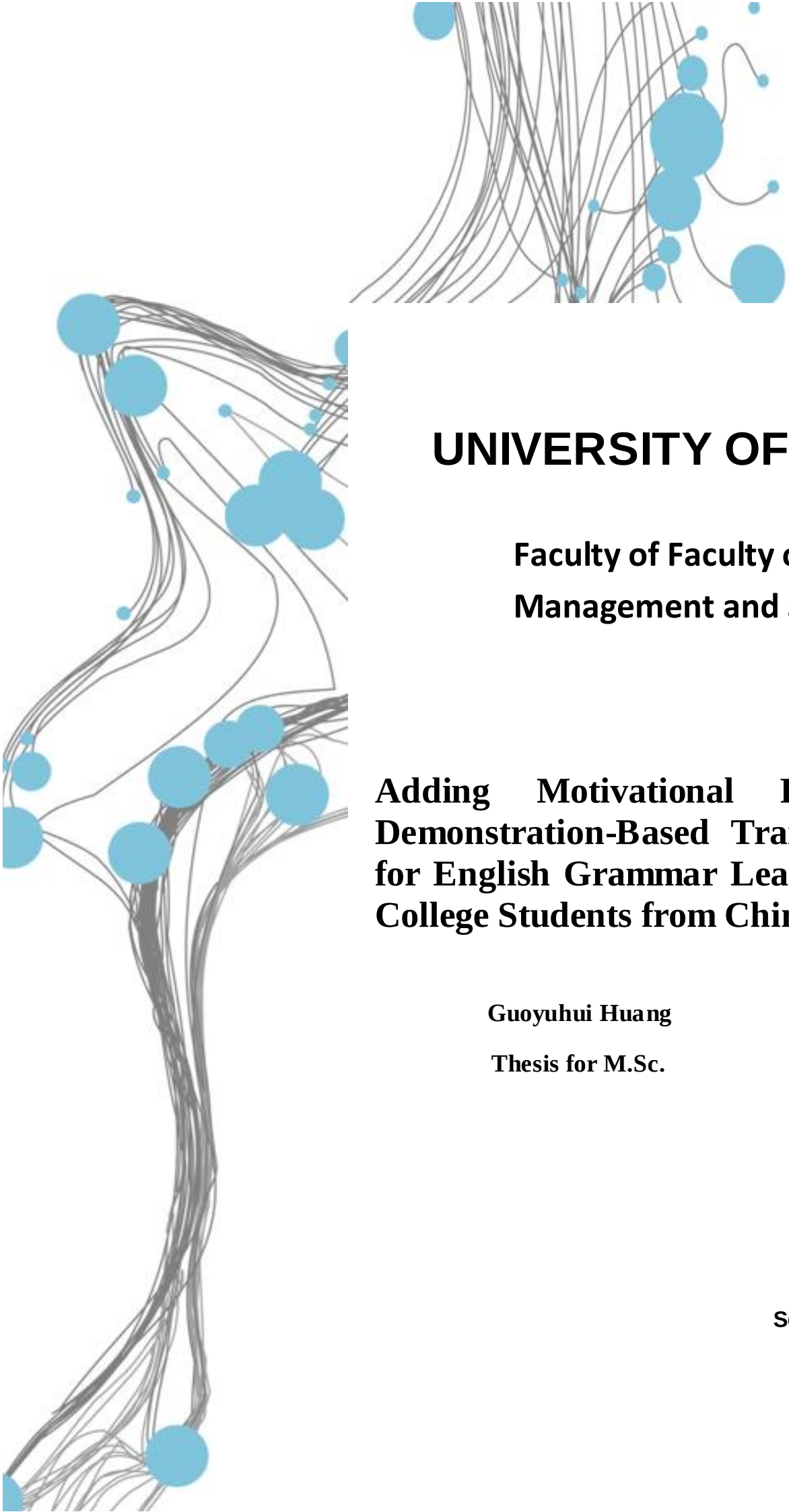

UNIVERSITY OF TWENTE.

Faculty of Faculty of Behavioral, Management and Social sciences

Adding Motivational Features to Demonstration-Based Training Videos for English Grammar Learning among College Students from China

Guoyuhui Huang

Thesis for M.Sc.

First Supervisor:

Joyce Karreman

Second Supervisor:

Hans van der Meij

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Abstract

The purpose of demonstration based training (DBT) videos is to provide step-by-step procedures that teach students certain knowledge. These demonstration based videos have been proposed and designed for software training among Western audiences and Chinese audiences due to previous studies indicating that, demonstration videos drastically enhanced task performance and self-efficacy. In addition, with support from declarative advanced organizers, these videos can moderately shrink the gap between task practice and knowledge learning.

The present study further explored the effectiveness of DBT videos in Second-language Grammar learning among college students in China. The control condition of the study used demonstrations only in exploring the effectiveness of the DBT videos. In the experimental condition, participants watched the demonstrations and the motivational features to investigate if the use of optimized videos to enhances learning outcomes. The study involved a pre-test performance(before watching the videos), mid-test performance(directly after watching the videos) and delayed-test performance(ten days later) and also explored attitudes regarding self-efficacy; relevance, satisfaction, usefulness, and ease of use. The study was conducted in the Faculty of Physics of Wuhan Polytechnic University in China and the experiment involved 60 participants between the ages of 18 and 21 years old. All the participants were divided into two groups, a control group of 30 students and an experimental group of equal number (30 students).

The data analysis from this study revealed that learning outcomes for both the control group and experimental group significantly improved. Furthermore, the study revealed a significant enhancement in the delayed test in the experimental group. Nevertheless, comparable with the control group, the study also revealed that, the participants in the experimental group have no significantly improved positive attitudes towards the videos in terms of self-efficacy; relevance, satisfaction, usefulness, and ease of use. Instead, the students from both control and experimental conditions were quite satisfied with the SBT videos with and without motivational features. Hence, it was concluded that DBT videos could be used as salient contributions to language learning area among college students from China in terms of learning outcomes, moreover, whether motivational features were added did not matter a lot

in respect of enhancing students' attitude. Additional research regarding DBT is imperative to investigate interventions that improve learning and training in some other domains among other types of students.

Keywords: DBT video, motivational features, ACRS model, English Grammar learning

Content

1. Introduction

English is a compulsory lesson through the whole Chinese education system, commencing from primary school. The quantities of English learners in China are significantly higher than any other country in the world (Sina Education, 2012). It is estimated that there are more than four hundred million English learners in China, which roughly accounts for one-third of the Chinese population (Jianshu, 2016). Additionally, the Chinese government has managed to invest annually a substantial amount of money in English education. As a result, China has become the most crucial market for English Education in the worldwide.

Although much effort and energy have been put into English education, the English Proficiency Index of Chinese citizens is far from satisfactory. According to a poll conducted by EF EPI, in 2015, China ranked No.47 among 70 countries, which declined mildly from No.37 in 2014 (EF EPI, 2015). Klagenfurt (2008) described the present conditions of English education in China. He manifested that, firstly, English education has become the heaviest burden of all the subjects for Chinese student, lasting for 14-16 years, obligatorily. Subsequently, it was demonstrated that both the quantity and quality of English teachers in China had a long way to go. Regarding goals of English education, China seemed to go astray, attaching too much importance to examinations rather than practice. Ultimately, the disparity of English level in different regions was salient. For instance, in some exceedingly rural areas, the English education remained to be vacant.

Given the dilemma mentioned above, a host of researchers devoted to investigating how to improve English education in China. Among all the methodologies, the multimedia learning, especially, the utilization of videos comes to scholars' vision. According to Zhu (2015), compared with the audio-based tools, the English videos provided brand new platforms to promote stimulation both visually and audibly. Zhang (2015) mentioned, in the multimedia learning environment for English education, students were more likely to be motivated, involved, and engaged and formed their cognitions towards new knowledge. As a result, they were able to enhance the ability to deal with the puzzling and problematic issues independently. In contrast, a certain number of scholars hold skeptical and nebulous views towards the effectiveness of video instructions for English teaching. Xu (2015) illuminated

the defects when providing video instructions in English classes. For instance, although most videos, to some extent, could inspire the students and capture their attention, the videos cannot be flexible enough to be adjusted to meet each student's requirements. However, the real teachers were better to handle a certain student according to the specific environment.

Based on the latest researches, Demonstrations-Based Training (DBT) model has been proposed to design the video instructions for software learning. Empirical studies have been implemented among Western audiences and Chinese audience. Brar & Van der Meij (2017) discovered that in statistics class, with the help of DBT videos, the Western students successfully obtained and maintained the motivation and attention during the knowledge acquisition. Nevertheless, the data also suggested that, with the absence of DBT videos, the task performance of students declined moderately over time. It was indicated that DBT might do good in completing step-by-step procedures, but there was still a gap between task performance and learning, which meant the students could not retain the knowledge in their long-term memory and still gained high scores in the delayed test. Later, Van der Meij (2018) redesigned the experiment, with the inclusion of declarative advance organizers. Declarative advance organizers meant, a brief introduction before the formal training materials, providing the learners with a general structure of the main content of the materials (Ausubel, 1968). The results showed that the gap between task performance and learning mildly shrank, but still disgruntled.

All in all, DBT videos have been demonstrated to be conducive to software training. No previous studies have investigated its effectiveness in grammar learning. Accordingly, the present article aims to expand the usage of DBT videos to grammar learning area. Chinese audiences are chosen in that there is a huge need for self-instructional materials on English language acquisition in China. Moreover, In China, it is favorable for English teachers to use step-by-step procedures to guide the students to learn specific English Grammar, which conveys the idea of "demonstration" (Chinese Education Online, 2014). If the DBT videos work well in grammar learning area among Chinese students, they can be promisingly used to support ICT development in the near future. Thus, the present article aims to design an optimized Demonstration Based Training video to assist the Chinese college students to learn English Grammar. Also noteworthy is the fact that, the previous DBT videos (Brar & van der Meij, 2017, van der Meij, 2018) only involved the role of advance organizers, however, DBT effects on motivation leave room for improvement. In this case, the present videos would add

more motivational features from ARCS model to further engage students in learning. Motivational features inside the DBT videos are responsible for motivating the users by some encouragements and the information which are relevant to the target audience rather than provide them with the general information regarding what they are about to learn. For instance, tell the users they are moving forward and making great progress in the materials.

Students' attitude towards the videos is also taken into account. In the previous studies, the students held a positive attitude towards the DBT videos in terms of usefulness, ease of use, satisfaction, and self-efficacy. Unlike the formers, the present studies also consider relevance of video due to the fact that, relevance is the central elements of the ACRS model. As a whole, the research questions are formulated as follows:

1) Can DBT videos regarding grammar learning enhance the learning outcomes and attitude of Chinese students?

2) Can motivational features in DBT videos regarding grammar learning significantly improve the students' learning outcomes and attitude towards videos ?

2. Literature review

In this chapter, the theories and principles of Demonstrations Based Learning model, Demonstration-Based Training (DBT) videos and motivational features are explained, the existing researches and previous findings regarding the effectiveness of Demonstrations Based Learning model, DBT videos and motivational features are illustrated, and hypotheses of this study are formulated.

2.1 Demonstrations Based Learning model

DBT videos originate from the Demonstrations Based Learning model (Brar, Van der Meij, 2017). Hence, in order to illuminate and realize the principles of DBT video, we need to elucidate the theories of Demonstrations Based Learning first.

The demonstration, generally speaking, means to show or explain. Salas et al. (2009) illustrated the definition of demonstration as follow,

"A demonstration is a strategically crafted, dynamic example of partial or whole task performance or of characteristics of the task environment intended to increase the learner's performance by illustrating (with modeling , simulation, or any visualization approach) the enactment of knowledge, skills, and attitudes (KSAs) targeted for skill acquisition."

Empirical studies have been conducted to examine the effectiveness of Demonstrations Based Learning model. Most of the studies showed positive results, illustrating Demonstrations Based Learning enhanced students performance. Bowen and Phelps (1997) explained that demonstrations assessments were proved to be very useful in enhancing students understanding and retention of chemical principles. Similar conclusions were drawn by Desse et al. (2000). He found that, when facing demonstrations, the students were able to generate better conceptual understanding. According to Zhang et al. (2006), when inserting demonstrations in the video (experimental condition), the students achieved significantly better compared with those without demonstrations (control condition). Therefore, they highly recommended that, integrating demonstrations in the videos could improve students' performance in the e-learning system.

Nevertheless, some researches came to adverse conclusions, arguing that Demonstrations Based Learning model did not have a significant impact. For instance, Udo (2010) compared the effects of guided-discovery, student-centered demonstration and traditionally expository instructional strategies on students' acquisition of chemical knowledge. Specifically, the guided-discovery approach referred to the principles of motivating the students in some easy experimental activities. In addition, the student-centered demonstration meant, engaging the students in showing the equipment and illustrating their correct use and experimental process. He discovered that, among all the methods, the guided-discovery was the most effective one. Sola and Ojo (2007) also compared three methods in the chemistry class, project, inquiry and lecture-demonstration teaching method. The project method meant, giving students or groups of students particular assignments to complete in their spare time, after which the results and feedbacks should be handed to the teachers. The inquiry involved the idea of asking questions, seeking answers and learning knowledge. Usually, the students needed to conduct researches, formulate hypotheses and make conclusions. The lecture-demonstration method was to show the process of certain knowledge with oral explanations. In this way, the students were able to know and see the concepts, facts and experimental results. The findings were, among these three methods, project was the most useful and ended up with the best performance in the chemistry class, no matter when it was compared with inquiry or lecture-demonstrations.

Above concluded the previous findings on the Demonstration Based Learning model, which lays the foundations for the development of the DBT videos. Next, we gave a brief introduction to previous findings on the DBT videos.

DBT videos allow viewers to learn through step-by-step procedures and demonstrations (Brar & van der Meij, 2017). So far, the empirical researches on the DBT videos were rare, since the theoretical principles of the DBT model in the video instruction area have just been come up by Brar and van der Meij in 2017. Two researchers utilized the theory foundations from Bandura (1986), who exploited the demonstrations for training and formulated the social cognitive theory. In his theory, Bandura (1986) came up with four core processes: attention, retention, production and motivation, after which they became the essential and crucial foundation for the design of DBT video. As a result, Brar and Van der Meij (2017) combined the Demonstration Based Learning model with video instructions for software learning. They provided guidelines for each process and accounted for the principles of designing a DBT video. The first guideline was attention, which referred to some physical features of video to

help the students filter, select and focus on the important information (Anderson, 2010). The second guideline was retention, which meant the students should not only understand and keep the knowledge in their short-term memory, but also utilized what they learned for the future conditions (Brar, van der Meij, 2017). Production was the third guideline. It emphasized the significance of practice, which has been demonstrated to be one of the core elements to test students' learning outcomes (Leppink, Paas, van Gog et al., 2014). The last guideline was motivation. Motivation was the driving force behind the process of attention, retention and production (Brar, van der Meij, 2017). Researches have formulated several methods to motivate the students' behaviors during learning. For instance, designing the materials with conversational style and trying to avoid too many jargons (Loorbach, 2007), or using the background music to make the learning materials more enjoyable (Srobin et al., 2015).

Hitherto, only two experiments were founded to test the validity of the model of DBT videos. Based on the existing researches, DBT videos could significantly enhance self-efficacy and task performance of audience when learning how to use a software (Brar, van der Meij, 2017). In addition, when adding the roles of advance organizers, the students' learning outcomes further improved (van der Meij, 2018). Although the empirical researches regarding the influence of DBT video on Chinese students' English grammar learning were vacant, the application of video instructions on Chinese students' Second Language Learning was mature. For instance, Garza (1991) proved that using the video materials to assist students to learn English made contributions to students' English reading and English listening. Similar conclusions were drawn by some other scholars, for instance, Miller (2007) suggested that video instructions were beneficial for students' learning second language and it was indicated that English teachers should prepare multimedia learning approaches to teach the students in the 21st-century class. Moreover, Hsu et al. (2012) manifested that when comparing experimental group(video group) and control group (non-video group), the students in the former group performed significantly better regarding vocabulary acquisition.

Although a substantial number of researches have testified the advantages of using video instructions in English reading, listening and vocabulary, the researches on grammar learning were rare. The previous studies have come up with several effective methods to teach Chinese students to learn English grammar. For example, the "Flipped Class", that was, a blending method to combine the video instructions before the class and teacher's instructions in the

class. Before the class, the students watched the video materials, while in the class, the teachers organized some workshops or discussions to let the students initially involve the learning. It turned out, the "Flipped Class" was valued higher than the traditional method ---- only teacher's face-to-face instructions in the class and students were able to learn the English grammar better (Liu, 2013). Hence, the present study focused on the language grammar learning field to test whether DBT videos can still assist Chinese college students to learn English grammar.

Since previous studies have proved, the video instructions contributed to students learning. Moreover, most of the researches indicated that Demonstrations Based Learning materials were conducive to students learning, the hypothesis was formulated as follow:

H1: DBT videos can enhance the grammar learning of a second language of students.

2.2 Motivational features

Gage and Berliner (1998) manifested that, motivation was the essential element of learning. The students' learning behavior is hard to improve without motivation even if they have good instruction (Moller and Russell, 1994). What is more, according to Edward et al. (2011), motivation in education could enhance students' confidence in their capacities and attributes. With the salient significance of motivation emerging in education, researches have been conducted to design motivational models or motivational methodologies to help educators and students to boost the teaching behavior and learning behavior. Motivational features refer to the materials whose content motivate the users learning behavior in training information. There are several models come up to design motivational features in the educational area. Keller (2008) introduced the ARCS model which has been widely spread. Also noteworthy is the fact that, although motivation guideline is one of the core components in DBT videos, more research on motivation in the DBT videos is needed. In the present study, more motivational elements are added to the DBT videos based on the ACRS model, which distinguishes the DBT videos from the DBT videos plus motivational features.

The reasons why Keller came up the idea of developing the ARCS model was that, in the past, a substantial number of teachers believed, they were merely responsible for teaching skills and knowledge efficiently and effectively. It was the students' responsibility to decide what to

learn (Keller, 1987). Nevertheless, students seldom digested the efficient content and often ended up with reluctance and unwillingness to further learning (Keller, 2010). In this way, Keller addressed the idea of the ARCS model to make the learning process of students more efficient and more enjoyable as well (Kirschner and Gerjets, 2006).

The foundation of the ARCS model was the expectancy-value theory (Fishbein & Ajzen, 1974), which regarded the human behavior as seeking for the possibility of success (expectancy), and attached great importance to the value of success (Loorbach, 2013). Eccles et al. (1983) proposed, the expectation of success and subjective task value directly influenced the achievement-related choices. With the inspiration of expectancy-value theory, Keller formulated the ARCS model, which originally was designed to impact students motivation in class learning but later on, expanded to other settings such as multimedia instructions, computer-aided instructions and distant education (Astleitner and Hufnagl, 2003).

ARCS model referred to Attention, Relevance, Confidence and Satisfaction (Keller,2008). The model was intended for designing educational materials (Loorbach et al., 2007). Attention meant, the educational materials should capture users' attention, arouse their curiosity, and keep their active engagement in learning. Berlyne (1965) discovered that users' attention could be caught by some interesting graphics or animations. Relevance aimed to establish the relationships between content, teaching methods, organizations and users' targets. Users' needs for success and power accounted for the motivational elements of relevance (McClelland, 1984). In terms of confidence, it related to the facts that whether users were able to control the present condition or whether their expectations of success were built in the learning activity. Weiner (1974) illustrated that compared with some external elements such as fortunate or task difficulty, the students' confidence was enhanced by assisting them to build positive expectation and experience the achievements under control. The above three, attention, relevance and confidence were the components to motivate the students to learn. If the educators hoped the lessons were able to continually motivate the students, here comes the forth component, satisfaction. Satisfaction meant the educational materials should help users to maintain the positive feelings during the learning (Maehr, 1976). In this way, students could feel that what they learned was appropriate and useful (Keller, 2008). The relationship between these four parts could be found in figure 1.

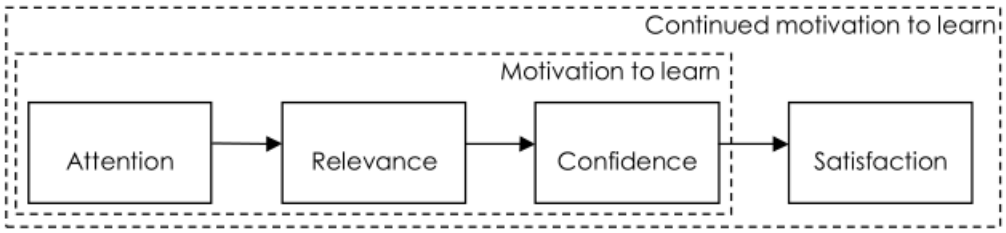

Figure 1： The relationship between Attention, Relevance, Confidence and Satisfaction[1]

[1]The figure is copied from the book of Loorbach (2013), namely, Motivational Elements in User Instructions, p43.

A host of empirical studies have examined the validity of ARCS models. Some of the researches drew the positive conclusions, confirming that ARCS was practical when applied to design educational materials for learning. Colakoglu (2010) examined whether the ARCS model contributed to designing instruction in the blended courses. The results showed that the instruction based on the ARCS model provided more motivational benefits and enhanced students learning compared with the controlled instruction. Chyung et al.(1999) designed a distant learning program based on the ARCS model and concluded that, the optimized program enhanced the students' learning and motivational reactions in all four categories (attention, relevance, confidence and satisfaction). Van der Meij et al. (2015) utilized the ARCS model to design the narration of animated pedagogical agents (APA) to enhance students' performances in science class. The results showed that, APA significantly improved students' learning and self-efficacy. Moreover, the female students praised higher compared with male students.

In contrast, some researches discovered no significant effect when utilizing ARCS models. For instance, Klein (1990) compared the learners' previous confidence and satisfaction on the materials (control) with the embedded strategies (experimental), concluding that ARCS-improved materials did not have an obvious impact on target users. In addition, Price(1989) illustrated the idea that, the learning outcomes of users were not influenced by attention or confidence. Instead, the textual displays were the very things that directly affected learners' behavior. According to Huett et al. (2008), when they were manipulating the confidence elements from Keller's ARCS model to engage the students in an online course, there were no significant differences in terms of learner confidence between the control group (without confidence materials) and the experimental group (with confidence materials).

The present study focused on the relevance elements and the confidence elements when designing the experimental condition. Loorbach et al. (2007) demonstrated that, when using attention guidelines, relevance guidelines, confidence guidelines to generate three different kinds of instruction versions for elderly people, they found the relevance version had the most significant and drastic impact on users' task performances. In their researches, they used three methods to enhance the relevance elements of instruction. To begin with, the relevance version used user-oriented terminology, which meant the language was more natural but accurate. Subsequently, they related the relevance version to users' daily lives and to some extent, showed the usefulness of a certain function. Last but not least, at the beginning of each section, the relevance version told the users what they were about to learn. Except for the undeniable importance of relevance, confidence has been demonstrated to be the essential part of the ARCS model (Loorbach, 2013). Bandura (1986) extensively studied confidence and defined it as "self-efficacy", which referred to the idea that "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986). According to Bandura, confidence influenced how much efforts the users would produce, how long they would preserve when facing the dilemma and how many achievements they would gain in the end (Bandura, 2006). In his theory, he articulated that, people's self-efficacy was constructed from four components, they were, enactive mastery experiences, vicarious experience, verbal persuasion and physiological and affective states (Bandura, 1997). One example of enhancing the confidence of the students was to master the tasks which were relatively difficult. In this case, the students would not be discouraged and expected quick results and easy success. Another example of improving the confidence of students was to provide a control step, which gave the students an opportunity to check whether they learned correctly (Bandura, 1997). Also noteworthy is the idea come up by Loorbach et al. (2007), they discovered that, telling users that the tasks were not difficult at the beginning contributed to enhancing users' confidence. The present study borrows the successful experience from the previous researches and formulates the motivational version of the DBT video to teach Chinese students how to learn English Grammar efficiently, effectively and delightedly.

Since a substantial number of studies have proved the effectiveness of the ARCS model in the education area, the hypotheses of the present study are formulated as follows:

H2: Compared with DBT videos, motivational features in the DBT videos would significantly improve the students' self-efficacy.

H3: Compared with DBT videos, motivational features in the DBT videos would significantly improve the students' relevance of the video.

H4: Compared with DBT videos, motivational features in the DBT videos would significantly improve the students' satisfaction.

Additionally, motivational videos have been demonstrated to be more useful compared with ordinary ones. In athletic training area, Jenkins et al. (2007) illuminated that, motivational videos with match analysis process (quantitative data statistics) made contributions to better coaching, increasing members' understanding of their performances. According to Barwood et al. (2009), adding background music in videos (motivational videos) was more conducive to the trainers compared with non-motivational videos. It was said these findings would have implications for enhancing engagement in the gym-based sports program. Moreover, in classroom learning area, a qualitative study was conducted by Yunus et al. (2013). They found that, among all the interviewees (52 English teachers), the majority held the views that motivational videos were beneficial to students' learning . For example, the visual aids helped to generate critical thinking and proficiency level in reading. Nevertheless, there were still existing researches revealed that, motivational videos were not always magical. For instance, an empirical research was conducted in a disadvantaged school in Chile by Rosas et al. in 2003. They compared the motivational videos (with games) and traditional teaching method (classroom teaching) and found that, the students' did not improve significantly in terms of math, reading comprehension and spelling. Although the results were out of expectation, the researches still concluded , more improvements should be done in educationally motivational videos. Furthermore, in the future, the motivational video could be a useful tool to promote and enhance students' behavior in the classroom.

Since the majority came to the conclusions that motivational videos contribute to better learning compared with traditional teaching methods or traditional videos, we formulate the hypotheses as follows:

H5: Compared with DBT videos, motivational features in the DBT videos would be perceived as significantly more useful.

H6: Compared with DBT videos, motivational features in the DBT videos would be perceived as significantly easier to use.

According to the previous researches above, we formulated the hypotheses on motivation and usability of the DBT videos with motivational features. It appeared that, adding motivational features in the DBT videos would have the positive impact on users. As a result, the last hypothesis was formulated as follow:

H7: Compared with DBT videos, motivational features in the DBT videos would significantly enhance students' learning outcomes.

3 Method

3.1 Design

The present study compares two groups, a control group versus an experimental group. In the control group, the participants only watch a DBT video while in the experimental group, they watch the Demonstrations plus motivational features. The independent variables are these two videos, the DBT video and the video combines DBT with motivational features. The dependent variables are students learning outcomes examined by pre-test (before watching the video), mid-test (directly after watching the video) and delayed-test (ten days after watching the video). Another dependent variable is students' attitude: usefulness, ease of use, self-efficacy, relevance and satisfaction of videos.

3.2 Learning material

3.2.1 General Description of the videos

The video aimed to teach students the "Attributive Clause". The reasons why the present study chose the "Attributive Clause" were as follows: Firstly, this is a demanding English grammar even for Chinese college students. Subsequently, there are existing good materials regarding the "Attributive Clause" which can be regarded as references to be redesigned as Demonstrations-Based Training videos. For example, "New Perspective Advanced Grammar" published by New Oriental School----one of the biggest English Learning Schools in China. Unlike the DBT videos, these videos recorded human lecture's teaching behavior just as what the students would see in the class. The content of these existing videos can be transferred into DBT videos without the need for human lectures' presence. Last but not least, the grammar is extensive enough to be divided into at least three lessons (as is required in the DBT video model). The control video followed the DBT design model while the experimental video added the role of motivational features based on the control one.

The video instructed the students on basic and important knowledge regarding the "Attributive Clause". The content of videos was divided into three separate sections, namely, introduction, how to write a simple attributive clause, and when to use a relative pronoun, and

when to use a relative adverb? The sequence of content followed the principle of " simple-to-complex". For example, the introduction part included the introduction of two basic structures of the "Attributive Clause", which was the foundation of writing a right "Attributive Clause".

As for the first chapter, the videos introduced the definition of the "Attributive" and the "Attributive Clause". Subsequently, the video gave a brief introduction on two basic structures of an "Attributive Clause" in a complex sentence. The first chapter of the DBT videos lasted for 6 min, while the first chapter of the DBT videos plus motivational features continued 9 min. In terms of the second chapter, the videos articulated five steps to write a simple attributive clause. The whole chapter of the DBT videos lasted for 12 min, while this chapter continued 13min in the DBT videos plus motivational features. The third chapter was the most difficult one, about which many Chinese students often felt confused and demanding. The video clarified the definition of the relative adverb, after which illustrated a three-step-method to tell the difference between the relative pronoun and the relative adverb. This chapter lasted for 19 min in the DBT videos, while it lasted for 20 min in the DBT videos plus motivational features.

3.2.2 Design of the DBT videos

All the guidelines (see appendix I), except for length and music guidelines in the model were considered during the design. In terms of the length guideline, since the English Grammar learning is relatively demanding compared with software training, it is impossible to compress the length of videos within 3-5 minutes. In addition, due to the fact that there was Chinese narration in the background, the music might distract the students' attention. In this case, the music guideline was also given up. The videos consisted of animations (slides) with narration (a female speaker). Words on the slides came just before the descriptions from the female speaker. Demonstrations in the video generally included an action verb and an object, before which were started with subgoals. For instance, " Step one, analyze the main clause and the attributive clause of the sentence", " Step two, write down the main clause" .

Figure 2 illustrates the application of the attention guidelines A1 of DBT video. Concretely speaking, attention guidelines A1 emphasizes the importance of signaling, proposing the usage of color or icons to attract the users. In this case, we used the red boxes and arrows to elucidate the grammatical knowledge and capture the students' attention.

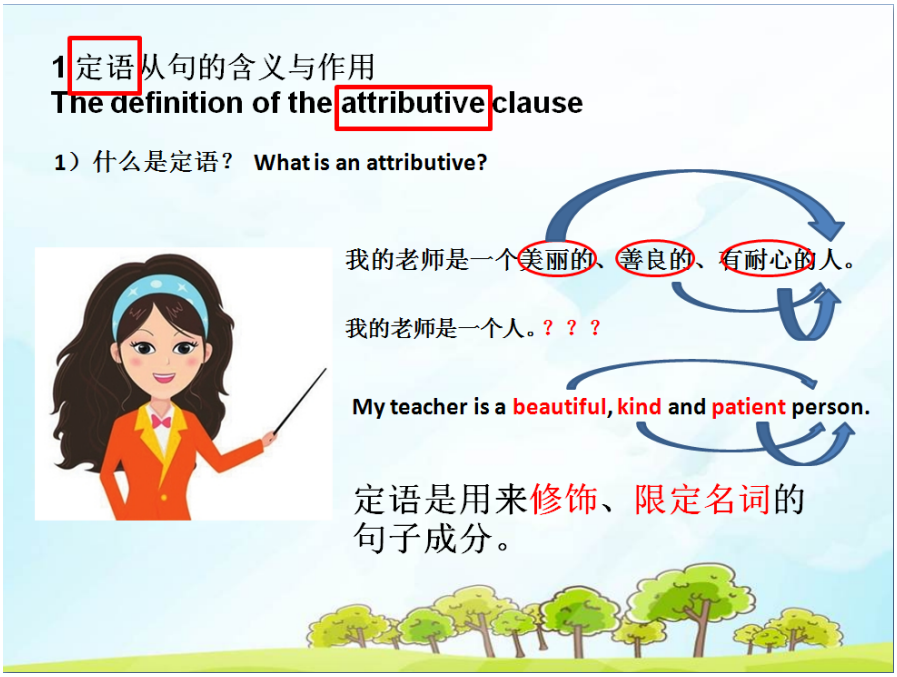

Figure 2: Application of A1: Signaling

Figure 3 and Figure 4 describe the use of the review guideline R5 of DBT video. According to the model, review guideline R5 elucidates the idea that, it is vital that the users should be given an opportunity to strengthen the knowledge they just learn by repeating the key information. Therefore, the whole video was divided into three sections. After each section, the lecturer gave a brief review to the students to consolidate their knowledge learning.

Figure 3: Application of R5: Review (Slide)

1 Here, we finish the brief introduction of the attributive clause.

2 In this chapter, we introduced the definition and the structure of an attributive clause in a complex sentence.

3 All in all, the attributive clause means to use a simple clause to take the place of the attributive in a complex sentence.

4 Moreover, the attributive clause has two structures.

5 The first one is to use the attributive clause to describe the subject of the main clause, and the second one is to use the attributive clause to describe the object of the main clause.

Figure 4: Application of R5: Review (Narration)

Figure 5 illustrates the application of the practice guideline P1. Brar and van der Meij (2017) mentioned, the learners should be provided with practice materials so that they would be able to digest the information they learn and see whether they need to restudy. In this case, after each section (except lesson 1 Introduction), the practices are provided to the students directly. The lecturer guides the students to finish all the practices.

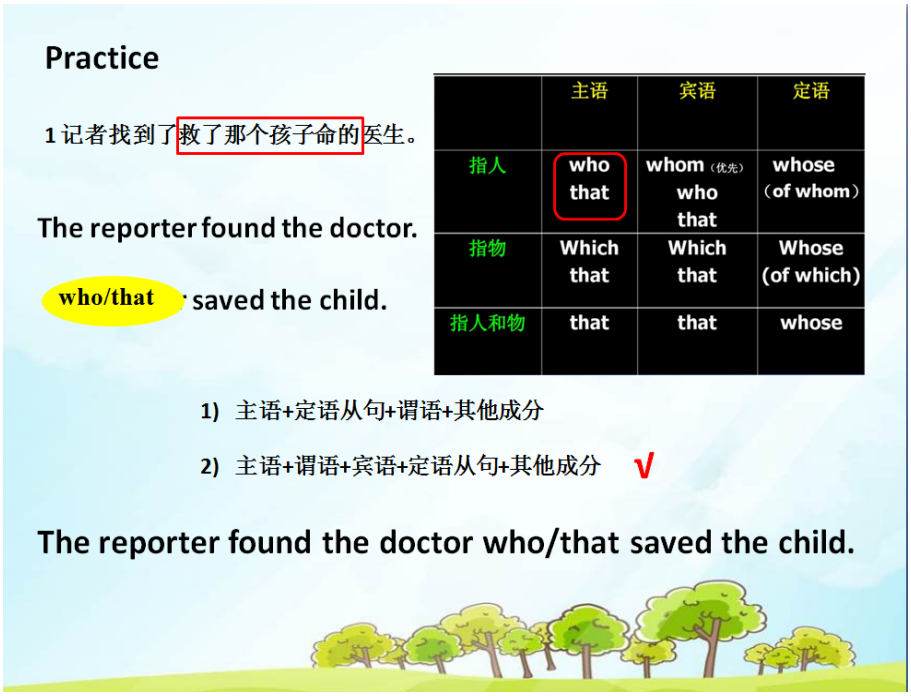

Figure 5： Application of P1: Practice

Figure 6 describes the use of M2, using a conversational style to the students. In this case, not only would the distance between the digital narration and students be closer, but also the students' perceived relevance of videos would be enhanced.

1Some students may ask, this is quite apparent.

2 If the antecedent is the time, we use "when".

3 If the antecedent is the place, we use "where".

4 If the antecedent is "people", we use "who".

5 If the antecedent is "substance", we use "that".

6 But, is it true?

Figure 6: Application of M2: Motivation

3.2.3 Design of motivational features in demonstrations

As is mentioned above, during the experimental condition, the participants would face the demonstrations plus motivational features. In the present study, we mainly utilized the relevance guidelines and confidence guidelines of the ARCS model to strengthen the relevance and self-efficacy among Chinese college students.

Loorbach et al. (2007) elucidated that, relating the instructions to the daily lives of users can enhance their relevance. Figure 7 explains the sample of relevance narration from the experimental video.

1 In China, generally speaking, the English proficiency of the students who can master the attributive clause are often higher than the ordinary level.

2 In addition, the attributive clause is a must in CET4, CET6, TEM4, TEM8, TOEFL and IELTS.

3 Usually, it appears in the reading, cloze test or error correction.

4 What is more, if the students can utilize the attributive clause in writing, they will get much higher scores than those who only use a substantial amount of simple sentences.

Figure 7: The sample of relevance narration

Furthermore, when students were given a chance to check whether they learned well (Bandura, 1997) and were told the tasks were not difficult (Loorbach et al., 2007) can improve their confidence. Figure 8 illustrates the use of confidence principles from the ARCS model to enhance the students' self-efficacy.

1 In order to further strengthen what we learned, let's do some practices together.

2 Please take out the draft paper to finish the practices below.

3 The practices may be a little difficult.

4 But it does not matter, I will be here together with you to complete the practices step by step.

Figure 8: The Sample of confidence narration

3.3 Pre-test

3.3.1 Narration

The author used her voice to record the video. Before the formal recording, the author invited three volunteers: a male student, a female teacher and a male teacher to record the narration for testing, all of whom were native Chinese speakers. Subsequently, the author invited 15 potential target students to vote for the background narration. The results were as follows: 9 students, occupying 60% of the voters, thought the author's narration was the best. The rest narrations respectively gained three votes (female teacher), two votes (male student) and one vote (male teacher). As a result, we used the author's own narration to finish recording the whole video.

3.3.2 Content Confirmation

In order to guarantee the accuracy of the content of the video, we gave the scripts to the English teacher (an English native speaker) from Language Center of University of Twente. In addition, the scripts were also given to one of English teachers in China from Wuhan Polytechnic University to test the accuracy of content. The former teacher assured all the content was correct and changed the ideas of teaching Chinese students English grammar with us. She shared that, in European countries, the English teachers often guided the students to self-discover the regulations between the sentences rather than directly teach the students how to transfer the sentence step by step. However, in China, Chinese students were accustomed to step-by-step procedures to quickly and efficiently work out the questions and gain high scores

in the exams. It was indicated that, European students learned English for use, but Chinese students learned English for the tests. The latter English teacher re-assured all the content and suggested us, we should keep and control using regular speed when recording the videos. In this case, the final videos were formulated.

3.4 Measures

3.4.1 Learning Outcomes

Three tests were used to test learning outcomes. Scores could be gained if the students set down the right answers. Tests were given to the students before the learning (pre-test, see appendix 2 (1)), during the learning (mid-test, see appendix 2 (2)), and after the learning----delayed test (ten days later, see appendix 2 (3)). All the tests contained ten questions, with five translation questions and five fill-in questions. Moreover, the difficulty of each question was roughly equal. The questions between these three tests were different to avoid carryover. Moreover, a Reliability Test was conducted. As a result, translations (alpha score: .73) and fill-in questions (alpha score: .81) were convincing and reliable to be further analyzed.

Figure 9 and Figure 10 give the examples of translation questions and fill-in questions: The red words were keys to questions, so the students could only see the black words on their papers.

A 翻译下列句子

Translate the sentences below.

1）这是昨天给我们讲课的王先生。

This is Mr. Wang who/that gave us the lesson yesterday.

2) 妈妈做的蛋糕很好吃。

The cakes which/that mother made tasted nice.

...

Figure 9: Examples of Translation Questions

B 填空题

Fill in the Blanks.

1) Is this the factory _____ a lot of students visited yesterday? that/which

2) This is the school _____ Mr. Smith once taught. where/at which

3) October 1, 1949, is the day _____ we'll never forget. that/which

...

Figure 10: Examples of Fill-in Questions

Once all the papers were collected, each paper was graded and calculated by hands. Noticeably, we ignored the spelling errors or tense errors in that the aims of the lessons were to let the students acquire the knowledge of the "Attributive Clause". For instance, if the students translated "我昨天看的电影非常无聊" as "The movie which I saw yesterday is very boring", which the right answer should be "The movie which I saw yesterday was very boring", we ignored the tense errors in the sentence. In addition, the students did not need to figure out all the possible answers to the questions since "the relative" in the "Attributive Clause" could sometimes be alternative. For example, in the fill-in question " Is this the research center ____ you visited last year?", the right answers should be "that" or "which". If the students just filled in with "that", we gave the full score to this question. Having calculated the scores of each student, we input the data into the SPSS Statistics to formulate the analysis results.

3.4.2 Attitudes

A questionnaire(see appendix 3) was used to examine the attitudes (usefulness, ease of use, self-efficacy, relevance and satisfaction) of the videos after mid-test. The foundations of the questionnaire were Instructional Materials Motivation Survey(IMMS) developed by Keller (2008) and a questionnaire utilized by van der Meij (2018) to test the validity of the DBT videos. The former ----IMMS could be used to indicate the students' attention, relevance, confidence and satisfaction with the learning materials(Keller, 2008). The latter questionnaire developed by van der Meij (2017) examined the usefulness, ease of use, self-efficacy,

satisfaction and filler of the DBT videos. Since our dependent variables were usefulness, ease of use, self-efficacy, relevance and satisfaction, we deleted the variable "filler" in van der Meij's questionnaire and utilized the relevance guidelines from IMMS survey to formulate the newly incorporative questionnaire.

The new questionnaire contained 30 questions. Answers were given on a 7-point Likert, ranging from "completely disagree " to "completely agree". Moreover, a reliability test was conducted. The "usefulness (alpha score: .77)" item consisted of 6 questions. For instance, "Recorded lectures like this are important in education ". The "ease of use (alpha score: .77)" item made up of 6 questions. For example, " A recorded lecture facilitates studying a topic". The "self-efficacy (alpha score: .92)" item consisted of 6 questions. For example, " I can write a good summary of the recorded lecture". The "relevance (alpha score: .77) item included 6 question. For instance, " This video was not relevant to me, because I already knew most of the content. The last item, "satisfaction (alpha score: .91)", also included 6 questions. For example, "The recorded lecture was a pleasure to behold". Since nearly all the alpha scores were above .75, we were confident that data were convincing and reliable. Having assured all the data were trustworthy, we utilized excel to calculate the mean values of each group to be regarded as the final analysis objects, after which the average values were uploaded to SPSS Statistics.

3.5 Participants

60 participants (mean age 19.18 years, range from 18-21) from the Faculty of Physics of Wuhan Polytechnic University were involved in the experiment. All the participants were from grade one, taught by the same English teacher. In addition, they were randomly allocated to two groups, a control group (only DBT videos) and an experimental group (DBT videos plus motivational features). The control group included 15 males and 15 females while the experiment group included 16 males and 14 females.

3.6 Procedure

The experiment was conducted in Wuhan Polytechnic University among 60 participants in a multimedia classroom. The whole experiment took place in a new multimedia classroom for

remote education. In this case, the author was able to see the participants through the camera of the classroom. Each participant faced with a computer controlled by the main computer of the multimedia classroom to control the experiment. Three supervisors, including two professors from the Faculty of Physics and one English Professor from the Faculty of Foreign Languages, were in the present. The author utilized the remote system to monitor the conditions. Noticeably, the students in two groups conducted the experiment at the same time.

First, the author gave a brief introduction (10 min) on the experiment. Subsequently, one of the supervisors distributed the pre-test. After approximately 20 minutes, the papers were collected and sealed. Next, the control group watched the demonstrations while the experimental group watched the demonstrations plus motivational features. The participants were allowed to control the individual computer by themselves to review the videos if they did not follow. After watching two lessons, a 5 minutes break was allowed. Subsequently, the students watched the third lesson of the video. After finishing watching all the videos, the students were given a mid-test about 20 minutes immediately. Then, the questionnaire was given to each student to complete. In this way, the first stage of the experiment ended, lasting for roughly 75 minutes. Ten days later, the same participants except for two students in the experimental group asking for sick leaves were given out the delayed test for 20 minutes.

4 Data analyses

Repeated tests ANOVAs were conducted to evaluate the changes in learning outcomes over time and with different videos. In addition, independent sample t-tests were utilized to assess the students' attitudes towards the videos in terms of usefulness, ease of use, self-efficacy, relevance and satisfaction. Two girls in the experimental group did not participate in the delayed-test. As a result, these two participants had missing data for their pre-test and mid-test. In all analyses, the significance level was set at a p of 0.05 (two-tailed). The results are qualified as significance as $p < 0.05$.

5 Results

5.1 Learning outcomes

H1: DBT videos can enhance the grammar learning of a second language of students.

H7: Compared with the DBT videos, motivational features in the DBT videos would significantly enhance students' learning outcomes.

Does time affect learning outcomes?

Scores for learning outcomes in the three tests (pre-test, mid-test and delayed-test) were illustrated in Table 1. Figure 11 illuminated the trends of learning outcomes of the students from both groups. Repeated measures ANOVAs articulated that , the learning outcomes of all the students significantly improved in respect of time, $F(2,112) = 50.68$, $p < .001$. More specifically, there was a significant enhancement during the intervals from the pre-test ($M(SD)_{control} = 3.60(2.33)$, $M(SD)_{experimental} = 3.61(1.77)$) to the mid-test ($M(SD)_{control} = 5.43(2.34)$, $M(SD)_{experimental} = 5.61(1.85)$, $p < .01$). In addition, a significant improvement was also found from the pre-test ($M(SD)_{control} = 3.60(2.33)$, $M(SD)_{experimental} = 3.61(1.77)$) to the delayed test ($M(SD)_{control} = 5.30(2.59)$, $M(SD)_{experimental} = 6.75(2.24)$, $p < .01$). Nevertheless, the students did not enhance significantly from the mid-test ($M(SD)_{control} = 5.43(2.34)$, $M(SD)_{experimental} = 5.61(1.85)$) to the delayed test, ($M(SD)_{control} = 5.30(2.59)$, $M(SD)_{experimental} = 6.75(2.24)$, $p = .07$).

Table 1 Means and standard deviations for learning outcomes changes over time

	Pre-test		Mid-test		Delayed-test	
Condition	Mean	SD	Mean	SD	Mean	SD
Control(n=30)	3.60	2.33	5.43	2.34	5.30	2.59
Experimental(n=28)*	3.61	1.77	5.61	1.85	6.75	2.24
Total(n=58)	3.60	2.06	5.52	2.13	6.00	2.51

Maximum scores on each test is 10. A high score means a better learning outcome.

* Two students were missing in the experimental condition

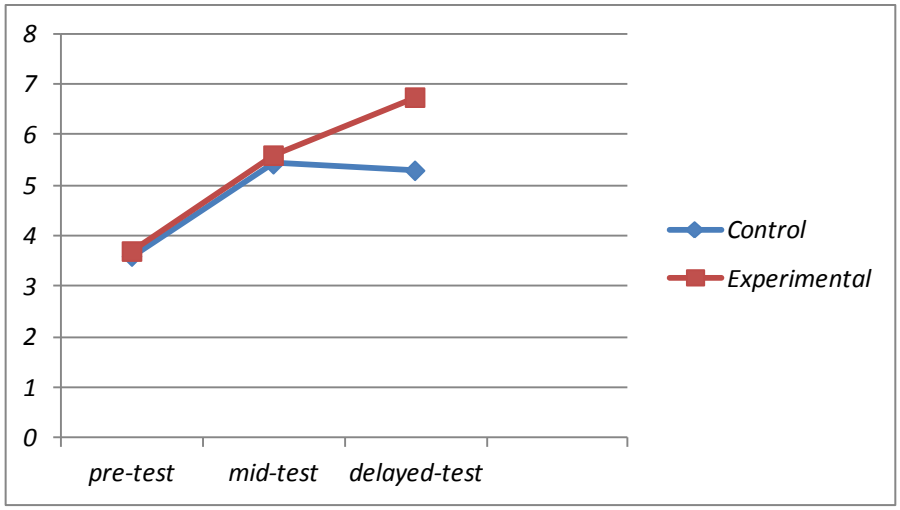

Figure 11 The Variation Trends of Students' Learning Outcomes During the Experiment

Does video affect learning outcomes?

According to repeated measures ANOVAs, there was no difference between the control videos and the experimental videos ($p = .29$). It was indicated that, the students benefited both from the control videos and the experimental videos in terms of learning outcomes.

Does time + video affect learning outcomes?

According to repeated measures ANOVAs, there was a significant enhancement when considering time and video together, $F(2,112) = 4.84$, $p = .01$. It was indicated that, learning outcomes of the students in different groups varied significantly different from pre-test to the delayed test. After referring to the mean scores, a hypothesis was formulated : there was a significant enhancement in the experimental group in the delayed test. In order to prove the hypothesis, an independent sample t-test was conducted. The results demonstrated that, in the delayed-test, the students in the experimental groups performed significantly better than that in the control groups, which meant the motivational features do make a difference. Specifically, $M(SD)_{control} = 5.30(2.59)$, $M(SD)_{experimental} = 6.75(2.24)$, $t(56) = -2.28$, $p = .03$.

In conclusion, the first hypothesis is proved to be true. The DBT videos can enhance the learning outcomes of all the students. Our second hypothesis was rejected. There was no significant difference between the learning outcomes of students from these two groups, which meant the students benefited both from the control videos and the experimental videos.

Noticeably, the students in the experimental group performed significantly better than that in the control group in the delayed test.

5.2 Attitudes

Table 2 illustrates students' attitudes on self efficacy, relevance, satisfaction, usefulness and ease of use of the videos both control groups and experimental group. In order to test whether the attitude is significantly improved, the t-tests are conducted.

Table 2 Students' attitudes towards the videos

	Usefulness		Ease of use		Self-efficacy		Relevance		Satisfaction	
Condition	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Control(n=30)	5.56	.62	5.46	.91	5.23	1.22	5.41	.89	5.11	1.06
Experimental(n=30)	5.29	1.24	5.27	1.17	5.33	1.48	5.13	1.32	5.08	1.47
Total(n=60)	5.42	0.98	5.36	1.04	5.28	1.35	5.27	1.12	5.09	1.27

Mean scores on a 7 point scale from "completely disagree"(1) to "completely agree"(7).

H2: Compared with the DBT videos, motivational features in the DBT videos would significantly improve the students' self-efficacy.

The results of an independent sample t-test elucidate that, there was no significant difference between the self-efficacy of students in experimental group and control group. Specifically, $M(SD)_{control}$ = 5.23(1.22), $M(SD)_{experimental}$ = 5.33(1.48), t(58) = - .29, p = .78. The second hypothesis has to be rejected.

H3: Compared with the DBT videos, motivational features in the DBT videos would significantly improve the students' relevance of the video.

The results of an independent sample t-test describe that, there was no significant difference between the relevance of students in the experimental group and control group. In addition, the relevance of experimental group ($M(SD)_{experimental}$ = 5.13(1.32)) is moderately lower than that in control group ($M(SD)_{control}$ = 5.41(.89)), which is out of our expectation (t(58) = .96, p = .34). In this case, our third hypothesis also needs to be rejected.

H4: Compared with the DBT videos, motivational features in the DBT videos would significantly improve students' satisfaction.

The results of comparison of students' satisfaction also reveal no significance ($t(58) = .10$, $p = .92$). Unexpectedly, the mean score of satisfaction in the experimental group is slightly lower than that in control group, with $M(SD)_{experimental} = 5.08(1.47)$ and $M(SD)_{control} = 5.11(1.06)$ respectively. The forth hypothesis seems to be wrong.

H5: Compared with the DBT videos, motivational features in the DBT videos would be perceived as significantly more useful.

The results of comparison of students' attitude towards usefulness still reveal no significance ($t(58) = 1.08$, $p = .29$). Specifically, according to the mean scores, the students in the control group grade $M(SD)_{control} = 5.56(.62)$ to the videos while the students in the experimental group give an even slightly lower mark as $M(SD)_{experimental} = 5.29(1.24)$ to the motivational features in the videos. As a result, we have to reject our fifth hypothesis.

H6: Compared with the DBT videos, motivational features in the DBT videos would be perceived as significantly easier to use.

The sixth hypothesis is also rejected as the result of an independent sample t-test shows no significant difference between two groups ($t(58) = .72$, $p = . 48$). Specifically, $M(SD)_{control} = 5.46(.91)$ versus $M(SD)_{experimental} = 5.27(1.17)$.

In conclusion, according to the analysis above, motivational features in the DBT videos do not end up with a higher praise on self-efficacy, relevance, satisfaction, usefulness and ease of use. Hypothesis two, hypothesis three, hypothesis four, hypothesis five and hypothesis six should all be abandoned. Noticeably, since the mean scores of both control group and experimental group are above 5.00 (maximum is 7.00), it is indicated that, the students hold positive attitudes both towards the DBT videos and the DBT videos plus motivational features.

6 Discussion and conclusions

6.1 Main findings

DBT videos with and without motivational features were designed and optimized to see their validities of improving English grammar learning among Chinese college students. A total number of 60 participants divided into two groups (a control group and an experimental group) involved the experiment.

A significant improvement in terms of learning outcomes of Chinese college students watching DBT videos was found both the control group and the experimental group. Although students were allowed to withdraw the videos during the experiment if they did not follow, they were forbidden to refer to any materials when completing the mid-test and the delayed-tests. Only if they remembered and understood the content of the videos could they finish the tests. In a word, DBT videos could indeed make contributions to not only software training (Brar & van der Meij, 2017) but also language learning. Also noteworthy was the fact that, when comparing the learning outcomes between two groups, a significant improvement in terms of the delayed test was found in the experimental group, nevertheless, as for mid-tests, no significant difference was found between the two groups. It was indicated that, the role of motivational features drastically shrank the gap between the mid-tests and the delayed-tests and helped the students retain knowledge in their long-term memory. Nonetheless, it did not impact saliently on immediate output. One explanation for the high scores obtained in the delayed test in the experimental groups was uncontrolled practice (van der Meij, 2018). Possibly, the students in the experimental group practiced on a voluntary basis during the week between the mid-tests and the delayed tests. As a result, it was indicated that motivational features in DBT videos would motivate the students to initiatively continue to learn (Keller, 1990). Another reason for the significantly high scores in the delayed tests in the experimental groups was , maybe the motivational features in the DBT videos helped the students to digest and retain the knowledge better. In this case, even ten days later, the students in the experimental group could recall more knowledge than the students in the control groups. The possible explanation was, the motivational elements inside the DBT videos let the students know, the “Attributive Clause” was very relevant to them. Hence, they

were likely to pay more attention when watching the videos compared with those in the control condition.

What is more, we initially expected the students in the experimental group would praise higher on self-efficacy, relevance, satisfaction, usefulness and ease of use of the videos compared with those in the control group. Nevertheless, the actual results rejected our hypotheses. In addition, we noticed the fact that, although some participants obtained higher scores or even full scores in the tests, they did not praise significantly higher on the videos. One possible reason was, we gave up the length guidelines of the DBT model because of the specificity of language learning. In our experiment, the videos for control group lasted for approximately 40 minutes while the length of experimental videos were above 50 minutes. Nevertheless, the model suggested the length of the videos should last for 3-5 min maximum (Brar & van der Meij, 2018). Wistia (2012) also illuminated the ideas that the long videos resulted in premature quit. It was suggested that, students were more engaged and motivated with shorter videos (Guo et al., 2014). Another reason was, the "Attributive Clause" was not a new English grammar for Chinese college students. As a matter of fact, it was a compulsory grammar lesson in Chinese high schools, in this case, the college students would be more likely to get bored when they were asked to watch the videos lasting for nearly 45 minutes to learn the knowledge they already knew.

However, we had to articulate that, although the students in the experimental groups did not hold significantly positive attitude towards the videos, mean values from both conditions were above 5.00 (maximum is 7.00). As a matter of fact, the students held positive attitudes towards both the DBT videos and the DBT videos plus motivational features. It was indicated that, the DBT videos effects on learning outcomes and attitudes leave a little room for improvement.

Our results illuminated that, the DBT videos have the potential to be effective and useful alternatives to human instructors if designed well. It plays an important role in engaging college students regarding language learning. What is more, adding motivational features in the DBT videos enhances students' further learning. Last but not least, students held a positive attitude towards the DBT videos with and without motivational features.

6.2 Limitations and suggestions for future studies

Importance should be attached to the limitations of the present study. To begin with, the study was a somewhat controlled experiment rather than in the completely nature and general environment, which meant the participants' attention and other contextual factors were highly constrained. Participants in the experiment were told they would gain credits from the tests in that we sincerely hoped the participants could take it seriously and guaranteed the effectiveness of the experiment. Although some students in the experiments did not behave well, for example, playing mobile phones while experimenting, the overall situation was quite satisfactory. Nevertheless, in the real-world learning environment, students were more likely to be tempted and distracted by outsiders.

The second limitation was the short intervention of experiment. The present study was conducted only for roughly two weeks and the participants interacted with the videos merely once. Hence, it was still quite unclear whether the difference between the DBT videos and the motivational features + DBT videos would vary in the long-term study. The last limitation was regarding participants. All the participants in the present study were from the Physics department of the university, in this way, whether the videos would benefit the students from other faculties were unknown.

According to the limitations mentioned above, we put forward several suggestions for the future studies. Firstly, try to design the experiment in the real-world learning environment. For example, in order to test the real learning outcomes of MOOCs, Chiu & Hew (2018) conducted their experiment using the data from an American university. The whole experiment was conducted in a real environment. Specifically, the participants were asked to learn the MOOCs lessons on American poetry and a way of understanding modernism and postmodernism out of the laboratory, such as in the classroom or at home just like the normal learners. As a result, the data analysis was more convincing and reliable. Secondly, manage to design the educational systems which could be more interactive. For instance, combine the video instructions with other multi-media platforms, tools or technologies like apps, softwares, websites or even augmented reality and virtual reality. For example. In Lu's (2016) research , the video was inserted in the website to realize human-computer interaction. For example, when the video was playing, there were some practices appearing beside the videos to test students learning outcomes immediately. Although the present study also included practices,

they were contained inside the videos. As a result, whether the students completed the practices on draft paper as required were uncontrollable. It was always recommended to balance use, form and meaning of learning materials, especially use.

Thirdly, try to conduct the experiment in a long intervention rather than just a one-off study. It was suggested the duration of the experiment in terms of education should be longer enough in order to obtain a more objective result (Choi & Clark, 2006). Fourthly, try to collect both quantitative data and qualitative data to expand the scope or insight of the research. It was suggested that, qualitative data was also as important as quantitative data in education research (Lewis, 2015). The former was useful to solve "how" questions while the latter made for solving "what" questions (Merriam, 1998). For example, in the present study, it would be better if we could interview the participants and found out how they thought the videos could be improved and optimized from their perspectives. The method of mixing qualitative and quantitative data, if well explained could drastically enhance the analytic power of the studies (Sandelowski, 2000). Finally, try to broaden the range of target groups. In the future, more researches are needed to elucidate whether DBT videos were conducive to K-12 education or vulnerable learners such as old people.

6.3 Implications for practice

China has made great progress in utilizing Information Communication Technology(ICT) to aid education during the past few years (Kang & Zhao, 2006). The governments reinforce more investment to develop education technology. It was estimated that, hitherto, multi-media learning technology has been pervasive in the national wide, occupying more than 99% of the markets (Sohu Education, 2017). In addition, China possesses the largest netizen compared with other countries, accounting for 22.4% (774 million) of the world netizen (CNNIC, 2017). Online education such as Coursera or MOOCs provides the free threshold for everyone and contributes to realizing education equity. Also noteworthy is the evitable trend of "Flipped Class" in China. Although the students' comments on Flipped Class are mixed, the majority still overweigh Flipped Class compared with traditional teaching method (Lo and Hew, 2017). All the facts above lay a foundation for the propagation of online video instructions. We sincerely hope, in the future, DBT videos could make a difference in multiple education filed, accordingly, more researches are needed to explore the possibility of applying DBT videos to each area.

6.4 Conclusions

DBT videos can enable instructors to spread knowledge without the need for presence when these videos are well designed. The present study demonstrated the learning outcomes of Chinese college students could be significantly improved both with DBT videos and DBT videos plus motivational features. A significant enhancement was also found in the delayed test in the experimental group, which meant the DBT videos plus motivational features were conducive to further learning. In addition, students from both groups did not hold significantly different attitudes towards these two videos. It was indicated that, students were quite satisfied with both videos. More researches are needed to illuminate how to apply the DBT videos to each learning and training area.

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Appendix

1 Guidelines of DBT videos

1 Attention guidelines (A)

A1: Signaling : use signals such as color or salient icons to capture audience attention.
A2: Preview: give a brief introduction about goal, jargon or other important information before the demonstration video.
A3: Pace: pay attention to the speed of information in demonstration videos. A moderate pace is recommended (Van der Meij and Van der Meij, 2013).
A4: User control: provide users with a toolbar to control speed, pause and so forth. In this way, the video can better meet users' personal requirements (Schwan and Riempp, 2004).

2 Retention guidelines (R)

R1: Segmentation: divide the video into several clips to enhance multimedia learning (Schittek Janda et al., 2005).
R2 : Label: use an evident label within each clip to summarize the content of each section.
R3: Order of sequence: the simple to complex consequence is recommended, which is conducive for the audience learning (Pollock, Chandler, Sweller, 2002).
R4: Pause: inclusion of pauses allow audience to digest and chew the information present before, which yields better knowledge acquisition (Spanjers, van Gog, Wouters, & van Merrienboer, 2012).
R5: Review: give audiences an opportunity to go over the information and consolidate the existing knowledge.

3 Production (P)
P1: Practice: provide audiences with practice materials to give their chance to discover what information they have forgotten to prompt the audiences to restudy.
P2: Arrangement: it means that when audiences practice right away after training can reach maximum benefit (Helsdingen, van Gog & van Merienboer, 2011).
P3: Practice files: provide audiences with some practice files to let audience savvy what must be learned (van der Meij, Caroll, 1998).

4 Motivation (M)

M1: Anchoring the tool in the task domain: select the task from the core tasks of the user's application domain.

M2: Conversational style: use a conversational style can motivate the users to some extent.

M3: Length: 3-5min is recommended, or the long video will have an adverse impact on users' learning (Guo, Kim, & Rubin, 2014).

M4: Music: inclusion of music achieves a mood for movie trailers (Finsterwalder, Kuppelwieser,& de Villiers, 2012).

2 Tests

1) Test for pre-test (15 min)

A 翻译下列句子

1）这是昨天给我们讲课的王先生。

This is Mr. Wang who/that gave us lesson yesterday.

2) 妈妈做的蛋糕很好吃。

The cakes which/that mother made tasted nice.

3) 房顶是红色的建筑是我家。

The building whose roof is red is my house.

4) 你在找的那本词典已经卖光了。

The dictionary which/that you are looking for has been sold out.

5) 她在照顾的病人是她的父亲。

The sick man whom she is taking care of is her father.

B 填空题

1) Is this the factory _____ a lot of students visited yesterday? that/which

2) This is the school _____ Mr. Smith once taught. where/at which

3) October 1, 1949 is the day _____ we'll never forget. that/which

4) October 1, 1949 was the day _____ the People's Republic of China was founded. when /on which

5) Is this the shop _____ sells children's clothing? that/which

2) Test for mid-test (15 min)

A 翻译下列句子

1）这是我妈妈昨天给我买的包包。

This is the bag which/that my mother bought me yesterday.

2) 住在我隔壁的男人是我的英语老师。

The man who lives next to us is my English teacher.

3) 你在大街上碰到的那个女孩是玛丽。

The girl whom you saw in the street is Mary.

4）这个新款飞机的部件是塑料做的。

This is the new type of plane whose parts are made of plastics.

5）我昨天看的电影非常的无聊。

The movie that/which I saw yesterday was quite boring.

B 填空题

1) Is this the leaning tower ___ Galileo did experiment centuries ago? where/in which

2) I'll never forget the day ___ I joined the League. on which/when

3) Is this the research center _____ you visited the modern equipment last year? where/in which

4) Is this the research center _____ you visited last year? that/which

5) This is the hour _____ the place is always full of women and children. when/during which

3) Test for delayed test (15 min)

A 翻译下列句子

1) 窗户朝南的房间是我的。

The bedroom whose window faces to the south is mine.

2) 他告诉了我们很多我们没听过的故事。

He told us many stories which we had never heard about.

3) 你昨天碰到的史密斯夫人是我的朋友。

Mrs. Smith whom you met yesterday is my friend.

4) 住在楼下的男人英语说得很溜。

The man who lives downstairs speaks English quite well.

5) 你们想看的那个电影已经卖光了。

The movie that/which you want to see has been sold out.

B 填空

1) The days _____ we spent in Tokyo together will never be forgotten. that/which

2) I can still remember the place _____ my bother and I used to sit in the evening. where/at which

3) This is the reason _____ we made Mr Li headmaster of our school. why/for which

4) Is this the place _____ your class visited last week? that/which

5) Mr. Smith returned to the small town _____ he grew up in as a child. that/which

3 Questionnaire

1) Chinese version

调 查 问 卷

学号：　　姓名：

说明：①完全不同意， ② 有点不同意，③ 比较不同意，④既不同意也同意，⑤有点同意，⑥比较同意，⑦非常同意

问　题	选　项（单选）
1 这样的视频教学对学习很有帮助	① ② ③ ④ ⑤ ⑥ ⑦
2 我认为这堂课与我的英语学习有关	① ② ③ ④ ⑤ ⑥ ⑦
3 我能够记住视频的主要内容	① ② ③ ④ ⑤ ⑥ ⑦
4 学习这个视频很开心	① ② ③ ④ ⑤ ⑥ ⑦
5 我很快就跟不上视频的节奏了	① ② ③ ④ ⑤ ⑥ ⑦
6 成功完成视频里的练习对我来说很重要	① ② ③ ④ ⑤ ⑥ ⑦
7 这样的视频教学有利于学习某个语法	① ② ③ ④ ⑤ ⑥ ⑦
8 这样的视频教学到处都有	① ② ③ ④ ⑤ ⑥ ⑦
9 学习这个视频很值得	① ② ③ ④ ⑤ ⑥ ⑦
10 我可以写下这个视频的主要内容	① ② ③ ④ ⑤ ⑥ ⑦
11 这样的视频教学对英语教学很重要	① ② ③ ④ ⑤ ⑥ ⑦
12 视频让我觉得掌握好这个语法非常重要	① ② ③ ④ ⑤ ⑥ ⑦
13 我可以回忆起视频中的大部分内容	① ② ③ ④ ⑤ ⑥ ⑦
14 观看视频很愉快	① ② ③ ④ ⑤ ⑥ ⑦
15 视频教学比课堂教学轻松一些	① ② ③ ④ ⑤ ⑥ ⑦
16 我享受观看此视频	① ② ③ ④ ⑤ ⑥ ⑦
17 我可以将视频的内容与我之前所学的知识联系起来	① ② ③ ④ ⑤ ⑥ ⑦
18 提供这样的视频给我有利于我学习	① ② ③ ④ ⑤ ⑥ ⑦
19 这样的视频使用很方便	① ② ③ ④ ⑤ ⑥ ⑦
20 这个视频很无聊	① ② ③ ④ ⑤ ⑥ ⑦
21 我可以理解这个视频的主要内容	① ② ③ ④ ⑤ ⑥ ⑦
22 这样的视频可以弥补课本知识的缺陷	① ② ③ ④ ⑤ ⑥ ⑦
23 视频内容对我来说很有用	① ② ③ ④ ⑤ ⑥ ⑦
24 我对视频内容很满意	① ② ③ ④ ⑤ ⑥ ⑦
25 我对视频的长度很满意	① ② ③ ④ ⑤ ⑥ ⑦
26 我对自己刚刚完成的的测验有信心	① ② ③ ④ ⑤ ⑥ ⑦
27 视频教学是很有用的教学资源	① ② ③ ④ ⑤ ⑥ ⑦
28 这个视频跟我无关，因为我知道大部分的内容	① ② ③ ④ ⑤ ⑥ ⑦
29 我可以很清楚记得视频的主要内容	① ② ③ ④ ⑤ ⑥ ⑦
30 我的注意力可以集中在视频内容上	① ② ③ ④ ⑤ ⑥ ⑦

2) English version

Name: ……

	completely disagree						*completely agree*
1. Recorded lectures like these are useful for the study	*1*	*2*	*3*	*4*	*5*	*6*	*7*
2. I think the lecture is related to my study.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
3. I have a clear memory of the main message of the recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
4. It was a gratifying experience to view the video	*1*	*2*	*3*	*4*	*5*	*6*	*7*
5. I quickly lose track with a recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
6. Completing the exercises successfully was important to me	*1*	*2*	*3*	*4*	*5*	*6*	*7*
7. A recorded lecture facilitates studying a topic	*1*	*2*	*3*	*4*	*5*	*6*	*7*
8. This type of lecture is handy for students	*1*	*2*	*3*	*4*	*5*	*6*	*7*
9. Viewing the recorded lecture was a valuable experience	*1*	*2*	*3*	*4*	*5*	*6*	*7*
10. I can write a good summary of the recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
	completely disagree						*completely agree*
11. Recorded lectures like this are important in education	*1*	*2*	*3*	*4*	*5*	*6*	*7*
12. The content and style of video convey the impression that being able to master it is worthwhile.	*1*	*2*	*3*	*4*	*5*	*6*	*7*
13. I can recall most of the details in the recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
14. The recorded lecture was a pleasure to	*1*	*2*	*3*	*4*	*5*	*6*	*7*

behold							
15. Recorded lectures require less effort to follow than real lectures	*1*	*2*	*3*	*4*	*5*	*6*	*7*
16. I enjoyed viewing the video	*1*	*2*	*3*	*4*	*5*	*6*	*7*
17. I could relate the content of this video to things I have learned about before	*1*	*2*	*3*	*4*	*5*	*6*	*7*
18. Students benefit from having recorded lectures available	*1*	*2*	*3*	*4*	*5*	*6*	*7*
19. Recorded lectures are easy to use	*1*	*2*	*3*	*4*	*5*	*6*	*7*
20. This video was boring	*1*	*2*	*3*	*4*	*5*	*6*	*7*
	completely disagree						*completely agree*
21. I understood the main idea(s) of the recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
22. Recorded lectures nicely complement study books	*1*	*2*	*3*	*4*	*5*	*6*	*7*
23. The content of this video will be useful to me	*1*	*2*	*3*	*4*	*5*	*6*	*7*
24. I was content with what the video had to offer me	*1*	*2*	*3*	*4*	*5*	*6*	*7*
25. The length of the video was perfect for me	*1*	*2*	*3*	*4*	*5*	*6*	*7*
26. I am confident that I will do well on a knowledge test on the recorded lecture	*1*	*2*	*3*	*4*	*5*	*6*	*7*
27. Recorded lectures are a useful resource	*1*	*2*	*3*	*4*	*5*	*6*	*7*
28. This video was not relevant to me, because I already knew most of the content	*1*	*2*	*3*	*4*	*5*	*6*	*7*
29. I can remember the content of the recorded lecture quite well	*1*	*2*	*3*	*4*	*5*	*6*	*7*
30. It was easy for me to stay concentrated on the video	*1*	*2*	*3*	*4*	*5*	*6*	*7*