

To What Extent does the Length of Online YouTube English Learning Videos Influence Chinese English Learning Students' Studying Efficiency?

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Abstract: In recent years, with the development of online video technology, more and more people learn languages through video sharing websites. As the world's largest video website, YouTube platform gathers a large group of learners and a huge amount of learning resources. Many users upload English teaching videos on YouTube, and these videos have gained a lot of attention. This study investigates the relationship between length of online YouTube English learning videos and learning effectiveness of English learners.

Keywords: YouTube; English Learning Videos; Chinese Students.

1. Introduction

YouTube, a video platform including information from all over the world, is the most popular social media in the market with over 2 billion users worldwide (Singh & Blase, 2020). In recent years, YouTube has become the third-most visited website with its high growth rate (Orús et al., 2016). Because of YouTube's high popularity, this video platform attracts a variety of audiences, ranging from teenagers seeking entertainment to experts finding professional information. Due to the dramatic increase in the total YouTube population, watching online YouTube videos has become a famous trend, especially among young groups (Orús et al., 2016). With the large audience base and rapid popular trend, more and more students choose YouTube learning videos as a way to learn by teaching, especially for English learning (Shoufan & Mohamed, 2022). Following this trend, English educators and video makers continue recording knowledge in different styles and posting videos on YouTube, which receive a high click rate. Thereby, several studies have investigated the effectiveness and efficiency of YouTube educational videos with different lengths. However, the results of these researches are based on the experiments of students' own feelings and viewpoints, instead of testing students' learning behaviors to measure their actual efficiency. From educational aspects, the result of this paper is valuable to determine what is the best video length to improve studying efficiency, since the audience of these YouTube educational videos are English as a Foreign Language students (EFLs) (Putri, 2022).

Consequently, researching and finding the proper video length for online English learning videos are of great importance. Thus, the purpose of the research is to investigate the extent to which shorter online English educational video lengths on YouTube can improve EFL students' studying efficiency if they are found to be effective and potential major factors influencing their studying efficiency. As a result, according to the investigation, students are able to change their watching behavior of English educational videos and video makers can adjust their video length to a proper time interval for students' efficiency improvement.

2. Literature Review

With a dramatic increase in the number of people, watching online videos has been a popular trend in youth groups (Orús et al., 2016). As a result, more and more YouTube videos in different kinds of fields are being watched, especially in the education area. YouTube works as an online video tool to present various information that can be used for learning (Wahyuni, 2021). Among other different platforms,

YouTube is now appointed as the most used educational learning media on the Internet (Widiantari & Dewi, 2023). Thus, the use of YouTube in class recently has become a growing case in higher education. By watching videos presented with attractive and clear images and visuals, students are able to absorb the information much more easily. Compared to those students in traditional education in the classroom, online learning videos are able to encourage students' motivation and learning outcomes. Also, after watching the YouTube learning videos, students are able to gain a sense of achievement and satisfaction (Orús et al., 2016). As a result, YouTube provides an effective platform for the development of learner-generated activities.

Under this circumstance, in which YouTube educational videos have risen to an unprecedented height and received social expectations, the effectiveness should be taken into evaluation and consideration. There have already been some research investigating the effectiveness of YouTube video learning. However, these investigations are not from a comprehensive perspective, since some influential factors have not been researched before. To begin with, YouTube online learning videos allow independent students to gain knowledge without waiting for teachers to have traditional classes. Therefore, YouTube as an alternative platform for education is playing a significant role in helping students' online learning (Widiantari & Dewi, 2023). Focusing on different aspects and characteristics Wahyuni (2021) concludes that the use of YouTube videos as a medium will improve students' speaking skills in English education. YouTube videos are conducive to improving students' speaking skills through their mastery of pronunciation, grammar, vocabulary, fluency, and comprehension of the utterances in the target language. With well-arranged audio

and visual compositions that appeal to the students' interests, online learning videos can attract students' attention and interest to engage in learning (Purwanti et al., 2022). In addition, YouTube videos can also improve students' English listening skills.

According to the data from Ma'soem University (Pratama et al., 2020), students find it delightful to use YouTube videos, which help them enhance their understanding of the learning material and develop the ability to express their own opinions. With the detailed content and proper pace of YouTube videos created by native speakers, students are able to reach the culture of the language under study through the original material presented (Pratama et al., 2020). Since YouTube videos make online learning more enjoyable, motivating, creative, and interesting, students will be excited to complete tasks when YouTube is applied to their listening subjects and certainly gain knowledge of listening skills (Ayu, 2016). Moreover, not only for independent self-learning and improving students' own abilities, YouTube videos are also working effectively as complementary materials in classrooms. They can improve students' academic performance and upgrade their educational level, which presents a substantial influence on students' English understanding. By dealing with students' difficulties and barriers to English comprehension, YouTube videos are more successful in promoting English learning than only textbook-based courses (Almurashi, 2016).

In addition to the positive impact on students caused by YouTube video learning, video length also plays an important role in students' academic achievement. During the outbreak of COVID-19, online learning videos and courses became a compulsory requirement (Wahid et al., 2021). Thus, teachers and students were completely in a remote online learning and teaching environment. At this time, the characteristics of videos themselves are of great importance. Since shorter videos contain a variety of content, for instance, American cultural background, famous speeches, and vocabulary studying, these videos can enrich students' English knowledge and their studying interests (Yu & Gao, 2022). Furthermore, according to the research data from Zhu et al. (2022), compared to longer videos, shorter videos significantly improve students' studying engagement by 24.7% and their exam scores by 7.4%, which can be considered as less cognitive load. Since students engage and focus more on shorter online learning videos, they will have more positive perceptions of video learning and have a higher possibility for long-term learning (Slemmons et al., 2018). Shorter videos mainly focus on specific topics in a short time span, which will make it easier to attract students' attention and arouse their interest.

Additionally, through dynamic and interesting presentations, short videos are effective in extending students' attention spans by providing concise and entertaining content (Yu & Gao, 2022). In conjunction with that, students perceived that they retained more information after watching shorter videos. With the cognitive defect of general knowledge for young students, the cognitive loads will be elevated when receiving and processing new information. By watching shorter videos, there is a greater possibility for students to comprehend and process knowledge with a small amount of information in segment topics (Slemmons et al., 2018). If the content of longer videos is not appropriate for target students to absorb, for example, uninteresting and redundant, they may have a negative impact on students, who

will be distracted from the video (Yu & Gao, 2022).

Consequently, the research result conveys that students are not mature enough to have the ability to organize complex content and digest to compress the information in a reasonable way (Slemmons et al., 2018). However, Hamid and Samad (2015) note that viewers tend to show stable behavior toward long-term videos, while their interactions through short-run videos appeal to be more random. This studying behavior is related to the video utility content. Longer videos present a more complete learning topic, while shorter videos mostly contain separate knowledge which are fragmented from the classroom context (Hamid & Samad, 2015). Thus, longer videos are also conducive to students' learning behavior in some aspects.

Although previous researchers have already studied the subjective opinions of the students, they didn't pay close attention to the objective effectiveness of online YouTube video learning. These studies mainly focused on and collected data from students' perspectives instead of measuring learning efficiency by testing afterward to determine the actual effectiveness.

Since most Chinese EFL students have limited learning sources nowadays, YouTube educational videos with high effectiveness and efficiency become a popular way to help them make progress and achievements. As a result, promoting the production of educational videos with proper time length and evaluating the efficiency difference between videos of different lengths are indispensable.

Consequently, the research question emerges: To what extent does the length of online YouTube English learning videos influence Chinese EFL students' studying efficiency? This research aims to collect data from Chinese EFL students and measure their watching behavior by testing them after watching videos with different time lengths. Based on previous research findings, this paper hypothesizes that shorter videos will lead to higher studying effectiveness and efficiency than longer videos. Thereby, this research will inform Chinese EFL students' what length of video is most effective, which is of great significance for them to make the decision of choosing videos to watch. Hopefully, the result of this research can make a contribution to the development of future pedagogical strategies to maximize learning outcomes and academic performance.

3. Methodology

The objective of this research is to investigate Chinese EFL students' studying efficiency after watching YouTube English educational videos of different lengths and find out the proper time interval to maximize studying efficiency. To test the hypothesis, this study adopted a casual study, which controlled all other variables except online video length. Previously, researchers conducted their research by collecting students' opinions and analyzing these subjective data. The majority of them concluded and verified their hypothesis only based on students' perspectives, instead of making an experiment (Hamid & Samad, 2015). Because of the subjectivity and uncertainty of data gathered from students' opinions, this research implemented a more objective experiment to test students' actual learning behavior and feedback with both quantitative and qualitative data to achieve the research objectives.

This research randomly selected sixty Chinese EFL students from the 10th grade of a Chinese public high school in Wuxi, China. By choosing 10th-grade students as the

subjects, this study could control the grade level of its participants, since grade level is an important factor that will influence students' attention span and understanding of educational videos (Slemmons et al., 2018). Also, because 10th-grade students are new to high school learning and haven't learned advanced English grammar before, choosing them as subjects can make sure students have not learned previous knowledge about the content of testing videos before. Moreover, a public high school was selected as an example because public high schools have many more students, than private schools in China.

To improve the replicability and accuracy of the research, these students' subjects were divided into two groups for comparison: one group was required to watch shorter YouTube English learning videos of 8 minutes and the other group was required to watch longer YouTube English learning videos of 18 minutes. The experiment was conducted at the same time on the same day through TenCent meeting, an online meeting platform, which simulated the actual condition of watching online videos.

Since the purpose of this research is to find Chinese EFL students' studying efficiency on videos of different lengths, the only independent variable is YouTube English educational video length. Other possible influential factors had to remain constant in the research. Students' age will affect their learning behaviors and abilities inevitably, which will be a possible variable factor for subjects (Clark et al., 2015).

Thus, to control all factors of subjects, the participants selected in this experiment are all 10th-grade students between 15 and 16 years old. By controlling these factors, this experiment reduces the error rate and becomes more replicable and easier for researchers to evaluate the results and verify the hypothesis. Moreover, since the studying efficiency of students is changing at different times throughout the whole day, it is significant to experiment with both two groups of subject students at the same time, in the evening at 7 PM when all of the participants have free time. In addition, choosing TenCent meeting as a media to show the videos allowed the research to run simultaneously and let every subject watch video assigned on their own devices which is similar to the condition they normally in when watching YouTube educational videos.

The selected test videos were the most viewed video within their time interval. Since people tend to watch videos with higher view counts according to YouTube recommendation algorithms, these two videos simulated the decisions students would make in real situations (Schmitt et al., 2018). The shorter video of 5.5 minutes has received 390 thousand views and the longer video of 18 minutes has received 1.9 million views. Both the shorter and longer videos covered the same knowledge of noun clauses' concepts and used examples. Since advanced English grammar is a difficult part for Chinese EFL students to learn, the knowledge of noun clauses covered in these videos can be modified into problems to test and reflect students' learning efficiency. However, there are still some limitations. Since the authors of the two videos are not the same person, their teaching styles and methods are not the same. The author in the longer video preferred to write on the whiteboard using communication skills and facial expressions to attract the target audience's attention, while the author in the shorter video used PowerPoint to clearly impart knowledge to students. This teaching difference may have a possible influence on students' attention span and studying efficiency.

The experiment test contained 5 multiple-choice questions and 5 multiple-true-false questions, which all focused on the content of the videos (Appendix B). Multiple-choice questions are efficient and objective to test a broad size of samples (Brady, 2005). Among the four choices provided for each multiple-choice question, there is only one correct answer. By assigning multiple choice questions as the test, students can apply the knowledge they learn on these problems without the error of expression, which ensures that these problems can effectively test students' studying efficiency. For the answers to all 5 multiple-choice questions, students need to choose the correct word or phrase which can be put into the blank in the questions. Since good multiple-choice questions should be short and understandable, a trial test of 5 volunteers was conducted before the actual test to ensure all the questions could be comprehended by all samples (Brady, 2005). However, multiple-choice questions provide limited insight into students' comprehension of every answer option.

Multiple-true-false questions complement this shortcoming of multiple-choice questions because they provide a more detailed way to test different degrees of students' understanding (Brassil & Couch, 2019). In the 5 multiple-true-false questions, students were required to determine whether the following sentences in questions are noun clauses. For the answers, multiple-choice questions required participants to choose the correct answer from four phrases and multiple-true-false questions asked them to determine whether a sentence is a nominal clause.

After collecting objective quantitative data in the test, an after-test survey was assigned to participants, aiming to gather subjective qualitative data on their feelings toward two videos (Appendix C, D). In previous research, Yu and Gao (2022) employed survey questions to measure participants' subjective feelings after watching educational videos. According to their experiment, this research adopted the way and style of their survey questions. Multiple-choice questions and free-response questions were prepared to get feedback on participants' feelings. However, early studies did not focus on how much video length affects learning efficiency based on students' opinions. In this research, a multiple-choice question was applied for participants to determine and rank the importance of different video factors to improve their studying efficiency. To compare participants' different feelings toward different video lengths, two versions of the survey were customized for longer and shorter groups. Thus, this after-test survey collected subjective and qualitative data from participants through both multiple-choice questions and free-response questions. Moreover, this study conducted a content analysis to gather participants' detailed experiences, feelings, and perceptions by words or phrases, categorizing participants' opinions into identified contents (Appendix C, D).

For the experiment, an informed consent form was first distributed to participants to ensure that they volunteered for the research and that all data collected in the experiment would only be used in the research (Appendix A). After participating in the experiment, personal information and answers are kept confidential. All informed consent forms were collected with test paper and the survey after the experiment from 60 participants. During the experiment, participants were divided into two groups: one was a shorter video group, and the other was a longer video group. Two groups of participants were separated into two online

meetings and began the experiment at the same time. After watching the videos provided for them, participants had 15 minutes to finish the test and 10 minutes to complete the survey. Neither group was allowed to check test and survey questions before finishing watching the videos.

After test score calculation and data analysis, the difference in quantitative and qualitative data represents the difference in studying efficiency because of the different video lengths of YouTube online English-learning videos. Microsoft Excel was utilized to analyze quantitative data and conduct an unpaired t-test to verify the statistical significance. Combining quantitative and qualitative data, the result of this study will lead to a more reliable research analysis of video length influence on English studying efficiency.

4. Results

To compare students' different studying efficiency after watching YouTube online English educational videos, a test and a survey were conducted among 60 10th-grade students separated into two groups, the longer video and shorter video groups both have 30 participants.

4.1. Test

Both two groups of participants received the same test paper. All participants' test papers were collected and scored after the experiment. The test accuracy of both groups of participants is presented below in the form of test scores (Figure 1).

For the longer video groups, the highest bar is 4 questions correct, which indicates that most participants scored around this level. There are only 5 participants with a high accuracy level of 8 to 10 questions correct, while 20 participants answered with a low accuracy level of 4 to 6 questions correct. For the shorter video groups, the highest bar is at 7 questions correct. There are 9 participants with a high accuracy level of 8 to 9 questions correct, while 13 participants answered with a low accuracy level of 4 to 6 questions correct. This shows that test scores in the shorter video group are generally higher than in the longer video group (Figure 1).

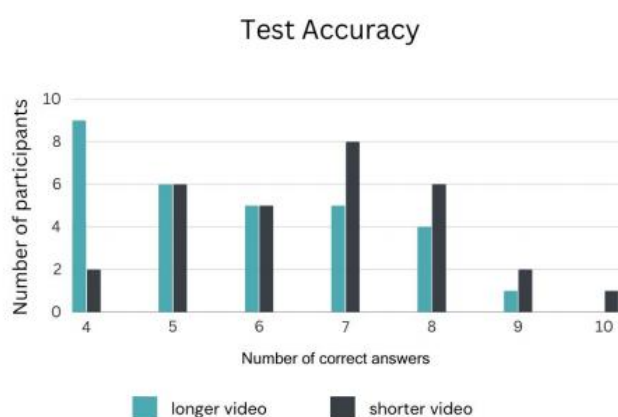


Figure 1. The test accuracy of both longer and shorter video groups

The test score average accuracy of shorter videos is 0.14 higher in multiple-choice questions and 0.8 higher in multiple-true-false questions than longer videos. This indicates that longer and shorter video groups have similar accuracy in multiple-choice questions, but students watching shorter videos solved multiple-true-false questions much better (Figure 2).

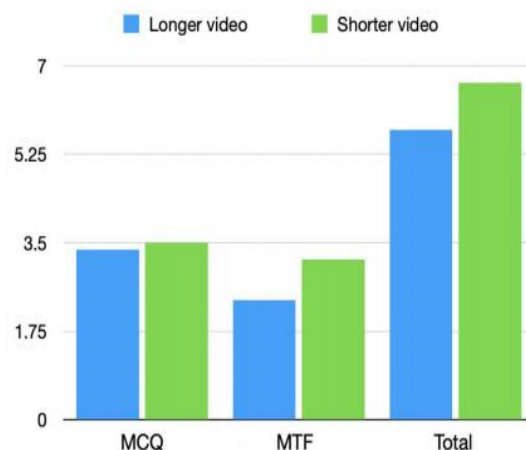


Figure 2. Test score average accuracy of longer and shorter videos

The test score average accuracy of shorter videos is 0.14 higher in multiple-choice questions and 0.8 higher in multiple-true-false questions than longer videos. This indicates that longer and shorter video groups have similar accuracy in multiple-choice questions, but students watching shorter videos solved multiple-true-false questions much better.

An unpaired t-test was conducted to determine whether the data difference is statistically significant and supports the hypothesis.

$$T = \frac{\bar{x}_1 - \bar{x}_2}{SE(\bar{x}_1 - \bar{x}_2)}$$

For the shorter video group, the average total score is 6.67 out of 10 and the standard deviation is 1.52 after t-test calculation ($M=6.67$, $SD=1.52$). For the longer video group, the average total score is 5.73 out of 10 and the standard deviation is 1.55 ($M=5.73$, $SD=1.55$). Because the p-value of the two-tailed t-test is 0.021, which is smaller than the conventional criteria, this difference is considered to be statistically significant.

4.2. Survey

For the shorter video group, among 30 participants, 74% expressed their agreement on the improvement of studying efficiency by watching shorter videos, while 9% showed disagreement of efficiency improvement totally and 17% held neutral ideas toward shorter videos. Compared to the shorter video group, 30% of participants in the longer video group appeared to agree on the improvement, while 33% claimed that they disagreed longer videos are efficient and 37% had a neutral attitude toward longer videos. From this subjective point of view from participants, this survey result exhibits that the majority of participants have an agreement and positive feelings that shorter videos are more efficient in teaching Chinese EFL students, while more participants hold neutral ideas toward longer videos (Figure 3).

Moreover, the survey asked participants to identify factors they think could contribute to the improvement of English-studying efficiency of YouTube online English-learning videos. Among the five identified factors, topic relevance (86.5%), video length (68.7%), and instructor credibility (50.6%) were the three most valued factors by participants. Thus, as the second major factor, this study focusing on video

length has an important influence on the educational field (Figure 4).

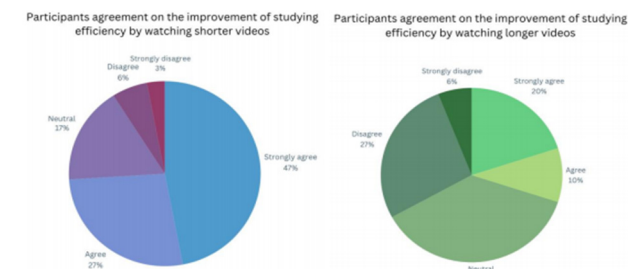


Figure 3. Participants’ agreements on the improvement of English-studying studying efficiency

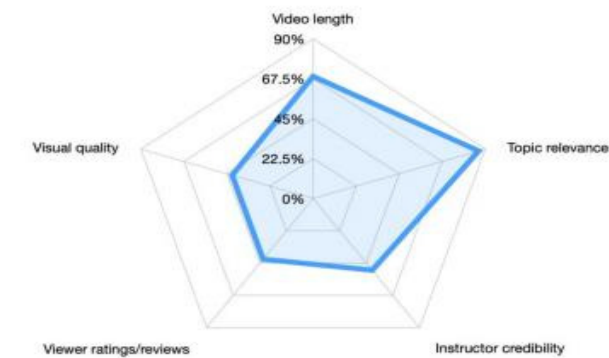


Figure 4. Participants-perceived factors contributing to the improvement of English-studying efficiency

In the last part of the survey, participants were asked to give their feelings and opinions. A content analysis was applied to analyze their descriptions and four content categories were identified in Table 1 (shorter video) and Table 2 (longer video): attention span, comprehension, engagement level, and perceived learning impact. Compared to these two tables, participants in shorter video groups have more positive feedback than those in longer groups, which indicates that shorter videos improve students' comprehension and engagement levels with limited attention span and positively influence participants' learning impact. Also, from the participants’ results, attention span is the most influential factor, especially in longer groups (Table 1, 2).

Table 1. Participants identified feelings about shorter videos in different categories

Category (Shorter video)	Participants’ descriptions
Attention span (53.7%)	“Fully engaged and focused on the video content.” “The video ends before I am distracted.” “Concentrated and attentive to the video without distractions.”
Comprehension (24.3%)	“Having a clear and thorough understanding of the main points conveyed in the video.” “No significant gaps in comprehension.” “Excellent comprehension of the video content, with a high level of accuracy and insight.”
Engagement level (13.2%)	“Actively engage with the video till the end.” “Fully involved and attentive, showing a high level of interest in the video.” “Concentrated and observed knowledge from the video.”
Perceived Learning Impact (8.8%)	“Convenient and quick” “Study in small chunks of time, because of the short time interval.”

Table 2. Participants identified feelings about longer videos in different categories

Category (Longer video)	Participants’ descriptions
Attention span (67.4%)	“Attention gradually decreases over time.” “I have the tendency to lose interest in this video because it is too long.” “I struggle to maintain attention, feeling the urge to do something else.”
Comprehension (14.6%)	“Some key points or details not fully comprehended.” “Still some room for improvement.” “Have a superficial understanding of the video content.”
Engagement level (12.7%)	“Hard to engage through the whole video.” “Feel bored in the middle of the video and can not concentrate on the rest of the video.” “Less engaged after watching several minutes.”
Perceived Learning Impact (5.3%)	“You need to take notes, or you’ll forget what you said before.” “A little bit waste of time”

5. Discussion

The purpose of the research is to investigate to what extent Chinese EFL students' studying efficiency was influenced after watching YouTube English educational videos of different lengths. According to the data collected, shorter YouTube English learning videos (5 to 10 minutes) are confirmed to have a better influence on students' studying efficiency than longer videos (over 15 minutes) and video length works as the second largest decision considered by Chinese EFL students before watching.

Before the study, the hypothesis predicted that shorter YouTube English educational videos would be more efficient in teaching Chinese EFL students, which is further supported by the data analysis results. The results illustrate that the test accuracy of students in shorter video groups is higher than those in the longer video groups especially in multiple-true-false questions, which indicates that shorter YouTube English educational videos are more effective in teaching English-related content and improving Chinese EFL students’ learning efficiency. From Figure 2, the shorter video groups’ average total score is 0.94 higher, and the average multiple-true-false question score is 0.8 higher than the longer video groups’. An unpaired t-test which was followed to further verify the statistical significance of the test accuracy difference showed the same result: the score difference is reliable compared to the standard values and the learning behavior of shorter video groups is strongly improved than that of longer video groups, which support the hypothesis this study previously predicted (Appendix E). The efficiency improvement of shorter YouTube English educational videos to Chinese EFL students is consistent with previous research findings on the impact of YouTube video length on learning and shorter educational videos influence (Yu & Gao, 2022; Hamid & Samad, 2015; Zhu et al., 2022).

Moreover, the detailed scores of multiple-choice questions and multiple-true-false questions part were analyzed to determine different comprehensions between shorter and longer YouTube learning videos. In multiple-choice questions, the shorter video group's test accuracy is 0.14 higher, which is not so significant, while in multiple-true-false questions, the shorter video group's test accuracy is 0.8 higher (Figure 2). This indicates that Chinese EFL students have better

English comprehension after watching shorter YouTube English learning videos since multiple-choice questions provide detailed understanding degrees of Chinese EFL students. Surprisingly, even though the longer video (1.9 million views) is much more popular than the shorter video (390 thousand views), the shorter YouTube English learning video still reflected higher studying efficiency of Chinese EFL students. This result provides a new insight into the relationship that video popularity has little influence on students' watching behaviors.

After evaluating objective quantitative data in the test, this study also conducted a survey to assess Chinese EFL students' subjective feelings and opinions toward YouTube English learning videos of different lengths. According to Figure 3, 74% of the participants agree with the efficiency improvement of the shorter video, which conveys that the majority of Chinese EFL students have positive feelings after watching shorter YouTube English learning videos. In contrast, in the longer video group, only 30% of the participants appeared to agree, while 37% of them held a neutral attitude, which indicates that Chinese EFL students' subjective feelings after watching shorter YouTube learning videos are better than longer ones (Figure 3).

Additionally, among identified factors influencing Chinese EFL students' learning efficiency, topic relevance (86.5%), video length (68.7%), and instructor credibility (50.6%) were the three most valued factors by participants (Figure 4). This supports the predicted hypothesis that YouTube English learning video length is one of the top consideration factors for Chinese EFL students, which is suggested by previous research on different YouTube video factors on students (Hamid & Samad, 2015; Orús et al., 2016; Slemmons et al., 2018). Based on the research, since video length serves as the second major factor, this research is significantly influential in the educational field.

In addition, in the last part of the survey, all participants were asked to give feedback on their feelings and opinions of different-length YouTube English learning videos using detailed word descriptions. A content analysis was conducted to analyze the data from categorized aspects in Table 1 (shorter video) and Table 2 (longer video): attention span, comprehension, engagement level, and perceived learning impact. Comparing these two tables, participants obviously show a positive attitude toward shorter English learning videos than longer videos from their descriptions.

Throughout the description, most of the participants use attention span level to describe their feelings after watching, which can be considered as the main factor to influence students' subjective comprehension of the knowledge in video content. The finding of Chinese EFL students' major understanding factor is consistent with previous research studies on students' perception of attention span through different video watching and subjective factors influencing students' engagement (Slemmons et al., 2018; Yu & Gao, 2022).

Therefore, this research indicates that Chinese EFL students can change their watching behavior and make use of the YouTube video platform to aid students' English learning. For educators and teachers, this research is helpful for them to choose educational videos of proper time intervals for students to watch to improve their studying efficiency and attention span. Also, online educational video makers will adjust their videos to suitable lengths to improve their video quality and attract more students and teachers to watch to

improve their video click rate.

6. Conclusion

In conclusion, this research successfully achieved its goal of investigating the improvement of efficiency in longer and shorter YouTube English learning videos and finding the more influential one for Chinese EFL students to watch. The results correspond with the hypothesis that shorter YouTube English learning videos are more effective in improving Chinese EFL students' studying efficiency than longer videos and video length is the second major factor influencing students' learning efficiency from their subjective feelings.

This study inevitably has some limitations. First, the sample size is limited in that all participants were 10th-grade students and selected from a single Chinese public high school. So, the general representativeness of the conclusion can not be universally applicable to the whole population of Chinese EFL students. Thus, in future research, more participants from all age groups in both public and private high schools should be taken into consideration. Moreover, as a general ability, English level can not be measured only through students' grade level. A pre-test should be conducted to control that all the participants' English levels are the same, which makes students' watching behavior accurately reflect the actual efficiency improvement of different videos. In addition, in this research, the popularity of the two YouTube English learning videos can not be ignored, since there is a big gap between 1.9 million views and 390 thousand views. In future studies, popularity should be controlled for different videos as a possible factor of students' studying efficiency. Lastly, since this research only focused on the instantaneous effect of YouTube online English learning videos and tests were immediately assigned to participants after finishing watching the videos, this result can not represent the long-term and overall effect and can only work as the general instruction of Chinese EFL students' short term learning efficiency. Therefore, future research should make use of longitudinal studies to evaluate the long-term efficiency of Chinese EFL students after watching online English learning videos for a long period of time. With the control of all possible existing continuous variables, the overall studying efficiency of different YouTube English learning videos can be further measured.

According to the findings and data analysis in this research, future researchers will have a comprehensive understanding of video length factors influencing students' studying efficiency. The casual study in this research can be conducted by them to investigate other potential factors affecting students' watching behavior through the way of controlling all other variables. Also, the content analysis and T-tests can be applied in data analysis to verify the statistical significance in future research.

As for English learning video producers, shorter video length preferences and potential factors from Chinese EFL students' consideration are clearly identified in this research. Therefore, they can use this information gathered to improve their videos accordingly, especially the video length. It is helpful for them to adjust their videos to a proper short length time interval and select their video content more carefully to further improve students' attention span, which will lead to a high click rate from educators and students. Apart from that, not only English-learning video makers but also producers in other educational fields can refer to this research and benefit their potential audiences. In addition, by identifying the

potential benefits of this research, educators and teachers can reconsider future pedagogical strategies, evaluate classroom teaching methods and resources, and apply shorter learning video resources to design more contact and refined teaching content, which will improve students' studying efficiency and concentration. Moreover, they can advocate and promote a series of learning pedagogy to help students better choose and use online learning videos as broader resources to learn.

Consequently, Chinese EFL students should consider changing their watching behavior to watch shorter online English learning videos based on the results of this research, making use of YouTube as an educational platform to aid their study instead of entertainment. This research works as a proper learning video chosen as standard guidance for Chinese EFL students to improve their learning satisfaction.

Hopefully, this research can serve as an adjustment for video makers, a guide for Chinese EFL students, a choosing standard for educators, and fundamental information for future potential factors in research design.

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Appendix A

Consent Form

Introduction

You are invited to take part in a research study. This form contains information that will help you decide whether to join the study. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. The purpose of this study is to research the relationship between the length of the online English learning videos and students' studying efficiency.

Study procedures

The approximate number of the subjects will be around 60 persons. Participants will be divided into two groups. One of the groups will watch shorter video, while the other group will watch the longer video. The length of the shorter video is about 5 minutes long and the length of the longer video is about 15 minutes long. These two videos are different in length but same in the content. After watching the videos, the researcher will distribute some questions about the content of the video to test the learning efficiency of you. The research may cost you about 10 to 20 minutes.

Risks

In my research, you won't face any physical risks. It is possible that you may feel mentally fatigued after the test.

Potential benefit

My research can help teachers and educators to better use online learning videos to help students consolidate knowledge. It can also allow educational video producers to adjust the length of their videos to a suitable range, so that students can learn more efficiently when watching videos.

Privacy policy

Participation is voluntary. Refusal to participate or terminating participants will not involve penalty or loss of benefits to which subject is otherwise entitled. I promise that I will not provide personal information about the participants to anyone, and that my experiments will only look at the participants' answers to the test questionnaires. Participants will leave their personal information (including names and gender) on the test questionnaire. But this information is only used to help participants remove their responses to my experiment, if they are not willing to participate after finishing the test. If you need to delete personal experimental data, you can contact me via my email zqycherry0404@163.com.

Consent

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Appendix B

Test

Multiple-choice questions

1. -What impresses you most when you visit the Acropolis?
-__it is that has brought the grand palace into today's terrible scene.
A. Where B. What C. How D. When
2. Some people believe__has happened before or is happening now will repeat itself in the future.
A. whatever B. whenever C. wherever D. no matter what
3. - __you don't like him is none of my business.
A. What B. Who C. That D. Whether
4. The question is __.
A. will she leave or not? B. whether she will leave or not.
C. do she leave or not? D. if she will leave or not.
5. Do you know__ ?
A. where does she live B. where she lives C. who is she D. who she does

Multiple-true-false questions

Determine whether the following sentence is a noun clause (T/F):

1. If he will come to the party is unknown.
2. Where she is going, it is a mystery.
3. I could not understand that why she behaved like that.
4. Whether she will come or not, it depends on her mood.
5. What he meant was not clear.

Appendix C

After-test Survey for Shorter Videos

1. Your name: _____
2. Have you watched online English learning videos to assist your study before?
[Single Choice]
你之前有看过线上英语学习视频来帮助你学习吗?
【单选】
。 Yes 是 。 No 否
3. How often do you use online videos for educational purposes? [Single Choice] 你多久看一次线上教育视频?
【单选】
。 Daily 每天
。 Weekly 每周 。 Monthly 每月 。 Rarely 很少 。 Never 从不
4. Do you think shorter videos will improve your studying efficiency? [Single Choice] 你认为更短的视频能提高你的学习效率吗? 【单选】
。 Strongly agree 强烈同意
。 Agree 同意 。 Neutral 中立
。 Disagree 不同意
。 Strongly disagree 强烈不同意
5. Which kind of characteristics of online learning videos do you think influence students' studying efficiency most? (You can add characteristics that are not listed here)
【Multiple Choice】
你认为视频学习的哪种特点对学生的学习效率影响最大? (你可以添加此处未列出的特点) 【多选】

- 。 Video length 视频时长
- 。 Visual quality 视觉要素
- 。 Topic relevance 主题相关性
- 。 Viewer ratings/reviews 收视率/评论
- 。 Instructor credibility 讲师信誉
- 。 _____

Appendix D

After-test Survey for Longer Videos

6. Your name: _____
7. Have you watched online English learning videos to assist your study before?
[Single Choice]
你之前有看过线上英语学习视频来帮助你学习吗?
【单选】
。 Yes 是 。 No 否
8. How often do you use online videos for educational purposes? [Single Choice] 你多久看一次线上教育视频?
【单选】

- Daily 每天
- Weekly 每周 ◦ Monthly 每月 ◦ Rarely 很少 ◦ Never 从不

9. Do you think longer videos will improve your studying efficiency? **[Single Choice]** 你认为更长的视频能提高你的学习效率吗? **【单选】**

- Strongly agree 强烈同意
- Agree 同意 ◦ Neutral 中立
- Disagree 不同意
- Strongly disagree 强烈不同意

10. Which kind of characteristics of online learning videos do you think influence students’ studying efficiency most? (You can add characteristics that are not listed here) **[Multiple Choice]**

你认为视频学习的哪种特点对学生的学习效率影响最大? (你可以添加此处未列 出的特点) **【多选】**

- Video length 视频时长
- Visual quality 视觉要素
- Topic relevance 主题相关性

- Viewer ratings/reviews 收视率/评论
- Instructor credibility 讲师信誉
- _____

Appendix E

Unpaired T-test Results

P value and statistical significance:
 The two-tailed P value equals 0.0219
 By conventional criteria, this difference is considered to be statistically significant.

Confidence interval:
 The mean of longer minus shorter equals -0.93
 95% confidence interval of this difference: From -1.73 to -0.14

Intermediate values used in calculations:
 t = 2.3560 df= 58
 standard error of difference = 0.396

Table 3. Test results of short video and long video		
Group	Shorter video	Longer video
Mean	6.67	5.73
SD	1.52	1.55
SEM	0.283	0.277
N	30	30