AN EXPERIMENTAL STUDY OF SUBTITLED ONLINE VIDEO SUPPORTING THAI STUDENTS LEARNING ENGLISH IT CONTENT

by **Kewalin Angkananon[1], Mike Wald[2]**

[1]Business Computer, Suratthani Rajabhat University, Suratthani, Thailand

[2]ECS, University of Southampton, Southampton, United Kingdom

[1]k.angkananon@gmail.com, [2]mw@ecs.soton.ac.uk

Abstract

This research study investigated whether the innovation of online video media spoken in both Thai and English with appropriate subtitles improved English skills for new students in Business Computing at Suratthani Rajabhat University. Ninety two students were split equally between an experimental group using video online media for learning and a control group learning the same content face-to-face in the classroom. Evaluation was conducted through achievement and satisfaction tests. Trials of the instructional media by 33 students with a range of English skills helped to improve it. At the end of the learning period all students using the video online media passed the achievement test standard but only 54% of the control group passed. There was no significant difference between the pre-test scores of the two groups. The post-test scores showed that the experimental group had a significantly higher average score (23.39) than the control group (14.89) at the p level of 0.05. The achievement test results of the experimental group (listening = 3.98, reading =3.89, writing = 3.93, speaking = 3.91, discussion =3.91, presenting = 3.87) were significantly higher than the control group (listening = 2.94, reading =3.07, writing = 2.72, speaking = 1.93, discussion =2.20, presenting = 2.20) at the p level of 0.01 in every English skill. The students' satisfaction for the innovation rated out of 5 was at a high level overall (4.54), the students were satisfied with the innovation (4.67), the innovation was interesting (4.63), and the innovation was easy to understand (4.28).

Keywords: English skills; cloud computing; online learning; online video

1. Introduction

The Thailand Ministry of Education (2012) has been paying more attention to the development of English language ability among Thai youth by targeting young Thai people to communicate in English effectively as can be seen from the increase in the number of international courses in Thai intuitions from elementary level to university level in both public and private institutions. Wutwongsa (2015) reported that the International Institute for Management Development (IMD) World Competitive Yearbook 2011 found that Singapore has the highest level of English proficiency in ASEAN countries followed by Philippines and Malaysia, with Thailand below Indonesia. This is in line with the English Proficiency Index (Education First, 2018),

which has five levels: very high, high, moderate, low and very low. The results show that the proficiency of English in Thailand is very low, lower than Indonesia and Vietnam which have moderate proficiency.

All this is also in line with the TOEFL test results of the English proficiency test of graduates in ASEAN countries, which showed that Singapore and the Philippines were followed by Malaysia, Indonesia, Myanmar, Vietnam and Cambodia which all had average scores of more than 500 for English language skills. The Thai language proficiency score is lower than 500, which is the same level as Laos. This indicates that Thai graduates of the English language have problems in using English and shows the problem of using English skills is a priority.

In addition, the National Academic Testing Institute (2013) reported the results of the Ordinary National Educational Test (O-NET) where the average score on the use of English skills of final year high school students in Thailand in the academic year 2012 was 22.13. In the academic year 2013, although improving, was 25.35 which was still low. Therefore, the need for development of English language skills is vital.

A survey by the first author to improve the 2012 curriculum of Bachelor of Business Administration of Business Computer Department, Suratthani Rajabhat University found that one of the problems faced by first-time students entering the Business Computer Department was the lack of a foreign language, especially English. Moreover, the experiences of this author teaching first year students in the academic year 2015 in the Fundamentals of Computer Science and Technology Module found that 80% of students could not explain the meaning of technical terms, and the 20% of students who could pronounce the technical terms correctly did not understand the meaning.

In order to improve the English skills of these undergraduate students, the author has developed a series of instructional activities focusing on English language skills through using online video about the cloud computing topic. It aims to make learners familiar with the use of English skills in listening, speaking, reading, writing, presenting and discussing. This will give students more confidence in using English in computing to make graduates more acceptable to employers and increase English proficiency in computers and information technology in line with the policy for Thai youth to develop knowledge and ability to use English equally with other countries in the ASEAN region.

The research problem for this study was whether learning online using video and subtitles would help Thai students learn English IT content better than just learning face-to-face in the classroom. The approach adopted is original by presenting the content: first in spoken

Thai with English subtitles to help Thai students read the English words; and then presenting in spoken English with Thai subtitles to help Thai students listen to the English content; and then presenting in spoken English with English subtitles to help Thai students both listen to and read the English IT content without any supporting Thai speech or writing. The rationale for this approach was that such an English learning process from easy to difficult using video online could help university students with a low level of English skills learn English. This approach required the author to develop the online video media in a cloud computing instructional package with emphasis on English skills in listening, speaking, reading, writing, presenting, and discussion for use by new students in Business Computing at Suratthani Rajabhat University. Evaluation involved comparing the students' academic achievement scores before and after using the instructional package with the achievement scores of a control group learning the same content face-to-face in the classroom and measuring students' satisfaction level towards the video online instructional package. Further details of the research design are provided in section 3 below.

2. Literature review

No previous published research could be found adopting a similar research methodology to this study but there has been some research on the benefits of captioning and the use of video for language learning. There has been extensive research showing how subtitles can be helpful for reading and literacy development but usually with the subtitles in the same language (Zane Education, 2018).

The use of the terms 'captions' or 'subtitles' varies across countries and they are sometimes used interchangeably. However, when the written words are in the same language as the spoken words they are usually designed to assist people with hearing impairments by also describing non speech sounds whereas when in a different language to the spoken word they are usually designed to only assist non-native speakers who have no hearing impairments.

Al-Seghayer (2001) studied using graphics and multimedia in teaching a second language effectively by testing the knowledge of vocabulary meaning and reading skill. There were three forms of teaching to describe meaning: only text, text and picture, and text and video. The data was collected by interviewing and asking questions using a questionnaire with 30 participants. The results showed that text with video helped learners with their understanding about the topic more than learning from text with PowerPoint because the combination of multimedia, voice, and text helped learners to build a mental image and concentrate more than only text and picture

Shimogori, Ikeda, and Tsuboi (2010) studied how automatically generated captions help learners to communicate in English with non-native speakers. The results showed captions facilitated understanding English listening skills, and especially helped improve the ability in listening skills for half of the learners in the class to reach an intermediate level, as well as had a positive effect on abilities in other English skills.

Guo (2013) studied several million video watching sessions on the edX platform and found the time spent watching went down as the videos got longer than 6 minutes. Comscore (Lella, 2014) found that the average watching time for online content video on the top 10 video platforms was around 4 minutes. Research has suggested, therefore, that approximately 4 minutes is a good length of video to keep viewers engaged, which is why 3-4 minutes was chosen for the length of the videos in this study.

Wiseman and Odell (2014) note that the challenge that using English as the Medium of Instruction presents to lecturers is "how to present their subject clearly and concisely in another language" and that students' perceptions of lecturers' English language proficiency relate to their perceptions of general competence. If it is harder for lecturers who are non-native speakers of English to provide clear and concise teaching through live face-to-face teaching in English than through pre-prepared online captioned videos, it might be expected that students would find the use of pre-prepared online captioned videos helpful.

Yabe (2015) investigated how much more university students in the US would be willing to pay for a captioned online class rather than for a non-captioned online class and found that international students would be willing to pay more than deaf and hard-of-hearing students or native speakers. These findings suggest that students greatly value the use of captions when learning in their non-native language.

Huang, Shadiev and Hwang (2016) split sixty Taiwanese university students into two groups. One group watched English lecture recordings with English captions and the other group watched them without captions. Then both groups were tested on the content and also surveyed about their cognitive load (i.e. mental effort) used. Captions improved students' performance and reduced cognitive load and were particularly beneficial for low EFL ability students. However, Huang et al. did not provide information about the length of the lectures in this journal article.

Bal-Gezegin (2014) studied the effect of using video and PowerPoint in article writing by 28 students in France. The participants were divided into two groups. The first group watched a video clip with a French voice and subtitles. The second group listened to a teacher who read the text in French and showed four PowerPoint slides. The results found that the first

group wrote an article significantly better than the second group at p = 0.05 level because the video connects language with meaning more than the PowerPoint media.

Teaching by getting students to watch online videos outside the class time is known as 'flipped learning'. Wald (2011) showed how using captioned videos in a flipped learning classroom allowed students to go at their own pace and watch the recording as many times as they needed. Bishop (2013) surveyed research about the flipped classroom, emphasising that the key point of this form of teaching and learning is that teaching and learning activities take place both inside and outside the classroom. There was also an evaluation of the methodology in teaching and learning of each activity. The results showed that students were more satisfied while learning in a classroom than while watching a video. However, students preferred learning using activities more than just listening to a lecture. Moreover, the flipped learning classroom increased students' learning performance by 21% compared to a traditional classroom. However, this study was at an early stage and needed more research, especially on classroom activities.

3. The study

3.1. Research purpose, materials and procedure

This research study aimed at comparing the learning achievement of two groups of learners: the experimental group who used online video and the control group who were taught face-to-face in the classroom. These two groups used the same content but a different teaching approach using different types of teaching media. The experimental group accessed an online video recording of a PowerPoint presentation in the classroom while the control group had the same PowerPoint presentation offered by the teacher face-to-face in class. The online materials were captioned whereas a transcript was provided for the Face-to-Face teaching group. The author, who is a native Thai speaker who also speaks British English fluently was the teacher for both the online recordings and face-to-face teaching in both Thai and English. The English was checked by the second author who is a native UK English speaker. The videos were produced using PowerPoint with the audio recorded using the MacBook Air's own microphone and so would be easy for any teacher to also create using standard computer equipment. Both groups were asked to do a pre-test before the experiment and a post-test after the experiment. The pre-test and post-test questions were designed by the teacher who is the author/researcher and checked by the native English speaking second author.

The achievement measurements were focused on the English skills of listening, speaking, reading, writing, presentation and discussion before and after using the instructional

package developed by the authors/researchers. The achievement of the experimental and control groups were compared by scores from the pre-test and the post-test, as well as performance scores of presentation capabilities and the discussion capabilities in English.

Three presentations of the same material using different formats were used to help students learn both written and spoken English through listening and reading. Both groups had the same order of presentations:

1) Thai slides, Thai speech, and English subtitles (experimental group: see example in Figure 1) or transcript (control group) to help understand the subject and concepts in Thai and English by reading English and by learning the meaning of the English subtitles or transcript. The online video is available at https://www.youtube.com/watch?v=QHBVTnqhQ-U

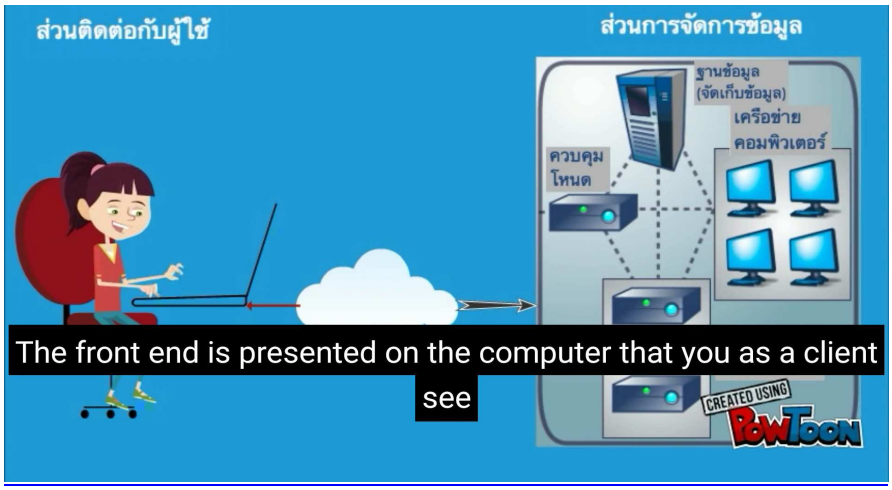


Figure 1. Example of Thai slideshow with English subtitles for the experimental group

2) English slides, English speech, and Thai subtitles (experimental group: see example in Figure 2) or transcript (control group) to help listening to English (and therefore also later help with speaking English) by learning the meaning and pronunciation of spoken English and reading English (and therefore also later help with writing English) through written English slides. The online video is available at https://www.youtube.com/watch?v=bUyU4aBrZxM&t=22s.

Figure 2. Example of English slideshow with Thai subtitles for the experimental group

3) English slides, English speech and English subtitles (experimental group: see example in Figure 3) or transcript (control group: see example in Figure 4) to help practice listening in English (and therefore also later help with speaking English) and learning the meaning and pronunciation of spoken English and reading English (and therefore also later help with writing English) through written English slides and subtitles without the support of any spoken or written Thai. Starting with English speech and English subtitles (online) or transcript (classroom) would have been too difficult for the students to learn new technical vocabulary. The online video is available at: https://www.youtube.com/watch?v=CMrxzj8x3zo.

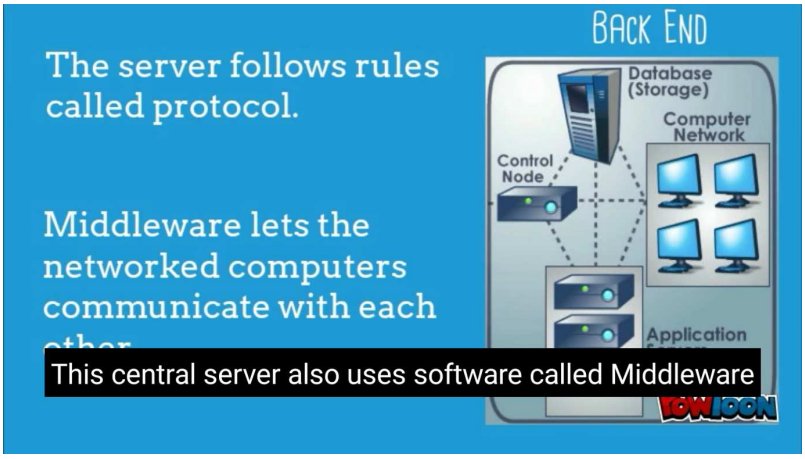
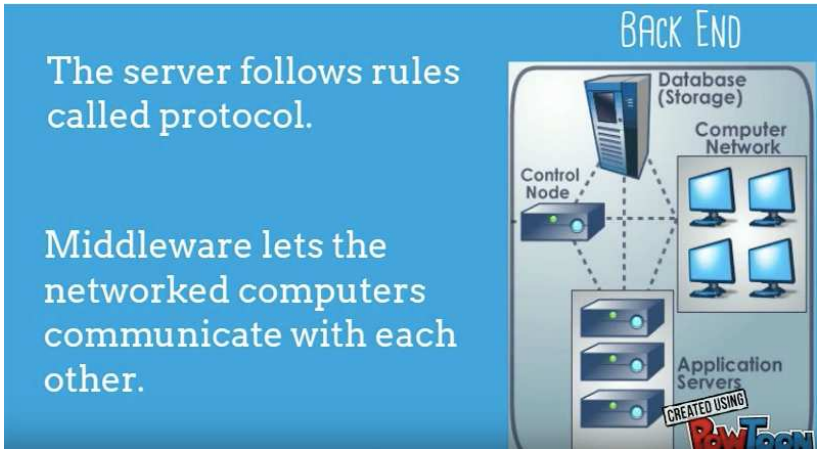


Figure 3. Example of English slideshow with English subtitles for the experimental group



0:00 Hello my name is Kewalin and I'm so excited to be your teacher this year.
0:07 For the first episode, I would like to talk about cloud computing.
0:14 Applications, Files, Videos, Music, and you are constantly faced with a problem finding space on your hard drive for all your digital stuff.
0:26 With cloud computing all your stuff can be stored on the World Wide Web

Figure 4. Example of English slideshow with English transcript for the control group

The content that was presented concerned the meaning of cloud computing; cloud computing architecture; process of cloud computing; advantages and disadvantages of cloud computing. Both groups of students were free to access their respective teaching materials also at home after class. The main difference was that the experimental group was able to listen to the teacher again as they could access the online recording but the control group could not listen again to the teacher as they had no recording.

For the student presentations the control group produced English slides, spoke English and produced a transcript in English while the experimental group created an online video with English slides and spoke English with English subtitles. The differences between the groups was therefore the creation of an online video of their slide presentation with subtitles by the experimental group and the presentation of PowerPoint slides in the classroom with a transcript by the control group.

For the student discussion the control group was asked questions and they wrote down their answers/discussions on the board in the classroom while the experimental group discussed questions on Facebook by typing answers/discussions. For both groups, the teacher used the same questions written in English.

The population were 514 undergraduate students in the Business Computer Department, Faculty of Management Sciences, Suratthani Rajabhat University. The samples were two groups of 46 undergraduate 1st-year students in the Business Computer Department who enrolled in the Fundamentals of Computer and Information Technology in Semester 1, 2016.

The two groups had similar average scores in the English Test when they entered the university. The experimental group had an average score of 70.64 and the control group had an average score of 68.10. A third group of 46 students having an average score of English of 68.10 was used to pilot and improve the materials and tests. All three groups were taught by the first author.

Tests for desired behavioural goals were developed for knowledge and understanding of cloud computing; knowledge and understanding about writing English sentences; ability in English pronunciation; advantages and disadvantages of applying a cloud computing service; presenting skill in English; and discussion skill in English. The focus of Part 1 test was on testing knowledge, memorizing, and understanding of cloud computing using reading skills. Part 2 tested writing skill in English sentences in the cloud computing topic, measured by checking their knowledge and understanding. Part 3 tested students' abilities in English pronunciation about the cloud computing topic, measured by their pronunciation in order to test their listening (in video or class) and speaking skills. Part 4 tested students' abilities in reading, understand meaning, and implementation. Part 5 tested the ability through producing video online media to present and answer questions. Part 6 tested the ability in discussion using speaking skills, listening skills, and discussion skills.

Three experts in English, computing, and measurement and achievement who had five years' experience in the fields evaluated the Item Object Congruence (IOC) presentation criteria skills in English using the following ratings: +1 = sure that it is related, 0 = not sure that it is related, and -1 = sure that it is not related.

The correspondences between the tests and the behavioural objectives based on the average scores of the three experts are displayed in Table 2, showing that the tests were generally considered good apart from the discussion. The experts suggested that the discussion method for the control group should be changed from speaking in class to writing on the blackboard to more closely match the experimental group typing a discussion in the Facebook social media program. The researcher agreed and adjusted it accordingly. All experts agreed that the test was consistent with the lesson and the test was consistent with the objectives. Only two experts were not sure whether the number of exercises in each lesson was appropriate. Only one expert disagreed that the forms of test were appropriate for the lesson, while two experts were not sure if the questions were of relevance to the content.

Table 1. The relationship between the tests, desired behavioural goals and the content and skills used

Tests	**Desired behavioural goals**	**Skills used**
Part 1 Test knowledge, memorizing, understanding of Cloud Computing	Measure knowledge, memorizing, understanding of the meaning computing term	Reading skill
Part 2 Test knowledge, understanding about writing English sentences in Cloud Computing topic	Measure knowledge, understanding about writing English sentences	Writing skill
Part 3 Test ability in English pronunciation about Cloud Computing topic	Measure ability in English pronunciation	Listening and speaking skills
Part 4 Test knowledge, elements, and process of Cloud Computing, advantages and disadvantages of applying Could Computing Service	Measure ability in reading, understand meaning and implementation	Reading skill, understanding, and implementation
Part 5 Test presenting skill in English about Cloud Computing	Measure ability in producing video online media to present and answer questions	Speaking skill, presenting skill, listening skill, and answering questions
Part 6 Test discussion skill in English about Cloud Computing	Measure ability in discussion	Speaking skill, listening skill, and discussion skill

Table 2. The findings of correspondence between the test and the behavioural objective from experts

Evaluation Criteria	**Average scores of learning activities**					
	Listening	**Speaking**	**Reading**	**Writing**	**Presenting**	**Discussion**
Pre-test and Post-test	**IOC**	**IOC**	**IOC**	**IOC**	**IOC**	**IOC**
1. The test is consistent with the lesson.	1	1	1	1	1	1
2. The test is consistent with the objectives.	1	1	1	1	1	1
3. The number of exercises in each lesson is appropriate.	1	1	1	0	1	0
4. The forms of test are appropriate for the lesson.	1	1	1	1	1	-1
5. The questions are of relevance to content.	1	1	0	0	1	1

The development process of the instructional package via online video media in cloud computing (see Figure 5) involved trials of the instructional package by:

- three learners who have low, medium, high scores of English test learning following the instructional package via online video media process by the observation, control, and suggestion of the instructor (Low = 0-2, medium = 3, high = 4-5);
- a small group of 10 participants with 3 people who have a high level, 4 people who have a medium level and 3 people who have a low level of using English;
- a large group of 30 participants with 10 people who have a high level, 10 people a medium level and 10 people who have a low level of using English.

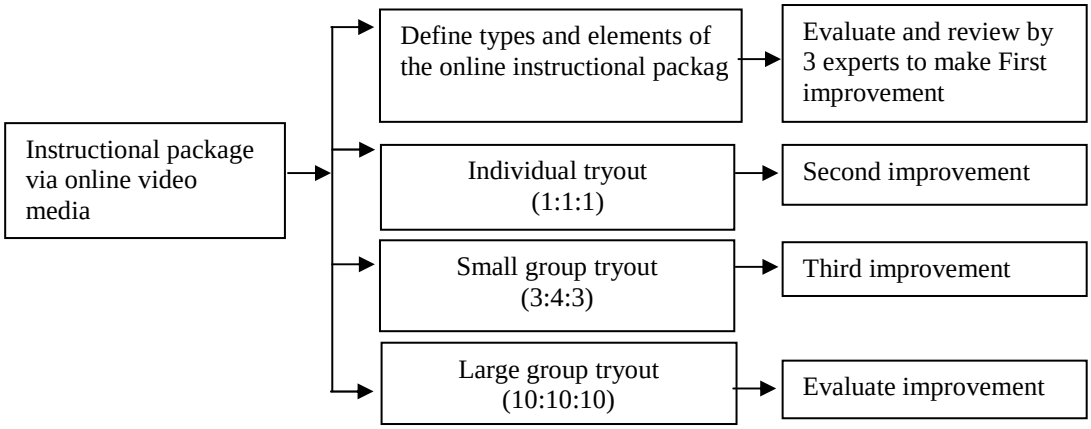


Figure 5. The development process of the instructional package

The findings from the three participants' trials of learning from online video media showed that the researcher should change the long sentences in the explanation to be shorter, and change the form of the writing test from writing full sentences to rearranging sentences. The findings from the small group of 10 participants' trials of learning from online video media showed that the researcher should change the long sentences for listening to be shorter, and remove ambiguous questions from the test. The findings from the large group of 30 participants' trials of learning from online video media showed further improvement was not necessary.

The pre-test and post-test were used in evaluating students' efficiency in learning by answering the same 20 questions, which were divided into four parts: meaning of vocabulary items, rearranging or writing sentences, pronunciation and reading comprehension. The questions in each part were developed using 15 questions per part and tried out with 30 participants who were not in the sample groups in order to select the appropriate questions that were not too difficult or easy for students. The best 5 questions from each part were selected to become 20 questions in total. If the learners selected the right answer, they got 1 mark, if not, they got 0 marks.

Part 5 was about the presentation ability, where learners created a video online and then presented it online by uploading to YouTube. There were four criteria used by the experts in their presentation ability judgements, where a score 7-8 means good, 4-6 means medium, and 1-3 means need to improve (see Table 3). A score over 4 means they passed the presentation criteria.

Table 3. Presentation scoring criteria

Scores / criteria	4	3	2	1
Video online material	- match objective well - correct spelling - related content and consistency - appropriate pictures or symbols that make presentation interesting and help understanding - good looking presentation	- mostly match objective - misspelling 1-2 places - most content related and consistent - mostly appropriate pictures or symbols and help understand presentation - good presentation	- somewhat match objective - misspelling 3 -4 places - some content related and consistent - some relevant picture and symbol help understand presentation - some interesting part of presentation	- less related to objective - misspelling more than 4 places - less relevance in content - no picture or symbol helps describe presentation - video online is not interesting
Presentation	- pronounce correct stress in words or sentences - correct intonation - pronounce consonants correctly - present all correct, smoothly and interesting	- pronounce mostly correct stress in words or sentences - mostly correct intonation - pronounce most consonants correctly - present 1-2 places wrong , stop 1-2 times to think but still interesting presentation	- pronounce some correct stress in words or sentences - some correct intonation - pronounce some consonants correctly - present 3-4 places wrong , stop 3-4 times to think, and some interesting presentation	- pronounce less correct stress in words or sentences - less correct intonation - pronounce few consonants correctly - present more than 4 places wrong, stop more than 4 times to think, and not interesting presentation

As regards the discussion scoring criteria (Table 4), the score of 7-8 means good, 4-6 means medium, and 1-3 means needs to improve. The score over 4 means they passed the discussion criteria. Three experts who had at least 5 years' experience in Computer Science who knew English very well were asked to evaluate the presentations and discussions following the criteria.

Table 4. Discussion scoring criteria

score / Criteria	4	3	2	1
Discussion	- discuss to the point and correctly - use correct English grammar	- most of discussion to the point and correct - mostly using correct English grammar only a few mistakes	- some of discussion to the point and only some are correct - some use correct English grammar, 3-4 places have grammar mistakes	- less discussion and mostly not relevant to the topic and correct - more than 4 places have mistakes using English
Answering questions	- answer questions directly and correctly - use correct English grammar	- answer most questions directly and correctly - use mostly correct English grammar only 1-2 places wrong	- answer some questions directly and correctly - use some correct English grammar; 3-4 places wrong	- answer few questions directly and correctly or say only a word - use less correct English grammar over 4 places wrong

4. Results

Scores within groups and between groups and satisfaction ratings were analysed.

4.1. The results within the experimental group

The results of a Paired Sample t-test for the experimental group of 46 participants showed that the average scores ($\overline{X}$ = 23.50) after learning with the online video media about cloud computing was higher than the pre-test score ($\overline{X}$ = 4.52) at the 0.05 level of significance (see Table 5). The coefficient of variation score of pre-test and post-test scores of the online video group was 7.62, which is low. It means the learning material has a very high efficiency. 100 % of the learners passed the post-test criteria, which that was set at a score of 15 out of 30 (see Table 6).

Table 5. Paired Sample t-test for the experiment group between pre-test and post-test score

N	**Average score ($\overline{X}$)**		**D**	**D^2**	**t-test**
	Pre-test	**Post-test**			
46	4.52	23.39	868	16626	54.6019*

Table 6. Coefficient variation score of pre-test and post-test average scores of experiment group

N	Total score	Pre-test score			Post-test score		
		$\overline{X}$	S.D.	CV	$\overline{X}$	SD	CV
46	30	4.52	2.09	43.42	23.39	1.78	7.62

4.2. The results within the control group

The results of the Paired Sample t-test for the control group of 46 participants showed that the average scores ($\overline{X}$ = 4.48) after learning with the online video media about cloud computing were higher than the pre-test score ($\overline{X}$ = 14.89) at the 0.05 level of significance (see Table 7). The coefficient of variation score of pre-test and post-test scores of the video online group was 15.78, which is high. It means the learning material should be improved. There were 54% of the learners who did not pass the post-test criteria that was set at a score of 15 out of 30 (see Table 8).

Table 7. Paired Sample t-test for the control group between pre-test and post-test score

N	Average score ($\overline{X}$)		D	D^2	t-test
46	Pre-test	Post-test			
	4.48	14.89	479	5283	27.5765*

Table 8. Coefficient of variation score of pre-test and post-test average scores of control group

N	Total score	Pre-test			Post-test		
		$\overline{X}$	SD	CV	$\overline{X}$	SD	CV
46	30	4.48	1.64	36.69	14.89	2.35	15.78

4.3. Comparison of the results between the experimental and control groups

The comparison between the two groups using the two-tailed independent t-test showed there was no significant difference in the pre-test scores of the two groups, as can be seen in Table 9.

Table 9. Independent Sample t-test between the experimental and control group for pre-test score

Test	N	$\overline{X}$	SD	t	Sig.
Experiment group	46	4.52	1.96	.115	.909
Control group	46	4.48	1.64		

The post-test score of the experimental group ($\overline{X}$ = 23.39) was higher than the control group ($\overline{X}$ = 14.89) at the 0.001 level of significance (Table 10).

Table 10. Independent Sample t-test between the experimental and control group for post-test score

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experimental group	46	23.39	1.78	19.55	<0.001
Control group	46	14.89	2.35		

4.4. The Independent Sample t-test between two groups of post-test score for listening skill

The comparison of the two groups for listening skill using the independent t-test showed that the experimental group ($\overline{X}$ = 3.98) had a significantly higher post-test score than the control group ($\overline{X}$ = 2.93), as shown in Table 11.

Table 11. Independent Sample t-test between two groups for listening skill

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experiment group	46	3.98	.65	7.345	<0.001
Control group	46	2.94	.71		

4.5. The Independent Sample t-test between two groups of post-test score for speaking skill

The comparison of two groups for speaking skill using independent t-test shows that the experimental group ($\overline{X}$ = 3.91) had a significantly higher post-test score than the control group ($\overline{X}$ = 1.93), as shown in Table 12.

Table 12. Independent Sample t-test between two groups for speaking skill

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experiment group	46	3.91	.66084	14.514	<0.001
Control group	46	1.93	.64643		

4.6. The Independent Sample t-test between two groups of post-test score for reading skill

The comparison of two groups for reading skill using independent t-test showed that the experimental group ($\overline{X}$ = 3.89) had a significantly higher post-test score than the control group ($\overline{X}$ = 3.07), as shown in Table 13.

Table 13. Independent Sample t-test between two groups for reading skill

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experiment group	46	3.89	.67	5.998	.000**
Control group	46	3.07	.65		

4.7. The Independent Sample t-test between two groups of post-test score for writing skill

The comparison of two groups for writing skill using Independent Sample t-test showed that the experimental group ($\overline{X}$ = 3.93) had a significantly higher post-test score than the control group ($\overline{X}$ = 2.72), as shown in Table 14.

Table 14. Independent Sample t-test between two groups for writing skill

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experiment group	46	3.93	.44	10.835	<0.001
Control group	46	2.72	.62		

4.8 The Independent Sample t-test between two groups of post-test score for presentation skill

The comparison of two groups for writing skill using Independent Sample t-test showed that the experimental group ($\overline{X}$ = 3.87) had a significantly higher post-test score than the control group ($\overline{X}$ = 2.20), as shown in Table 15.

Table 15. Independent Sample t-test between two groups for presentation skill

Test	**N**	$\overline{X}$	**SD**	**t**	**Sig.**
Experiment group	46	3.87	.50	16.071	<0.001
Control group	46	2.20	.50		

4.9. The Independent Sample t-test between two groups of post-test score for discussion skill

The comparison of two groups for writing skill using Independent Sample t-test showed that the experiment group ($\overline{X}$ = 3.91) had a higher score of post-test than control group ($\overline{X}$ = 2.20), as shown in Table 16.

Table 16. Independent Sample t-test between two groups for discussion skill

Test	**N**	$\overline{X}$	**S.D.**	**t**	**Sig.**
Experiment group	46	3.91	.63	15.068	.000**
Control group	46	2.20	.45		

Both groups of learners have problems in listening when they did not understand the vocabulary. It is therefore difficult for them to listen to foreigners in English. The students are not confident where they should put stress in words or sentences and also have speaking problems as they know very little vocabulary. They have less chance to speak English, which is

why they lack confidence in speaking English. They do not understand or remember English structures and misspell words, have less experience in presenting in English and do not know which words or linking words should be used. Even if they understand the question, they may not be able to answer because of lack of vocabulary so cannot discuss well.

The satisfaction of learners for video online was measured using 5 levels of Likert Scale. The average satisfaction score was 4.54. The highest score was for the learners satisfied about the video online ($\overline{X}$ = 4.67). The second highest score was for the video online is interesting ($\overline{X}$ = 4.63). The lowest score was for the content in video online is easy to understand ($\overline{X}$ = 4.28), as shown in Table 17.

Table 17. Satisfaction of learners for video online

Questions	$\overline{X}$	**SD**
1. The content in video online is easy to understand.	4.28	0.69
2. The content is cover the knowledge of bachelor degree level.	4.37	0.64
3. The video online is interesting.	4.63	0.49
4. The video online can help learners in learning independently.	4.38	0.38
5. The video online can develop English skills of learners.	4.52	0.51
6. The video online is suitable for learners' ages.	4.50	0.55
7. The learners satisfy about the video online.	4.67	0.47
Average scores	4.54	0.53

Figures 6 and 7 show examples of English presentation and English subtitle of a participant from the control group.

Figure 6. Cover picture of a participant's work

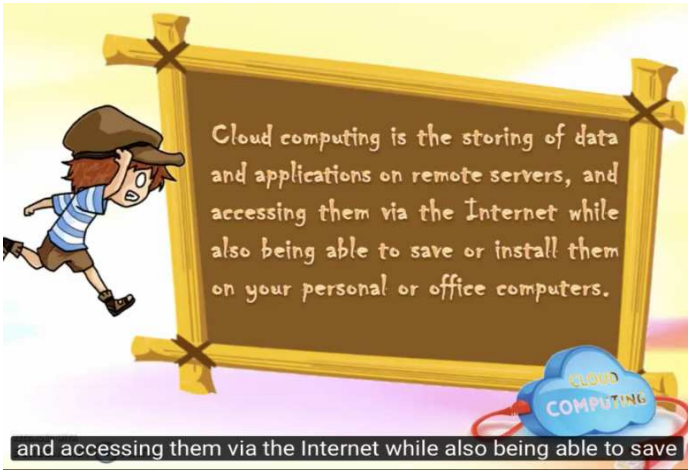


Figure 7. Participant's work describing meaning of Cloud Computing

Figure 8 shows an extract from the experimental group participants' discussion using Facebook. The instructor posted three questions on her Facebook wall, and participants in the experiment group typed answers and discussed with their peers. Three experts who had at least 5-year experience in Computer science evaluated the discussion on the wall and gave marks following the criteria.

Figure 8. Participants' online discussion anonymised

YouTube viewing figures showed that

1) the video with speech in Thai with English subtitle had 2,629 views;
2) the video with speech in English with subtitles in Thai had 227 views;
3) the video with speech in English with subtitles in English had 88 views.

The order of student views from most to least was Thai speech and English subtitle; English speech and Thai subtitle; and English speech and English subtitle.

5. Discussion and conclusions

The pre-test scores of the two groups were very similar, which suggests the two groups have a similar potential in learning English. The post-test scores of the experimental group were higher than the control group at the 0.001 level of significance, therefore answering the research question by showing that learning online using video and subtitles helped Thai students learn English IT content better than just learning face-to-face with similar content. The average satisfaction score at 4.54 was high for learning through video online. This also suggests that perhaps English could be learnt by Thai students through teachers providing similar online video materials with subtitles for the content of other subjects as well as IT.

Proving beyond any doubt the cause and effect of an education technology intervention involving teachers and students is difficult because of many possible variables. This study controlled many of these variables as the two groups of students had similar abilities and the same content and slides and the same teacher was used for the face-to-face teaching and the video online teaching. It was observed that learners listened to the online video many times so that they could practice speaking. Therefore the opportunity to listen again could be one of the reasons for the better learning by the experimental group compared to the control group.

The listening and speaking scores were very similar within groups, which supports Gilakjani and Ahmadi's (2011) findings that a good skill of listening can result in a good skill of speaking. Based on the results, it can be concluded that students found they didn't realise how important the English consonant sound was in speaking or communication because the Thai language has no consonant sound. The Thai language also has no different sound for a plural or a singular word. Therefore, most students missed out the consonant sound because they never pronounce it in Thai. They are not used to it and feel shy if they have to try and pronounce it. The consonant sounds that students missed out included in the word "computers" where they missed out the "s" sound, and "homework" or "take" where they missed out the "k" sound at the end and "rest" where they missed "t" sound at the end. Moreover, when students

did not understand the words, it led to broken conversation as they did not understand the questions.

Speaking problems were caused by lack of vocabulary so learners could not communicate well, and also lacked a chance to practice speaking English. This speaking problem is related to the finding of Kosashunhanan (2016) that the engineers in Japanese companies spoke English only in the meetings. They lacked practicing English and their pronunciation also hindered communication. The lack of vocabulary was in both technical terms about cloud computing and general English words leading to failure in communication. The results for "Meaning of vocabulary" (X = 3.81) had a similar score to listening and speaking. When the researcher asked further questions to students about their problems, she found that if students knew the meaning of the words, they can guess the pronunciation of those words and also guess the meaning of the sentence. For example, if the question asked about the students' opinions, they can only answer or say "Yes" or "No" without saying the full sentence like "yes, I agree with you" or "No, I did not agree with you". The students also mentioned that they have very little opportunities in their daily lives to speak English, and the lack of practice leads to lack of fluency in speaking English.

Reading problems occurred from failure to understand the meaning of words, grammar, and parts of speech resulting in failing to comprehend what they were reading. This is in line with the work of Bond and Tinker (1957), who stated that readers should understand meaning of vocabulary, phrases, and sentences to understand the whole story. The learners did not understand the structure of sentences, and lacked vocabulary so they found it difficult to write a sentence. They prefer learning how to write from rearranging the sentences rather than writing from scratch which relates to the finding of Arapoff (1967) that writing is the most difficult skill as it requires listening, thinking and speaking. Thai and English have a different structure in word order in the sentence, which is one reason why Thai students get confused in word order in English writing or speaking. Another problem is that in the Thai language there is no equivalent to the "s" at the end of a plural noun.

A good writing skill is to be able to set a goal and write in order. Thus, as claimed by William (1993), reading and writing are related and in order to read to understand it is important to know the good steps of writing. During presentations problems may arise when learners do not know how to pronounce words or stress words in sentences, which relates to the finding of Yordming (2017) that students have no confidence in pronouncing words. Moreover, most Thai English teachers often do not give a good example of pronouncing English words or sentences so students cannot learn the proper English pronunciation, which corroborates the

findings of Samae and Karavi (2015) that Thai students stress words or sentences in a wrong position. The experiment proved that students cannot write correct sentences, do not often understand the structure of the sentences, lack vocabulary, and do not know when they should use the words. For example, instead of "turn on computer" the Thai students wrote or said "open computer". The results also found that most students found writing as the hardest of all English skills. This was because they did not know the meaning of words or when they should use them and were not sure about the position of words when the sentence was getting long. This is related to Arapoff's (1967) claim that writing is a difficult skill which needs knowledge from listening, thinking and speaking skills and William's (1993) findings that reading and writing skills are related as to understand reading you need to understand the structure of writing sentences.

When the learners did not understand questions, they could not respond well. The discussion part of the experiment involved writing responses which is a writing skill that is a real problem for learners and therefore their discussion was quite short.

Since the average score for learners' overall satisfactions for video online was at a high level, it shows that learners think positively about online video. Students used online video in their spare time at home to review the lesson. They prefer watching online videos to reading from books, which is related to Wangkahad's (2013) finding that the benefit of online media is that learners can learn anywhere, any time when there are connected to the Internet. Moreover, Hsiu-Feng, Shu-Hui, Shu-Chu, and Shyh-Chyi (2013) found that the satisfaction of learning from online video was caused by fewer limitations and its sociall connection with enthusiasm in learning.

Future controlled studies varying the learning process variables would be required to prove that the English learning process used in this study from easy to difficult (Thai slide, Thai speech and English subtitle; English slide, English speech, Thai subtitle; English slide, English speech, and English subtitle) helps students at the university having a low level of English skills understand language better than requiring them to learn only through English at first.

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