, 1999). Although research has shown enhanced classroom interaction resulting from the use of SRSs and the JiTT technique, the interactivity that occurs under such conditions still reflects the three-part structure of conventional classroom discourse, characterized as initiation-response-evaluation (IRE) or initiation-response-feedback (IRF). That is, the teacher asks questions, elicits the learners' responses, and then evaluates the answers or provides follow-up feedback if needed (Cazden, 2001). From a constructivist view of learning, the IRE and IRF structure can be criticized for making the classroom teacher-centered, leaving few opportunities for authentic interaction and knowledge construction. Mazur (1997) thus advocated for a peer instruction (PI) technique to create student-centered active learning environments with the use of SRSs in classrooms, in which students are given opportunities to discuss things with their classmates and provide peer feedback as they respond to the questions that are asked. This approach is widely used in science disciplines, and has been proven to make classrooms more interactive, thereby improving student learning (Crouch & Mazur, 2001). In the case of flipped language classrooms, the use of SRSs with the PI technique is arguably even more conducive to learning, given that it generates more opportunities for students to produce L2 output and interact with others in the structured questioning process. Nevertheless, this claim warrants further investigation, because few studies have integrated SRSs in flipped classrooms, and even fewer in flipped language classrooms. Moreover, no studies have compared the effectiveness of SRS-integrated flipped classrooms, as supported by the two different techniques of JiTT and PI. Empirical evidence is needed to determine the optimal uses of SRSs for creating an effective flipped learning environment, and the present study aims to fill this gap in the literature.

**Purpose of the Study**

The literature reviewed above indicates that flipping the language classroom and clicking to participate in class are both potential avenues to design interactive learning environments. Based on the underlying assumption that enhancing classroom interaction can benefit students' language learning and development, the present study incorporated a SRS (supported by either the JiTT or PI technique) as a means to engage students in the flipped classroom and promote active learning. Furthermore, an investigation was undertaken to examine the effectiveness of SRS-integrated flipped classrooms, addressing the following questions: (1) How did the flipped classroom intervention influence the students' development of speaking skills? (2) How did the students' willingness to communicate (WTC) vary due to the flipped classroom intervention? (3) How did the flipped classroom intervention affect the students' satisfaction?

**METHODOLOGY**

**Participants**

This study adopted a quasi-experimental research design involving two experimental groups, and each cohort consisted of 20 voluntary participants, drawn from two intact classes of the same English language course. All the participants had homogeneous backgrounds in terms of their L1 and L2; that is, they were Taiwanese university students learning English as a foreign language (EFL) in Taiwan, with 10 to 14 years of L2 study. No significant differences were found between the two groups' English proficiency levels (per self-reported scores on the Test of English as International Communication, ranging from 580 to 855). Although none of the participants had any flipped learning experiences, many of them had blended learning experiences prior to the study and they regarded themselves as experienced computer users.

Of particular interest to this study is whether a flipped classroom creates a less intimidating and more engaging environment for learners with low WTC. Consequently, the 10 students (five from each experimental group) who received the lowest scores in a baseline survey on WTC in English in classroom

settings were selected to be the focal participants in this study. These represented those individuals who were generally considered as shy learners or less-motivated students in the traditional classroom. It was anticipated that a close examination of such learners' communication behaviors in class would provide vital insights for language educators.

**Target Technology**

The SRS incorporated in this research is Kahoot!, a cloud-based application that can be freely accessed and operated by any device with a web browser. As a SRS, Kahoot! can be used to create interactive classroom activities through question-and-answer exchanges, with real-time histogram results of student responses. While this tool affords various types of response activities, the present study focuses on the use of Kahoot! quizzes for enhancing classroom interactions.

Kahoot! is defined as a game-based SRS by its developer team (Wang, 2015). For teachers, the creation of Kahoot! quizzes is user-friendly and takes only three major steps: (1) entering a set of multiple-choice questions with two to four answer options; (2) setting a time limit for answering each question, in the range of 5 to 120 seconds; and (3) saving and launching the quiz with a system-generated personal identification number (PIN) of the game so that students can join the question-and-answer activity. To start playing the game, the students need to visit the front page of Kahoot! using their devices, such as laptops or smartphones, and then enter the game PIN. In other words, users do not need to create a Kahoot! account when joining the game as a player; all they need is the related game PIN to take part in a game. The game then proceeds at a centralized pace, typically led by the teacher, with one question at a time displayed on a large screen to elicit student responses. After the completion of each question, instant tallies of the submitted responses in combination with the correct answer are shown on the screen, allowing the students to monitor their own comprehension and enabling the teacher to provide immediate feedback when needed. Meanwhile, the students earn points for the game by answering the questions correctly and speedily, with leaderboards of the top five scorers shown between questions and at the end of the whole game.
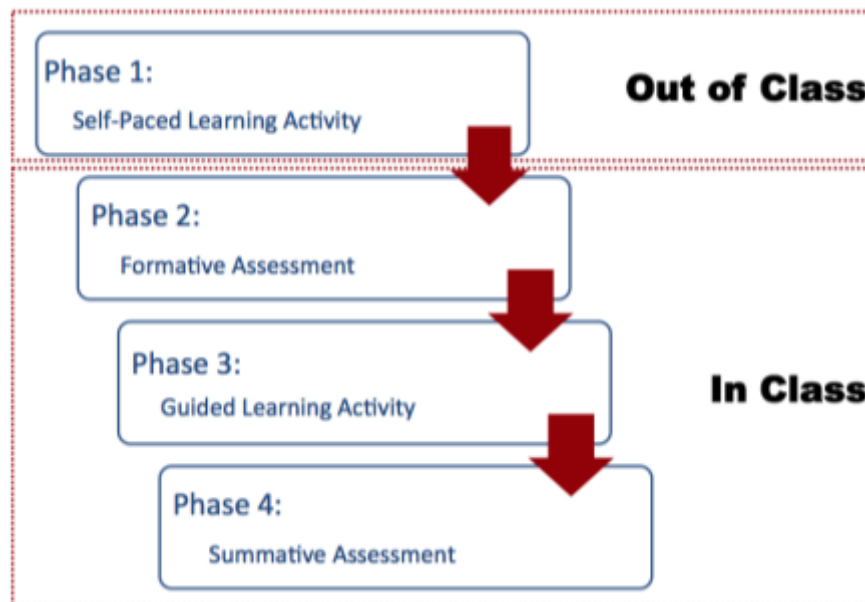
**The Flipped Classroom Intervention**

To maintain comparable experimental conditions, the same instructor taught the two groups, adopting identical materials, lessons plans, and interactive technology. For the purpose of this study, how the interactive technology (as exemplified by Kahoot!) was employed to support the students' flipped learning experiences was used as the independent variable. This study thus compared the two groups' learning outcomes due to the different flipped classroom conditions, in terms of the students' development of speaking skills (research question 1), WTC and communication behavior (research question 2), and learner satisfaction (research question 3). These were applied as the dependent variables.

The target technology, Kahoot!, was implemented in both groups, but with different techniques to create varying dynamics of classroom interactions. In one condition (labeled as the JiTT group), the teacher adopted the JiTT technique to conduct the Kahoot!-mediated question-and-answer activity, which was organized into the following steps: (1) the teacher posed a question; (2) the students responded to the question individually using Kahoot!; and (3) the teacher revealed the correct answer, commented on the performance of the whole class, and then proceeded to the next question. In the other condition (labeled as the PI group), the teacher employed the PI technique, with a slight variation on the activity procedure, as follows: (1) the teacher posed a question; (2) the students shared their initial responses with their peers before voting individually; (3) the students made their own votes using Kahoot!; (4) the teacher revealed the correct answer and the results of student votes; (5) the students discussed the question again and provided explanations for the correct answer in small groups; and (6) the teacher provided supplementary guidance and proceeded to the next question.

A total of six 50-minute lessons were created for this flipped classroom intervention, using a course management system for content delivery. Six educational videos from TED-Ed were selected as the primary

content materials for the lessons, and each video was approximately five minutes in length. A sample video included in this curriculum is entitled *Why are people left-handed?* The source for selection of flipped learning videos, TED-Ed, was chosen because it offers authentic and animated videos along with adaptable learning guides that are specifically tailored for flipped classrooms. As shown in Figure 1, each lesson was conducted in a cycle of four phases that entailed a series of focused learning activities, outlined with estimated time allocations below.

1.  Self-paced learning activity: Varied individually
    Before attending the class, the students were asked to watch a weekly assigned video and complete a lesson worksheet in order to prepare for in-class participation. The worksheet (see Appendix), inspired by a well-established graphic organizer known as a KWL chart (Ogle, 1986), with discussion questions added, was designed to scaffold the students' self-paced learning process out of class.

2.  Formative assessment: 20 minutes
    At the beginning of each face-to-face class meeting, the students took part in the warm-up activity using the SRS, and answered a set of comprehension questions on the basis of the video content. This served as formative assessment, allowing the students to receive formative feedback from the teacher and peers.

3.  Guided learning activity: 20 minutes
    The students conducted a peer review on the worksheet that they completed prior to the class, followed by a small group discussion that encouraged them to share their opinions in the target language. Meanwhile, the teacher played a facilitative role in circulating around each group, offering assistance when required to meet the students' individual needs.

4.  Summative assessment: 10 minutes
    Each lesson concluded with a paper-based quiz covering paraphrased question items that were already addressed in the warm-up activity. The quiz served as summative assessment for the teacher to monitor student mastery of the content material and thus provide additional help or remedial instruction if needed.



*Figure 1*. The major learning phases of the flipped classroom intervention

From a macro perspective of instructional design, the flipped classroom intervention was carefully developed to enact the so-called F-L-I-P principles first put forth by Hamdan, McKnight, McKnight, and Arfstrom (2013) and later appropriated for language education by Hung (in press). Table 1 illustrates the instructional design framework of this research. It is also worth noting that the effectiveness of the established flipped learning environments for both groups was evaluated using a post-intervention satisfaction survey, with items closely corresponding to the four design principles.

Table 1. *The Instructional Design Framework*

| The F-L-I-P Principles | Learning Support in this Study |
|---|---|
| The F principle: Flexible language learning environment | Students watch online videos delivered via a learning management system anytime, anywhere, and at their own pace. |
| The L principle: Language learning culture | The teacher and students interact actively using a SRS to enhance L2 use and foster deeper learning. |
| The I principle: Intentional linguistic content | Students complete pre-class assignments associated with each lesson to preview and prepare for class. They also complete a summative assessment at the end of each lesson in class to review the learning content and reveal the level of mastery that has been obtained. |
| The P principle: Professional language educator | The teacher adopts varying active learning techniques (JiTT or PI) to support the SRS integration in the flipped classroom. |

## INSTRUMENTS

### Speaking Test

All the participants were required to take oral tests twice, once before and once after the instruction, to measure their development of L2 speaking abilities throughout the research. The speaking tests were conducted individually in English in a face-to-face setting. The same questions were used in the pre- and post-tests. The test questions were different from the ones covered in the flipped classroom curriculum, but they shared similar difficulty levels as they were pilot tested with 15 students who were at the same proficiency level as the participants before the intervention. For the speaking test, each test-taker was asked three open-ended opinion questions in five minutes. All the test-takers' spoken responses were audio recorded for grading purposes. Two raters evaluated the individual students' speaking performance on the basis of content and organization, fluency of speech, and accuracy of language use. The raters independently gave a score (with a maximum of 100) after listening to each student's responses, and their raw scores were then averaged for data analysis.

### Willingness to Communicate Survey

A WTC survey was adapted from Hung (in press) to measure L2 learners' predisposition to interact with different members of the learning community in the flipped classroom. This survey includes four items on a 5-point Likert scale (1 = *very unwilling*; 5 = *very willing*). The first two items are about the subscale of student–teacher interaction (*I ask the teacher questions or feel comfortable initiating dialogues with the teacher in the target language* [Item 1] and *I answer questions from the teacher or feel comfortable responding to the teacher's comments in the target language* [Item 2]). The last two items relate to the subscale of student–student interaction (*I ask my classmates questions or feel comfortable initiating dialogues with my classmates in the target language* [Item 3] and *I answer questions from my classmates or feel comfortable responding to my classmates' comments in the target language* [Item 4]). McCroskey (1992) first developed the WTC construct to explain L1 communicative behaviors, and it was then

appropriated for use in L2 settings by MacIntyre, Dörnyei, Clément, and Noels (1998), who defined WTC as "a readiness to enter into discourse at a particular time with a specific person or persons, using a L2" (p. 547). Because WTC is intertwined with L2 oral proficiency (Peng & Woodrow, 2010), the participants were asked to self-assess their WTC before and after this research to determine their developmental changes due to the flipped classroom intervention.

**Classroom Observation**

Classroom observations were conducted by the principal investigator with the assistance of two graduate students, who worked as a team for data collection and analysis in this study. Field notes were taken by the research team to gather information on the 10 target students' behaviors regarding their WTC during the guided learning activities in class. In each of the flipped classroom conditions, the class was divided into five collaborative learning groups of four to five students. The focal participants were randomly distributed and assigned to one of the five different small groups for class participation. Their interactions with the teacher and peers were recorded for data analysis, using digital voice recorders. Six weekly sets of audio-recorded classroom observations along with field notes (corresponding to the six weekly lessons) were analyzed with a coding scheme developed by the research team. For the data coding and analysis, the focal participants' communication behaviors were first categorized into student–teacher interaction and student–student interaction, and then tallied for the frequency of interaction patterns, in terms of initiation (I), response (R), and follow-up feedback (F).

**Satisfaction Survey**

The satisfaction survey was designed based on Hung (in press), which guided the instructional design of this research. The 5-item survey was administered to both groups one week after the flipped classroom intervention was over, and ratings were recorded on a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*). The first four items corresponded to each of the instructional design principles in this research (*The flipped classroom provides a flexible learning environment that caters to my learning preferences and language proficiency* [Item 1], *The learning culture in the flipped classroom engages me to participate in class activities and interact with others using the target language* [Item 2], *The learning mechanism in the flipped classroom is well designed and implemented to facilitate my mastery of content learning and language skills* [Item 3], and *The teacher provides the support needed to facilitate my language learning process and performance in the flipped classroom* [Item 4]) The last item was an open-ended question that asked the respondents to express their reasons for satisfaction and dissatisfaction (*Why are you satisfied or dissatisfied with the flipped classroom intervention?* [Item 5]).

**PROCEDURE**

This research was undertaken over a period of 10 weeks, using the following procedure. In Week 1, all the participants took an oral test to assess their baseline proficiency regarding English speaking skills. In addition, they completed a pre-survey on WTC to indicate their intention to speak in class under traditional classroom conditions before this intervention. In Week 2, both groups were introduced to the objectives and participation requirements in the flipped classroom and given a demonstration of how to use the target interactive technology (Kahoot!) for taking part in the question-and-answer activities. The instructional intervention took place during Weeks 3–8, in which both groups completed six lessons along with their associated pre-class worksheets and in-class assessments, under the different flipped classroom conditions. In Week 9, all the participants took the same speaking test and WTC survey again to determine any improvements they made. Lastly, this research elicited all the participants' perceptions of learning in the flipped classroom using a satisfaction survey in Week 10.

## RESULTS

### The Effect on Speaking Skills

The descriptive statistics and group comparison results for the participants' speaking test performance are shown in Table 2. The independent samples *t*-test results indicated a significant difference in the post-test scores between the two groups ($t = 2.709$, $p = .010$), with a large effect size (Cohen's $d = .857$), while both groups did not differ in the pre-test. This suggests that engaging EFL learners in the flipped classroom, integrated with a PI technique for SRS use, exerts a statistically significant effect on enhancing students' L2 speaking skills.

Table 2. *Results of Speaking Performance for Both Groups*

| Speaking Test | JiTT group (N = 20) | | PI group (N = 20) | | t | p |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | |
| Pre-test | 73.90 | 6.97 | 74.25 | 6.41 | 0.165 | .870 |
| Post-test | 81.10 | 6.58 | 86.15 | 5.11 | 2.709 | .010* |

### The Effect on Willingness to Communicate

Table 3 presents the descriptive statistics and the independent samples *t*-test results for both groups' WTC. Although the group comparison results showed no significant differences before ($t = -.245$, $p = .809$) and after ($t = 1.300$, $p = .202$) the flipped classroom intervention, both groups demonstrated significant improvements in their WTC over the period (JiTT group [$t = -6.380$, $p < .000$] and PI group [$t = -7.066$, $p < .000$]). This suggests that after participating in the SRS-integrated flipped classroom, the EFL learners' WTC in class increased regardless of the teaching techniques used.

Table 3. *WTC Survey Responses for Both Groups*

| WTC Survey | JiTT group (N = 20) | | PI group (N = 20) | | t | p |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | |
| Pre-survey | 3.35 | 0.96 | 3.28 | 0.98 | -0.245 | .809 |
| Post-survey | 4.68 | 0.24 | 4.78 | 0.24 | 1.300 | .202 |

With regard to the focal participants' communication behaviors in class, the total amounts of student–teacher and student–student interactions are summarized by group in Figure 2. The focal participants were found to be more likely to interact with the teacher and their peers with the guidance of the PI technique, as compared to that of the JiTT technique. This suggests that the proposed approach has an additional advantage for motivating learners with low WTC to participate in the SRS-integrated flipped classroom, especially when facilitated by the PI technique.
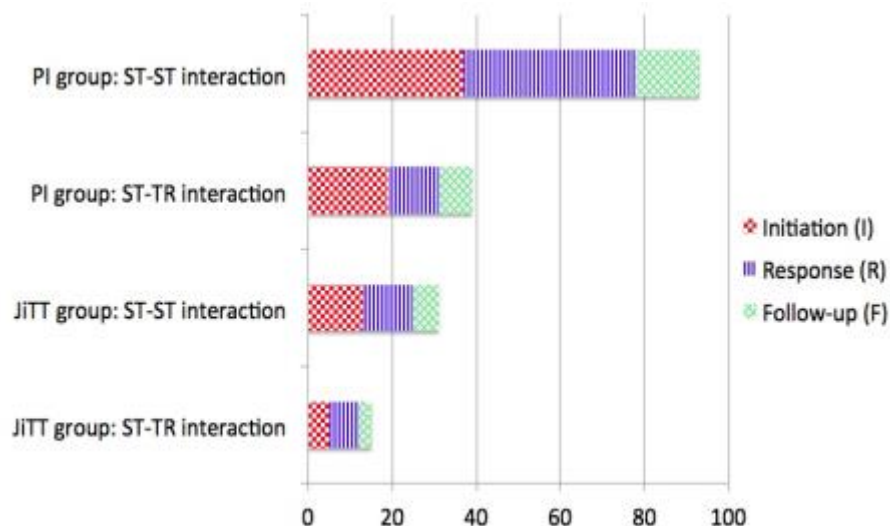
*Figure 2*. The focal participants' total amounts of frequency of student–teacher (ST-TR) and student–student (ST-ST) interactions during the guided learning activities in class.

**The Effect on Learner Satisfaction**

The participants' responses to the post-intervention survey on learner satisfaction are summarized in Table 4. The results of the independent samples *t*-tests showed that both groups were highly satisfied with the flipped classroom intervention as a whole, and the PI group's satisfaction with the language learning culture was significantly higher than that of the JiTT group ($t = 2.707$, $p = .010$), with a large effect size (Cohen's *d* = .859). This suggests that flipping the classroom using a SRS, in combination with either JiTT or PI techniques, can be a satisfactory alternative to traditional instruction, particularly with regard to creating a learning culture where language learners are motivated to communicate in L2.

Table 4. *Satisfaction Survey Responses for Both Groups*

| Survey Items | JiTT group (N = 20) | | PI group (N = 20) | | t | p |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | |
| Flexible language learning environment | 4.85 | 0.37 | 4.80 | 0.41 | -0.406 | .687 |
| Language learning culture | 4.35 | 0.49 | 4.75 | 0.44 | 2.707 | .010* |
| Intentional linguistic content | 4.60 | 0.60 | 4.85 | 0.37 | 1.594 | .119 |
| Professional language educator | 4.50 | 0.51 | 4.55 | 0.51 | 0.309 | .759 |

**CONCLUSION**

This research began with the recognition that simply flipping the lecture-and-homework procedure does not guarantee the desired learning outcomes. In light of the pedagogical potential of SRSs for engaging students in active learning, this research aimed to explore whether and how SRS-integrated flipped classrooms affect EFL learning. The positive findings of this study regarding subject matter learning and learner satisfaction echo the relevant literature on flipped language classrooms (e.g., Huang & Hong, 2016; Hung, 2015), suggesting the applicability of this promising approach in English language teaching contexts. Furthermore,

since integrating SRSs in the classroom to boost active learning is well established in former research (e.g., Agbatogun, 2014; Cardoso, 2011), this study contributes to the literature by extending its application to the flipped classroom, while also finding further evidence for the superior effects of the PI technique. Briefly, this study has demonstrated that SRS-integrated flipped classrooms are capable of providing interactive learning opportunities that enhance EFL learners' WTC, aiding in their development of speaking skills and increasing their satisfaction with such learning experiences. Language educators are thus encouraged to adapt the proposed instructional design to suit their local contexts, as a supplement to communicative language teaching approaches or traditional instruction. As always, the success of a flipped classroom will depend not only on the technological tools that are selected, but also—and to a greater extent—on how well these are implemented.

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**APPENDIX. Flipped Learning Worksheet**

**Name:**

**Lesson:**

**Time spent completing this lesson:**

☐ < 30 min.   ☐ 30 min. ~ 60 min.   ☐ 60 min. ~ 90 min.   ☐ 90 min. ~ 120 min.   ☐ > 120 min.

| # What I **K**now | # What I **W**ant to know | # What I **L**earned |
|---|---|---|
| ➔ *Summarize the video content in your own words.* | ➔ *List any concepts or language use in the video that you do not understand or want to know more about.* | ➔ *Jot down any newly learned knowledge and vocabulary that you think are useful in other contexts.* |

➔ *What are your views on the following discussion questions? Think of them and be ready to share your opinions with others in class.*

- Sample Discussion Question 1:
  Do you think a left-handed person can be trained to be right-handed, and vice versa?

- Sample Discussion Question 2:
  Do you think there are more advantages than disadvantages to being left-handed in a right-handed world?

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## ACKNOWLEDGEMENTS

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