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Video Lecturing in Clicker-assisted English Flipped Class [↗](#)

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ABSTRACT

Value: The study on the impact of video lecturing on clicker-assisted English flipped class was necessary because it has seldom been explored. **Purpose:** This study studied the impact of video lecturing on student satisfaction and English proficiency, plus correlations between student satisfaction levels and English proficiency. **Methodology:** Randomly recruited Chinese participants (Female N=44; Male N=43) from a university in China received both pre and post College English Test Band 4 and satisfaction measurements, together with a semi-structured interview. **Findings:** We concluded that the video-assisted class could cause significantly higher English proficiency than the non-video-assisted class ($F=23.17, p<.001$, $\text{Partial}\eta^2=.216$); there were significant differences between video- and non-video-assisted cohorts for post interaction ($F=8.37, p=.005$, $\text{Partial}\eta^2=.093$), post efficacy ($F=7.68, p=.007$, $\text{Partial}\eta^2=.086$), and post regulation ($F=16.34, p<.001$, $\text{Partial}\eta^2=.166$); there were strong, positive relationships between post English proficiency and post student interaction ($R^2=.70$; $\beta=.84$; $p<.01$), self-efficacy ($R^2=.57$; $\beta=.75$; $p<.01$) and self-regulation ($R^2=.59$; $\beta=.77$; $p<.01$) levels in both cohorts at the .05 level. However, no strong, positive correlations were found in both cohorts at the .05 level between pre English proficiency and pre student interaction ($R^2=.00$; $\beta=.05$; $p=.33$), self-efficacy [$R^2=.03$; $\beta=-.17$ (negative); $p=.05$] and self-regulation [$R^2=.05$; $\beta=-.23$ (negative); $p=.01$] levels. Future research into video-assisted English flipped class may need interdisciplinary cooperation.

EXTERNAL LINK

<http://Clicker-assisted English Class; English Proficiency; Flipped Class; Satisfaction; Video>

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

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Methods.docx

MATERIALS TEXT

Methods

The research lacks consent because the data were analyzed anonymously. The research has been approved by the authors' institutional review board-School of Foreign Languages of Hohai University, which waived the need for written informed consent from the participants. All experiments conform to the relevant regulatory standards.

This research attempts to integrate quantitative into qualitative research methods using several scales to measure English proficiency and satisfaction levels, together with a semi-structured interview to collect qualitative data. English was the linguistic medium of administration of questionnaires and interviews.

Participants

Randomly selected 87 Chinese undergraduates (Male N = 43, Female N = 44) from a public university in China were willing to join the research, whose formal English education endured for approximately eight to nine years. They were normally literate and were in a normal psychological state based on their self-reports. They ranged from 19 to 22 in age (M = 20.33, S.D. = 1.02). They were assigned to two cohorts on a random basis, who received English teaching in the video-clicker-assisted flipped English class (N = 41) and the non-

video-clicker-assisted flipped English class (N = 46) respectively. Both cohorts, under the instruction of the same teacher, had similar English proficiency identified through College English Test Band Four (CET 4). Both cohorts were assumed to be equivalent to each other in terms of pre-interaction, self-efficacy and self-regulation levels because they were randomly divided into two groups from the same population who shared the same educational and social backgrounds. This assumed similar English proficiency and interaction, self-efficacy and self-regulation levels established a basis for comparison.

Pre English proficiency and preinteraction, self-efficacy and self-regulation levels of the randomly selected participants were then determined via CET 4 (June, 2012) and the interaction, self-efficacy and self-regulation scales after they were randomly assigned to either intervention or control cohorts.

The teacher was awarded a Ph.D. degree in English language. Before the study commenced, he also received specialized training regarding both video-assisted and non-video-assisted pedagogical approaches.

Participants in the non-video-assisted cohort were asked to read textbooks before class without access to videos, while those in the video-assisted cohort had access to videos plus textbooks when preparing for class. The video-assisted cohort was required to complete all of the tasks that the non-video-assisted cohort completed and vice versa. Both cohorts of participants were instructed via clickers. The only difference was whether students could learn English assisted with videos. In the video-clicker-assisted flipped English class, students learned English aided with videos, while in the non-video-clicker-assisted flipped English class, they learned English without aid of videos.

Research instruments

Four scales, including a CET 4 to determine English proficiency and three scales to identify interaction feasibility, self-efficacy and self-regulation levels, were used as research instruments in both the video-clicker-assisted flipped English class and the non-video-clicker-assisted flipped English class.

CET 4
CET 4 in June, 2012, designed under the guideline of Ministry of Education of China, was used to identify English proficiency. CET4 was internally reliable and externally valid. Its identification of English proficiency has been generally accepted since it came into being decades ago (Sheng and Zhang, 2015). Test items in the CET 4 include writing, listening comprehension, reading comprehension, and translation (See Table 1).

Table 1

Details of CET 4

Structure	Content	Percentage	Duration
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Writing	Writing based on requirements	15	30m
Listening comprehension	Dialogue	15	30m
Paragraph	20		
Reading comprehension	Lexical understanding	5	40m
Skimming and scanning	10		
Detailed reading	20		
Translation	From Chinese to English	15	30m
Total	100	130m	

As shown in Table 1, there are in total four sections in the CET 4. Section 1 requires test takers to complete writing a short essay within 30 minutes. They should write at least 120 words following the given outline. Section 2 includes three parts: 8 short conversations and 2 long conversations, 3 short passages, and a passage. Section 3 is made of three parts: skimming and scanning, blank filling in a passage, and in-depth reading comprehension. Section 4 requires test takers to complete the sentences by translating into English the Chinese given in brackets.

The scale to identify interaction feasibility, self-efficacy and self-regulation levels

Interaction, self-efficacy and self-regulation were three key factors influencing student satisfaction (Yu, 2015). Peer and student-teacher interactions, as well as interaction between students and learning contents could also play an important role in student satisfaction (Kuo et al., 2014). In the environment of clicker-assisted education, student self-efficacy exerted an important influence on student satisfaction (Liang and Tsai, 2008; Artino and Anthony, 2007). As regards to youngsters, student self-efficacy was closely related to satisfaction (Çakar, 2012). Self-regulation was referred to as the variable revealing student meta-cognition and motivation (Zimmerman and Schunk, 1989), which exerted a positive influence on student satisfaction (Deci and Ryan, 1996; Bembenutty and White, 2013). Three scales, followed by a five-point Likert scale: *I strongly disagree, I disagree, neutral, I agree, I strongly agree*, were used to identify interaction feasibility, self-efficacy and self-regulation respectively (see Table 2).

Table 2

A scale to identify satisfaction (adapted from Yu, 2015)

Scales of satisfaction	α
Interaction feasibility	.82
Clickers-assisted English class provides a discussion platform for interaction.	
Clickers-assisted English class facilitates feedback from peers.	
Clickers-assisted English class presents an easy access to frequently asked questions.	
Clickers-assisted English class provides a place to discuss questions.	
Generally, Clickers-assisted English class contributes to the interactive capacity of students.	
A self-efficacy scale	.90
I feel confident understanding terms or words relating to hardware of clickers.	
I feel confident understanding terms or words relating to software of clickers.	
I feel confident describing functions of clickers.	
I feel confident trouble shooting problems of clickers.	
I feel confident explaining why a task will not run through clickers.	
I feel confident using the clickers to learn.	
I feel confident learning advanced skills through clickers.	
I feel confident turning to a peer discussion when needed.	
A self-regulation scale	.83
If I study in appropriate ways, then I will be able to learn the material in this course.	
It is my own fault if I don't learn the material in this course.	
If I try hard enough, then I will understand the course material.	
If I don't understand the course material, it is because I didn't try hard enough.	
Likert scale	5=strongly agree; 4=agree; 3=neutral, 2=disagree; 1=strongly disagree

As shown in Table 2, questions to identify interaction centered on student-student and student-teacher interaction since both interactions were important indicators of satisfaction (Kuo et al., 2014). Sample questions are: "Clickers-assisted English class presents an easy access to frequently asked questions; Clickers-assisted English class provides a place to discuss questions." Self-efficacy mainly

referred to student beliefs, confidence, and expectations in accomplishing tasks (Bandura, 1977). Therefore, the scale to identify self-efficacy focused on these three elements. Examples are "I feel confident explaining why a task will not run through clickers; I feel confident using the clickers to learn; I feel confident learning advanced skills through clickers; I feel confident turning to a peer discussion when needed." Self-regulation indicated the extent that students meta-cognitively, motivationally, and behaviorally fulfilled learning tasks (Zimmerman and Schunk, 1989). Therefore, questions aiming to identify self-regulation, as shown in Table 2, pivoted on student meta-cognition, motivation and behaviors. Sample questions are: "If I try hard enough, then I will understand the course material; If I don't understand the course material, it is because I didn't try hard enough."

Although there is not a specific item evaluating student–teacher interaction in the interaction scale, the following three questions do identify student-teacher interaction: (1) Clickers-assisted English class provides a discussion platform for interaction; (2) Clickers-assisted English class presents an easy access to frequently asked questions; (3) Clickers-assisted English class provides a place to discuss questions.

Cronbach's alpha is a method to examine reliability, which was proposed by Lee Cronbach in 1951. It overcomes the shortcomings of partial halving method and is the most commonly used reliability analysis method in social science research. In general exploratory studies, the Cronbach's alpha coefficient is above 0.6, and the benchmark study is above 0.8 (Nunnally, 1978).

The internal consistency was demonstrated by Cronbach's alphas (see Table 2). Three sub-scales to determine interaction feasibility, self-efficacy and self-regulation were all considered internally consistent since they reached the satisfactory level ($\alpha > .80$) in the study.

A semi-structured interview

A semi-structured interview, designed by professors in English language teaching, was designed in order to collect qualitative data. Researchers informed participants that all the information in the interview would remain confidential and would merely be used in the research. All the interviewees would be properly rewarded for their cooperation after the interview.

The interview is made of three sections involving demographic information, interview questions and acknowledgement. Section 1 focuses on interviewees' demographic information including names, ages, genders, educational backgrounds, working experiences, literacy and psychology. Section 2 is mainly concerned with interview questions. For the interaction feasibility, we selected 2 to 3 questions for interviewees to answer. For the scale of self-efficacy, 3 to 4 questions were selected. For the scale of self-regulation, we selected 2 to 3 questions (See Table 2). We also designed some questions regarding English listening, speaking, reading, writing and translation skills in order to solicit the data of interviewees' English proficiency. The last section aims to extend our gratitude to all the interviewees and their contribution to the study.

Research procedure

Learning tasks of participants were to improve their English proficiency through an intensive English reading course for two semesters. Both cohorts learned English assisted with Clicker system.

The teaching process assisted with Clicker system

The teaching progress assisted with Clicker system is visualized in Figure 1.

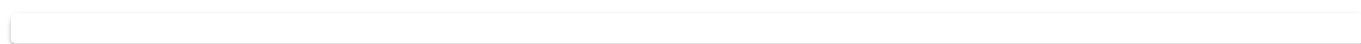


Figure 1. The teaching process assisted with Clicker system

As shown in Figure 1, assisted with clicker system, the teacher could project language notes to the large screen in order to present the lecture and ask students to follow. The teacher could also raise questions for students to answer. Using keyboard controller, students could answer questions, which was transmitted through the wireless receiver to the teacher. The teacher could then show students' answers on the large screen, which would be displayed in the form of histograms. The teacher and students could easily judge the answers.

The teaching progress was decided based on the answers of students. If most of students (>80%) answered correctly, the teacher would move on after correcting the wrong answers. If nearly half students answered correctly, the teacher would stop to explain the question in details and continue the teaching progress after they understood them. If most of the students answered wrongly, the teacher would repeat the teaching progress after most of them learned the knowledge, understood the questions and provided correct answers.

The teaching process for both cohorts

The intervention cohort was instructed through the video-clicker-assisted flipped English class, while the control cohort was taught via the non-video-clicker-assisted flipped English class instruction.

The video was used to both present the image of the teacher and show educational materials. The intervention cohort was provided with teaching videos through the communicative platform. They were required to download videos from the online space. The activities were automatically recorded by the platform. In both the physical and virtual classes, the teacher designed quizzes or tests in the content of the videos in order to encourage students to view and understand videos. Task and key knowledge were included in the videos. Students could not successfully perceive the knowledge and complete the task without watching videos, which ensured that the intervention cohort truly made use of the videos.

After two academic semesters, both cohorts were tested in terms of English proficiency and interaction, self-efficacy and self-regulation levels. The pre and posttest results were entered into a computer for further analysis and discussion. The only difference between the intervention cohort and the control cohort was that the former was instructed assisted with videos, while the latter was not instructed

with the aid of videos. Consequently, differences in student interaction, self-efficacy and self-regulation levels and English proficiency were due to whether video lecturing was used. The effect of videos on clicker-assisted flipped English class would thus be revealed. The videos, enduring 10 to 50 minutes, were all designed by the teacher, who aimed to inspire and encourage students to improve their listening, speaking, reading, writing and translating skills. Cultural awareness and linguistics-related knowledge would also be integrated into language teaching via the videos.

1

2

2.1

2.2



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