

## **Effects of ICT-Aided Flipped Classroom on Grammar Achievement**

Phyna Nuon\*, Wilawan Champakaew  
School of Liberal Arts, Mae Fah Luang University,  
333, Chiangrai, Thailand

\*Corresponding Author: [nphyna@gmail.com](mailto:nphyna@gmail.com)

### **ABSTRACT**

Based on communicative approach, this study examines the effects of ICT-aided flipped classroom on students' grammar achievement at one Cambodian university. Adopting purposive sampling technique, there are 81 participants: 41 in the control group receiving non-flipped classroom and another 40 in the experimental group participating in ICT-aided flipped classroom. The research instruments used are pre-test, post-test, formative assessment and student logs. After one semester, the results from the pre-test and post-test indicate both groups perform grammar academically better yet the experimental group achieve higher scores with medium effect size. Moreover, the average scores from the formative assessment also keep rising and support the findings from the tests. The student log shows students' participation in viewing videos and reading handouts in advance and this correlates to higher academic performance. The current study suggests three possible aspects influencing the improvement of grammar such as prior-to-class activities, in-class activities and teaching process. With these positive findings, this paper calls for more studies with respect of flipped classroom across other English skills, disciplines and theories.

*Keywords:* Flipped classroom, information and communication technology (ICT), Verso, Prezi, Kahoot, grammar achievement

### **Introduction**

Today's teaching and learning vary from those in the past due to the development of objectives and approaches. Second language learning (L2) approaches have developed from grammar translation method to direct method and to situational language teaching and so on (Renukadevi, 2016; Richards & Rodgers, 2014). Later communicative approach has brought the revolution in language education. Canale and Swain (1980) supported grammar in communicative competence composing of four components namely 1) linguistic or grammatical competence; 2) sociocultural or sociolinguistic competence; 3) discourse competence; 4) strategic competence. Grammar instruction can be done explicitly or implicitly (Evans, 1999; Ellis, 2015; Loewen, 2015). Evans (1999) stated that PPP including presentation, practice and production can be integrated with other approaches to make instruction better.

Aside from an L2 approach revolution, flipped classroom has existed earlier in the 1990s (Correa, 2014). However, it became popular until Bergmann and Sam (2012) working in Woodland Park High School recorded their presentation slides with voices and uploaded for students to watch online. Tech-integration into flipped classroom has promoted the twenty-first century education (Rahman, Aris, Mohamed & Zaid, 2014). Flipped classroom also provides a positive impact on learners' achievement (Hung, 2015; Rahman et al., 2014, Zhonggen & Guifang, 2016, Liu, 2016; Denprapat & Chuaychoowong; 2016). In spite of its popularity, a number of the flipped classroom research has been very limited in Cambodia.

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So far, there has been only one study about the flipped model done by Hean (2014) in Cambodia. Apparently, it makes a big gap which should be filled by more investigations in this country. At the same time, Khmer or Cambodian is an analytic language with no inflection (Smyth, 1995). Khmer has no change in the word forms such as case, number, gender, mood, person, voice and tense. Having no inflection makes Khmer and English dissimilar. Therefore, most of Cambodian students keep their first language (L1) transfer when learning English, especially grammar. A lot of Cambodian teachers have still preferred grammar translation to teach English (Mao, 2015). Keuk (2008) claimed that Cambodian learners used some wrong English grammatical features in writing and speaking. Owing to these linguistic errors, it was hard for some foreigners to understand Cambodian English at first. Cambodians' English proficiency was very low and ranged 69 out of 72 countries (Education First, 2016). Due to above problems, this study would be implemented with the below objective.

### Objective

The objective of the study is to examine the effects of the ICT-aided flipped classroom on students' grammar achievement.

### Research Question

Does the ICT-aided flipped classroom promote students' grammar achievement?

### Theoretical Framework

Strayer (2007) gave a clear framework and portrayed that educational technology and learning through activities has widely influenced the flipped learning environment. Strayer's (2007) framework can be a good application in this study since it also focused on technology and learning activities. Below is the framework in this study.

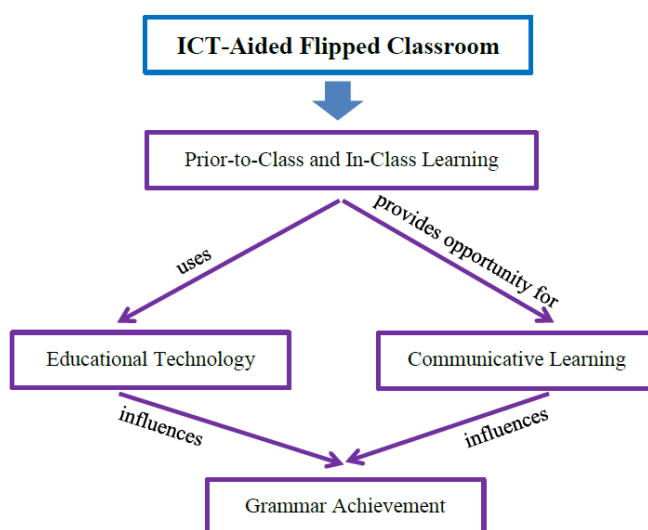


Figure 1. Conceptual Framework Adapted from Strayer (2007)

The flipped classroom aims to engage students in pre-class study to enhance in-class involvement (Hung, 2015). In this ICT-aided flipped classroom, the researcher conducted prior-to-class and in-class activities by using educational technology platforms (Verso, Kahoot and Prezi) and providing variety of communicative tasks such as group discussion, roleplay and writing. The grammar achievement would be profoundly affected if the

instructor and students used technology or ICT to teach and learn both outside and inside the class and then the instructor proposed variety of communicative tasks.

### Methodology

#### Participants

Second-year students in one Cambodian university were purposively selected since they had been through how to live and learn in the university. Hence, they would focus on learning with less anxiety about their university lives. From the population size of 485, there were 81 participants: 41 (the control group) and 40 (the flipped group). Using purposive sampling technique, the flipped group was the one having more smart phones. To ensure reliability, both groups' final scores from the first semester were compared. The control group's and experimental group's average scores were 69.5 and 68 (out of 100) respectively meaning their abilities were similar.

#### Research Instrument

Instructional instrument (lesson plans) and data collection instrument (pre-test, post-test, unit study logs and formative assessment) were used in this study.

**Lesson Plans.** The course objective was to help students recognize grammar structures and strengthen their accuracy and fluency. In total, there were 26 lesson plans: 13 for the control group and another 13 for the experimental group. The lesson plans covered last six units in World English 2. To ensure validity, the lesson plans were evaluated by three experts. Next, a few lesson plans were piloted by 40 students different from the participants.

Both flipped and non-flipped classes got the same contents and exercises yet materials and time for activities were dissimilar. The flipped group had to watch a video and read a handout prior to class. In contrast, non-flipped group was given neither video lectures nor materials. For presentation, the teacher presented on Prezi for 10 minutes to the experimental group and around 20 minutes on the board to the control group. For practice stage, the flipped group worked in pairs or groups and did quizzes on Kahoot yet the control group worked individually or in groups on the paper-based exercises. For production stage, both groups worked in groups to complete the task assigned such as performing a roleplay or writing a paragraph.

**Data Collection Instrument.** There are three instruments as the followings.

**Pre-Test and Post-Test.** These paper-based tests were split into two parts: isolated and integrated parts. After evaluated by three experts to ensure validity, the test items were declined to 36 and a piece of writing. The tests were piloted by 20 students and Cronbach's Alpha of .745 was calculated to ensure reliability. The final draft consisted of 34 items and one piece of writing with 50 points and 45 minutes.

**Student Logs.** Adapted from Hung (2015), the student logs kept track on students' pre-class participation. The logs were paper-based copies. The student logs was evaluated by three experts and piloted by 20 students.

**Formative Assessment.** Both groups did isolated-item quizzes and writing tasks to keep track on their achievement. Rubrics were adapted from Alberta Learning (2000) and evaluated by three experts.

#### Data Collection

**Pre-Test and Post-Test.** Both groups were taught by the researcher for the whole semester. They were required to take the pre-test and post-test at the very beginning and at the end of the semester respectively.

**Student Logs.** The student logs were given to the experimental group before class and collected back the next class. By the end of the semester, the researcher collected approximately thirteen pieces of the student logs from each of them.

**Formative Assessment.** Both groups were assigned to write a paragraph and took quizzes individually at the end of each unit.

### Data Analysis

Data from pre-test, post-tests and formative assessment were keyed in SPSS 16.0 to find out the mean scores, standard deviation (SD), significant level and t-test. The level of significance of P value was 0.05. The researcher also calculated effect size to see how big the mean difference was between the two groups using Cohen's  $d = (M_1 - M_2)/\sigma_{\text{pooled}}$ , where  $\sigma_{\text{pooled}} = \sqrt{[(\sigma_1^2 + \sigma_2^2)/2]}$  and effect size correlation  $r_{y\lambda} = d/\sqrt{(d^2 + 4)}$ . The student log data were calculated to find frequency and percentage.

## Literature Review

### Grammar and PPP Approach

Different people define grammar distinctively. Swan (2011) defined grammar as a cluster of prohibitions causing people worried about whether they use their own language properly. Grammar is used as a communication support system to communicate better (Alexander, 1990). Grammar in this study was a set of linguistic forms to test students' isolated and integrated skills.

PPP is an approach based on behaviorist teaching practice and has been emerged since the 1950s in the United Kingdom (Maftoon & Sarem, 2015). PPP still has had its defenders, in the room yet not in academia (Evans, 1999). A traditional PPP has evolved over the years by blending some elements of other approaches into its basic format. PPP is a grammar teaching model which three teaching stages (Evans, 1999). First, the presentation stage helps students get or restructure linguistic knowledge. The second stage involves in practice: controlled and freer. In controlled practice, students just simply repeat the target language point without thinking about when and how to use it. Conversely, freer practice requires students to know how the target is used and manipulate the form. The belief is that learners can understand the forms but they also need to practice more to acquire the structure. Practice leads students to mastery. Last, in the production stage, students must be able to decide when to use the learnt structure in a natural context.

### Communicative Approach

Communicative approach is a current approach. Initially, this approach focused on only fluency and comprehension in using L2 in communication. However, many learners did not acquire accuracy morphology and syntax. Thus, this approach finally aims to need communicative competence. Teachers in this approach find authentic tasks to promote real-world communication and let learners express ideas, interview, do role play and play games and so on.

### Information and Communication Technology

ICT or educational technology referred to all technologies used in training, education as well as strategies for using them Doering (2014). In Cambodia, ICT encompasses radio, television, computer network, computer technology, email and internet (Kol, 2005). ICT in this study included Verso, Prezi and Kahoot.

**Verso.** Verso offered safe opportunities with peer anonymous format that allowed learners to post a response without showing their identity to their peers except teachers. Ricci (2016) introduced Verso to his class and found out that his students were interested and

excited in viewing their peer's responses. Finally, Ricci (2016) found Verso very simple and beneficial to use in his class.

**Prezi.** Prezi was founded by Peter Arvai, Peter Halacsy and Adam Somlai-Fischer in 2009 and it has supported over 60 million users with more than 160 million prezis (PreziTeam). Prezi brought a new presentation paradigm through its movement capacities and visual uniqueness which provide zooming ability (Anthes, 2012).

**Kahoot.** Kahoot is a game-based quiz to test students' knowledge (*Siegle, 2015*). *Students not only have fun, but also learn academic contents during playing games. Most learners prefer a game demonstrating what they know to a paper-and-pencil test.*

### Flipped Classroom

Flipped classroom is a pedagogical model allowing lectures and homework to be reversed (Bergmann & Sams, 2012). It was originally conducted in science, technology, engineering and mathematics (STEM) (Rahman et al., 2014). Bergmann and Sams (2012) noticed that their students did not need lectures all the time because they could learn on their own. Thus, they started to record their video lectures in 2007 (Correa, 2015). Later, the term *flipped classroom* came from Karl Fisch after he mentioned *flip* in his blog but he refused not to own flipped concept (Zhang, 2015).

Evseeva and Solozhenko (2015) implemented a study in an English language course to evaluate the efficiency of the flipped model in English teaching, overview the flipped classroom technology and find out the advantages of the this model. From the survey, 85% of the students liked flipped classroom technology. The researchers claimed the benefits of tech-flipped classroom such as time flexibility, involvement, self-discipline, self-directedness and academic improvement. However, it was not reliable enough because only survey could not claim academic achievement.

Hung (2015) did post-test quasi-experimental study for six weeks to figure out the impacts of flipped classroom on student's English learning achievement. The results showed the significant difference in academic performance from the second and third lessons while no significance difference for the first lesson.

Kang (2015) conducted a study to compare student perceptions and achievement in English vocabulary and grammar in flipped and regular classrooms. The post-test showed significant difference in grammar with  $p=0.011$  and vocabulary with  $p=0.041$  in the flipped classroom but there was no significance in the regular classroom.

Denprapat and Chuaychoowong (2016) investigated the effectiveness of the flipped classroom on English language achievement and independent learners' attributes. The findings suggest both flipped and traditional groups got higher English achievement yet the flipped group got higher mean scores.

Liu (2016) implemented a study in metallurgic English course for one term and aimed to introduce a new model of MOOC and traditional education to flip roles of learners and teachers in ESP (MFE) under constructivism. The score comparison between the groups indicated significant difference with  $T=2.682$  and  $p=0.01$ . The experimental group's mean scores rose from 70.914 to 76.600 while  $p=0.000$  meaning that they got great improvement.

Zhonggen and Guifang (2016) examined the effects of the clicker-aided flipped classroom on academic achievement and students' satisfaction. The findings revealed significant difference with post-test mean scores of 76.43 and 74.17 from the flipped traditional classes respectively with  $p .038$ .

## Findings

## Findings from Pre-Test and Post-Test

Table 1

*Comparison of Pre-Test between the Two Groups*

| Group              | n  | Mean  | SD    | df | t     | sig  |
|--------------------|----|-------|-------|----|-------|------|
| Control Group      | 41 | 12.41 | 3.578 |    |       |      |
| Experimental Group | 40 | 10.52 | 5.228 | 79 | 1.903 | .061 |

Table 1 indicated pre-test mean score comparison between both groups before the treatment. An independent sample t-test was used to compare pre-test mean scores. The results showed that there was no significant difference between the pre-test mean scores  $\{t(79) = 1.903, p > 0.05\}$  of the control group (M = 12.41, SD = 3.578) and the pre-test mean scores of the experimental group (M = 10.52, SD = 5.228).

Table 2

*Comparison of Pre-Test and Post-Test of the Control Group*

| Group                  | n  | Mean  | SD    | df | t       | sig   |
|------------------------|----|-------|-------|----|---------|-------|
| Control Group Pre-test | 41 | 12.41 | 3.578 |    |         |       |
| Post-test              | 41 | 35.27 | 4.123 | 40 | -34.609 | .000* |

Table 2 shows a comparison of the control group's pre and post-tests. The researcher used a paired sample t-test to measure the control group's grammar achievement. From the Table 2, after being taught, the control group reached significantly higher achievement,  $\{t(40) = -34.609, p < 0.05\}$ , post-test, M = 35.27 and SD = 4.123 whilst pre-test, M = 12.41, SD = 3.578.

Table 3

*Comparison of Pre-Test and Post-Test of the Experimental Group*

| Group                       | n  | Mean  | SD    | df | t       | sig   |
|-----------------------------|----|-------|-------|----|---------|-------|
| Experimental Group Pre-test | 40 | 10.52 | 5.228 |    |         |       |
| Post-test                   | 40 | 37.62 | 4.186 | 39 | -26.055 | .000* |

A paired sample t-test was used to evaluate the experimental group's grammar achievement. The findings suggested that after involving in ICT-aided flipped model, the experimental group performed significantly better,  $\{t(39) = -26.055, p < 0.05\}$ , post-test (M = 37.62 and SD = 4.186) and their pre-test (M = 10.52, SD = 5.228).

Table 4

*Comparison of Post-Test between the Two Groups*

| Group              | n  | Mean  | SD    | df | t      | sig  |
|--------------------|----|-------|-------|----|--------|------|
| Control Group      | 41 | 35.27 | 4.123 |    |        |      |
| Experimental Group | 40 | 37.62 | 4.186 | 79 | -2.553 | .013 |

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Table 4 illustrated the significant difference between the post-test mean scores ( $t(79) = -2.553$ ,  $p < 0.05$ ) among the control group ( $M = 35.27$ ,  $SD = 4.123$ ) and the experimental group ( $M = 37.62$ ,  $SD = 4.186$ ). Then post-test mean scores and SD of both groups were calculated online using an effect size program by Becker. Effect-size  $r$  was  $.272$  and Cohen's  $d$  was  $.565$ . It claims the moderate effect size.

### Findings from Formative Assessment

Table 5  
*Comparison of Formative Assessment*

| Unit   | Group              | n  | Mean  | SD    | sig   |
|--------|--------------------|----|-------|-------|-------|
| Unit7  | Control Group      | 39 | 9.90  | 1.071 |       |
|        | Experimental Group | 39 | 8.69  | .863  | .000* |
| Unit8  | Control Group      | 41 | 10.56 | 1.119 |       |
|        | Experimental Group | 38 | 9.50  | 1.007 | .000* |
| Unit9  | Control Group      | 40 | 11.90 | 1.194 |       |
|        | Experimental Group | 39 | 12.82 | .885  | .000* |
| Unit10 | Control Group      | 41 | 12.73 | 1.141 |       |
|        | Experimental Group | 38 | 13.58 | 1.004 | .001  |
| Unit11 | Control Group      | 40 | 14.12 | 1.114 |       |
|        | Experimental Group | 40 | 14.88 | .992  | .002  |
| Unit12 | Control Group      | 41 | 14.56 | .976  |       |
|        | Experimental Group | 38 | 15.53 | .603  | .000* |

From Table 5, the two groups improved their scores (total scores: 20) during the treatment. The control groups' mean scores gradually rose from 9.90 to 14.56 whilst their counterparts' mean scores rapidly jumped from 8.69 to 15.53. At the end, the flipped group got higher average scores.

### Findings from Student Log

Data from the student log show that from around 22.5% to 45% of the students did not watch videos and read before they came to class in the first four weeks. However, the absence of before-class participation dropped gradually from week 5 on. From weeks 5 to 13, the students started to watch and read before the class started from 80% to 90% (see appendix).

## Discussion

The findings to the research question whether the ICT-aide flipped classroom had any effects on grammar achievement show a positive effect with a moderate effect size on students' grammar achievement. The findings from this study also confirmed Hung's (2015) findings of the flipped classroom effects on year-one students' English achievement and Kang's (2015) study. Similarly, Zhonggen and Guifang (2016), Liu (2016), and Denprapat and Chuaychoowong (2016) yielded that the students' achievement in both groups were significantly higher from pre-test to post-test. However, the formative assessment of this study shows the experimental group did more poorly than their counterparts in units 7 and 8 yet they kept improving gradually more than their counterparts did from units 9 to 12. These findings are consistent with Hung's (2015) results of the significant improvement from the two last lessons while no significant difference in the first lesson. This means that at the initial start, too few or none of the students were familiar with the ICT tools and flipped

model. After the students continually participated in the flipped model, they became accustomed to the ICT tools and managed to obtain higher post-test mean scores than their peers in non-flipped classroom. These findings also echo Liu's (2016), and Denprapat and Chuaychoowong's (2016) studies which found the flipped group's great improvement in post-test scores.

Similar to other previous studies (Kang, 2015; Hung, 2015; Denprapat & Chuaychoowong, 2016; Liu, 2016; Zhonggen & Guifang; 2016), this study proofed the feasibility of the flipped classroom model to facilitate English language learners and verified that this flipped model is applicable with technology integration and in different levels of English language courses.

The above results clearly signify the positive impacts on the students' grammar achievement in the ICT-aided flipped classroom. Although the level of impacts and whether they directly influenced on the students' grammar achievement could not be precisely described, this current study suggests that increasing achievement was apparently determined by three aspects: prior-to-class activities, in-class activities and teaching process.

Firstly, the prior-to-class activities including watching the video lectures and reading the handouts provided flexibility of learning and created passion for the students learning and turned them into more responsible and independent learners who were increasingly active and highly motivated to learn. These findings are also in the line with Kang's (2015) findings which indicated that pre-class assignments with short videos and worksheets were a catalyst for learning goal achievement and students became more interactive. Kang's (2015) educational tool, Blackboard Mobile, also enhanced flexible environment. The findings from the student logs implied that students in the ICT-aided flipped-classroom became more independent and willing to do self-study before coming to class. Some students repeatedly viewed video lectures until they could understand the contents before the class started. This could result in students' proactive and on-going involvement in all learning activities in the class and higher score achievement. Hung (2015) also demonstrated the active learner involvement and participation. Likewise, Evseeva and Solozhenko (2015) found convincing evidence that tech-flipped classroom promoted time flexibility, self-discipline, involvement and self-directedness so did Zhonggen and Guifang (2016) who said that pre-class participation escalated more efforts correlating to better grades.

Secondly, the in-class activities were likely rich in interesting, competitive, collaborative activities which could gradually met the students' satisfaction, learning motivation and offered them different means of constructing knowledge by taking quizzes, playing educational game, discussing, writing and roleplaying. These support Zhonggen and Guifang's (2016) findings about students' satisfaction in the clicker-aided flipped classroom. Denprapat and Chuaychoowong (2016) stated that the students got motivated and had more opportunity to express their ability and themselves in various ways in order to build their knowledge.

Lastly, teaching process was clear, systematic and appropriate for the students to adjust themselves in a not-completely new learning environment. This current study also confirmed Denprapat and Chuaychoowong's (2016) findings which indicated that teaching process was one aspect of English language improvement. The teaching process in this current study was not only clear but also systematic. As the result, the students possibly understood each step the instructor asked them to complete and each step linked systematically from one to another, i.e. after presentation to practice and later to production. The teaching process was neither too traditional nor too modern by integrating the flipped model, communicative approach and technology into PPP.

Apart from positive impacts on students' grammar achievement, the effect size of the study was medium. Two main aspects might have prohibited the study from obtaining the



high effect size. First, some students in the developing country like Cambodia might be tech-phobes and not willing to welcome technology. Based on the student log, some students failed to participate in pre-class activities in the first four weeks. As a result, they might not catch the lessons in the class with such a quick presentation. This led them to get lower scores in the post-test which included all parts of the grammar lessons. Hung (2015) also linked the absence of pre-class participation to lower test scores. Second, some students might still prefer teacher-centered learning although the instructor tried to integrate communicative approach into PPP with which they had been familiar. So when they had to complete the communicative tasks, they might not do and learn wholeheartedly. This assumption matched with Mao's (2015) findings that most of Cambodian teachers have practiced grammar translation method in English teaching and most students have been passive learners and heavily relied on their teachers in the class.

### **Limitation**

Despite of the positive results, several disadvantages were also possibly visible in the ICT-aided flipped classroom. ICT tools may not have been in favor to some learners who had a tech-phobia. Another limitation lies in the fact that the researcher was also the participants' instructor which might lead to undetectably biased and unconsciously manipulated findings. Besides, when not all the participants possessed smartphones or tablets, it became one of major challenges to conduct this study. To deal with this problem, the instructor tried to put them to work in groups which could prevent them from expressing their individual understanding when choosing correct answers in Kahoot. Finally, the slow speed of internet connection might distract some students from watching or repeatedly watching the video lessons smoothly and inevitably force them to occasionally skip some parts.

### **Recommendation**

This study would like to point out some recommendations for further studies as followings. First, future studies should apply flipped classroom in other minor and major skill courses. Moreover, further studies should choose alternative ICT platforms. Furthermore, with too few numbers of flipped classroom in Cambodia, future studies are recommended to integrate this model in other disciplines in Cambodia. Also, future research should provide only online video lectures to ensure tech-based flipped classroom. Last, it is recommended that future studies adopt other approaches or theories such as content-based instruction and content and language integrated learning (CLIL), cooperative language learning or constructivism or the like.

### **Conclusion**

This study aimed to investigate the influence of ICT-aided flipped classroom on students' grammar achievement at one university in Cambodia. The ICT-aided flipped classroom significantly enhanced students' grammar achievement with moderate effect size. The impacts on grammar improvement could be prior-to-class activities, in-class activities and teaching process. For further teaching, instructors shall provide the topics for roleplay activities in advance. Consequently, learners would be much more prepared and they would spend less time discussing and preparing in class. Moreover, it would be better if learners, especially lower level ones, got a list of words which were relevant to the topics. That list of words might help to give some ideas of which learners could never think. Finally, instructors shall consider after-class activities such as homework or reflection sheets to make learners stay alert to learning.

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**EFFECTS OF ICT-AIDED FLIPPED CLASSROOM ON GRAMMAR**

**Appendix**

**Part 1: Numbers of Times in Watching Videos in Advance**

| Week | Frequency (Percentage) |            |            |           |          |
|------|------------------------|------------|------------|-----------|----------|
|      | 0 Time                 | 1 Time     | 2 Times    | 3 Times   | 4 Times  |
| 1    | 18 (45%)               | 17 (42.5%) | 3 (7.5%)   | 1 (2.5%)  | 1 (2.5%) |
| 2    | 9 (22.5%)              | 22 (55%)   | 8 (20%)    | 1 (2.5%)  | 0 (0%)   |
| 3    | 11 (27.5%)             | 17 (42.5%) | 9 (22.5%)  | 2 (5%)    | 1 (2.5%) |
| 4    | 9 (22.5%)              | 17 (42.5%) | 12 (30%)   | 2 (5%)    | 0 (0%)   |
| 5    | 4 (10%)                | 20 (50%)   | 12 (30%)   | 3 (7.5%)  | 1 (2.5%) |
| 6    | 4 (10%)                | 13 (32.5%) | 20 (50%)   | 3 (7.5%)  | 0 (0%)   |
| 7    | 1 (2.5%)               | 13 (32.5%) | 22 (55%)   | 4 (10%)   | 0 (0%)   |
| 8    | 0 (0%)                 | 16 (40%)   | 19 (47.5%) | 5 (12.5%) | 0 (0%)   |
| 9    | 0 (0%)                 | 19 (47.5%) | 17 (42.5%) | 4 (10%)   | 0 (0%)   |
| 10   | 0 (0%)                 | 16 (40%)   | 21 (52.5%) | 2 (5%)    | 1 (2.5%) |
| 11   | 2 (5%)                 | 18 (45%)   | 19 (47.5%) | 1 (2.5%)  | 0 (0%)   |
| 12   | 0 (0%)                 | 18 (45%)   | 19 (47.5%) | 2 (5%)    | 1 (2.5%) |
| 13   | 0 (0%)                 | 17 (42.5%) | 18 (45%)   | 5 (12.5%) | 0 (0%)   |
| n    | 40                     | 40         | 40         | 40        | 40       |

**Part 2: Numbers of Times in Reading Handout in Advance**

| Week | Frequency (Percentage) |            |           |          |         |
|------|------------------------|------------|-----------|----------|---------|
|      | 0 Time                 | 1 Time     | 2 Times   | 3 Times  | 4 Times |
| 1    | 18 (45%)               | 20 (50%)   | 2 (5%)    | 0 (0%)   | 0 (0%)  |
| 2    | 13 (32.5%)             | 27 (67.5%) | 0 (0%)    | 0 (0%)   | 0 (0%)  |
| 3    | 13 (32.5%)             | 26 (65%)   | 1 (2.5%)  | 0 (0%)   | 0 (0%)  |
| 4    | 11 (27.5%)             | 24 (60%)   | 5 (12.5%) | 0 (0%)   | 0 (0%)  |
| 5    | 7 (17.5%)              | 31 (77.5%) | 2 (5%)    | 0 (0%)   | 0 (0%)  |
| 6    | 5 (12.5%)              | 30 (75%)   | 5 (12.5%) | 0 (0%)   | 0 (0%)  |
| 7    | 4 (10%)                | 28 (70%)   | 8 (20%)   | 0 (0%)   | 0 (0%)  |
| 8    | 7 (17.5%)              | 26 (65%)   | 7 (17.5%) | 0 (0%)   | 0 (0%)  |
| 9    | 3 (7.5%)               | 30 (75%)   | 6 (15%)   | 1 (2.5%) | 0 (0%)  |
| 10   | 1 (2.5%)               | 32 (80%)   | 7 (17.5%) | 0 (0%)   | 0 (0%)  |
| 11   | 1 (2.5%)               | 33 (82.5%) | 6 (15%)   | 0 (0%)   | 0 (0%)  |
| 12   | 1 (2.5%)               | 31 (77.5%) | 8 (20%)   | 0 (0%)   | 0 (0%)  |
| 13   | 0 (0%)                 | 34 (85%)   | 6 (15%)   | 0 (0%)   | 0 (0%)  |
| n    | 40                     | 40         | 40        | 40       | 40      |