

Original Paper

The Impact of Multimedia Materials Teaching on EFL Elementary School Learners

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Abstract

Nowadays, it is hard for EFL students to learn a foreign language well because of the learning environment and limited teaching materials. Therefore, if we are willing to create a successful foreign language learning classroom, the use of multimedia will be very important. Besides, learning with multimedia has become the latest tendency among the education field. For instance, many researches and professionals all approve that various materials of multimedia learning can make the learning more productive, impressive, abundant, and memorable. In this research, multimedia materials were constructed by video clips. Furthermore, after adopting multimedia materials, some findings showed that multimedia-material teaching can strongly increase the vocabulary acquisition in a short period of time. In addition, students can learn not only by spelling and images, but also by vivid of video clips presentation and sounds to make connections to their daily life. Furthermore, through the interest program, their learning motivation is higher than the traditional teaching styles. Students get more positive learning attitude and their self-efficacy all been improved. Therefore, multimedia-material teaching can make learners learning more productive, abundant and efficient; therefore, using multimedia-material teaching will be one of the important teaching materials that can be applied in the classroom.

Keywords

Multimedia learning, EFL teaching, Vocabulary acquisition, Learning motivation

1. Introduction

1.1 Background Learning Environment

Since English has become one of the languages that contain most of the speaking populations all over the world, the importance to learn English well gradually gets more attention in Taiwan. However, non-English speaking countries such as Taiwan, China... etc., although English is one of the subjects that students need to learn through their school life. Nonetheless, the insufficiency of the English-speaking environment leads to the problem for people who want to learn English well. So, for people who live in this kind of environment, how can they learn English well and sharpen the four skills of a language: listening, reading, speaking, and writing? The most important part is about learning vocabularies.

1.2 The Importance of Learning Vocabulary

Scholars defined the major difficulties for English learning is facing a great deal of unknown vocabularies in English reading content or passages. Besides, memorizing words can be another difficulty for Chinese students to learn English, because Taiwan is an English as foreign language country; therefore, English only uses in school or cram schools' class.

Also, there are some studies that can prove the elements--Vocabulary that can cultivate English skills. An excellent and huge vocabulary is helpful to inferring meaning from English sentences and passages (Rupley, Logan, & Nichols, 1999). Also, Schmitt (2010) pointed out that one thing that all of the partners involved in the learning process (students, teachers, material writers, and researchers) can agree upon is that learning vocabulary is an essential part of mastering a second language. However, it has been really difficult for learners to remember vocabularies and even use it. If you don't memorize vocabularies, it is hard to raise your English ability. Limited vocabularies often lead to misunderstanding or lower comprehension of English texts (Segler, Pain, & Sorace, 2002.)

1.3 Multimedia Learning- A New Way to Learn Well

What is multimedia? Multimedia contains six components, they are: text, animation, still images, audio, video and interactive platforms.

Nowadays in the modern society, the ways that students and teachers can get knowledge become more various. Instead of the original way: learning and drilling from books or dictionaries, Internet and multimedia gradually become more efficient and easy ways to learn English and memorize vocabularies well. Besides, at present the use of internet and multimedia sources such as films, TV channels have been existed for a long period of time. Furthermore, these sources have proved usefully in replacing the traditional English learning and teaching. It means that the teaching area has encountered new changing methods and teachers now have the opportunities and responsibilities to cooperate with the remarkable technology which can make teaching contents more abundant and organized. Such as Gilakjani (2012) sites that advantages of multimedia design compared to using a single medium might result from the ability to choose among media to present well-structured information. Therefore, students can learn more complete and systematic knowledge based on the

multimedia sources compared to learn unrelated and dependent information based on the traditional learning method.

1.4 Purpose of the Study

Due to the fact that Shyamlee and Phil (2012) indicates that Technology is utilized for the upliftment of modern styles, also it satisfies both visual and auditory senses of the students. That means applying technology into the classroom is the tendency of learning languages now. Besides, when apply the technology in the teaching content, both visual and auditory learners' need would be satisfied. Therefore, in this research, researchers are willing to observe the effect on adopting multimedia-material teaching as the technology in the classroom. After learners accept MMT and TT, researchers will then focus on the vocabulary acquisition and learning motivation aspects.

1.5 Definition of Words

1.5.1 Learning Motivation

In this research, the leaning motivation questionnaire was designed by I-Ling (2007). Then the questions can be separated to five different factors: learning cognition, self-efficacy, learning environment incentives, learning target, and learning attitudes. Then, the meaning of the scores based on Likert type, the higher score presents high learning motivation and lower score means weak learning motivation.

1.5.2 Multimedia Materials Teaching (MMT)

The way we use multimedia as the teaching materials can be various, such as videos, online information, news, internet platform, some learning-designed systems. In this research, video clips that were made by the researcher will be the major elements that used in this research. Besides, in the video clips contain pictures, short videos, and gif image format with the combination of different music tracks. The idea of these videos was that researcher chose the related vocabularies, or video clips and applied sentences to target words then combined them together as a formal video clip.

1.5.3 Traditional Teaching (TT)

Traditional teaching contains lots of methods, in this research, researcher uses the way of deductive method teaching, which means students follow teachers' directions doing oral practice repetition depends on the teaching aids such as pictures with spelling at the back or real objects.

1.6 Research Question

1. Are there any significantly different on vocabulary acquisition between students who adopt the traditional teaching (TT) and multimedia materials teaching (MMT)?
2. Are there any significantly different on learning motivation between students who take part in the traditional teaching and the multimedia materials teaching?

2. Literature Review

2.1 Multimedia Learning

Omaggio (1979) conducted the first study for the influence on pictures related to reading comprehension with college freshmen who study in French. She found that pictures made a significantly improving on reading comprehension. After Omaggio's study, more and more research has narrowed down and focuses more on the effects of visual materials on L2 vocabulary acquisition. Related to Malik and Agarwal's (2012) surd simulate real life problem vey, it mentioned that multimedia helps in the way of solving problem with the usage of learning by applying, understanding abstract and complex concepts, provide more flexible method for teachers and students in non-English speaking or we say in the expanding circle of the international language—English's district., and facilitate not only individualized learning but cooperative peer-learning. Multimedia-material is used and experimented by a great number of educational institutions. Furthermore, Gilakjani (2012) also proves that there are some advantages for using multimedia-materials to EFL classroom. For example, students can raise their interest level after experience varieties of different kind of multimedia materials. Also, students can enhance their understanding due to the fact that diverse material can let students connect with their background knowledge and then raise their skills of realizing more complex teaching content. Lastly, the rich multimedia material can help learners build up the memory easily and consistently memorize the content.

After discussing about the advantages and the expression about multimedia-materials, now it comes to the theory basis of this research. Sydorenko (2010) cited that "Input in various modalities is now being used in language teaching because multiple modalities are believed to improve language acquisition". This perception is supported by Paivio's (2007) Dual Coding Theory (DCT). DCT revealed that language acts and imaging are two classes of implicit behavior. The main idea of DCT is that humans have the potential to code encountered, in these two dependent systems linguistic ("verbal") and nonverbal (images) systems. The most important assumption is that the two independent systems have the connections that can lead to better memory capabilities. Paivio and Begg (1981) also assumed that the two systems have connections to the sensory modality that was explained in Table 1. For instance, video clips are an appropriate example combines linguistic and images systems together and it can make students learn vocabularies easier. Therefore, in this study, the theory will be quoted as the basis that researcher tries to figure out whether MMT can precisely combine the two systems and make students recognize vocabularies simply and efficiently.

Table 1. The Two Systems That Serve Memory

Sensory Modality	Symbolic Systems	
	Verbal	Nonverbal
Visual	Printed words	Picture or objects Environmental
Auditory	Speech sounds	sounds Feelable objects
Tactual	Braille	Motor feedback from haptic exploration
Kinesthetic	Motor feedback from writing	of objects

Note. From Pavio and Begg (1981, p. 68).

2.2 Learning Motivation

Gilakjani (2012) has indicated that some studies have suggested that students have higher satisfaction and motivation in the classroom when the use of multimedia materials is located. Besides, Pintrich (2002) combines different kinds of theories and assumptions of learning motivation. In his points, he classified some explanations. He thought that motivation contains four keys of components on students learning motivation. They are academic self-efficacy, attributions, intrinsic motivation, and achievement goal. Besides, Pintrich also cites that social cognitive models stress that students will be motivated in multiple ways. The issue is to realize the way and the reason why students are motivated on their school's achievement. In addition, in this research, learning motivation will be sorted of four different aspects, then the characteristic and multiple components of learning motivation will be observed by the researcher.

3. Methodology

This study attempted to describe about the process and details of using multimedia teaching content on English Vocabulary and investigate the effectiveness on 3rd grade students in the mix of two different elementary school's vocabulary acquisition and learning motivation. In this chapter, the methodology was constructed of the following parts: 1) research design, 2) participants. 3) materials chosen for this study, 4) instrument applied in this study, 5) experimental procedure, and 6) data analysis.

3.1 Research Design

In this research, students are randomly separated to controlled or experimental group. Then, the initial ability was controlled according to their 106th English midterm at school. Different groups of students will receive different kinds of teaching, controlled group will receive TT, and experimental group will receive MMT. Then, after accepting different kinds of teaching method, students will do the posttest include vocabulary acquisition test and learning motivation questionnaire to observe the difference between two teaching method, table 2 shows the process of the research design in this research between the two groups, MMT and TT.

Table 2. Research Design

	group	covariate	Independent variable	posttest
(R)	C	English Midterm	Teaching with only pictures and words at the back. (TT)	vocabulary acquisition test+ learning motivation questionnaire
(R)	E	English Midterm	Teaching with video clips that logically combine audios, pictures, and sentences. (MMT)	vocabulary acquisition test+ learning motivation questionnaire

3.1.1 Target Words

There are ten target words that were chosen from the student book that published by minister of education in Taiwan (Dino on the Go Book6). Those ten target words are: umbrella, music, science, glasses, hamburger, breakfast, school, backpack, gloves, and wallet. Due to the fact that students are all third-grade students in elementary school, in this study, first, considering about the level students can well-understand and memorize in a short period of time. Then, the target words should be words that they did not approach and gain in the student book before. Therefore, in this study, ten target words were chosen from the fifth-grade student book. Also, to make the study more efficient, the connections of the target words are prevented.

3.2 Participant

There are 31 participants (17 boys and 14 girls) for this current study, with an average of 9 years old who was randomly chosen from the mix of two different elementary schools and then separated into two different classes. They all learn English for approximately 1 year. Due to the fairness, the target words are picked from the fifth-grade student book that published by the minister of Education in Taiwan (Dino on the Go Book6). I as the teacher and the researcher tried to use multimedia teaching content to improve students' not only vocabulary acquisition but their interest and motivation in learning English.

In order to investigate specifically the effect of multimedia teaching content on vocabulary learning among participants with different English ability and proficiency, therefore, student's initial ability was controlled and the average of the experiential and control group with their mid-term exam at school was almost the same.

3.3 Instrument

There are two instruments that were used in this study including the achievement test and the learning motivation questionnaire.

3.3.1 Achievement Test

The achievement test was conducted by the research. The test consisted of three different parts: picture-related questions, translation with Chinese and English, and the multiple choice that choose the

adequate words to fill in the sentence. In the first part, there are five questions that students need to pick the words from the grid that is corresponded to the image. Then, related to the second part, there are eight questions which show the Chinese meanings of target words then students may pick the words from the grid that meet the same meaning with the questions. Last, about the third part, there are five multiple choices that has three selections followed with each question. Students should find the best response to the sentence. Due to the fact that question number three affect the internal validity of this test, therefore, question number 3 was deleted from this test (Table 4). The maximum of the score of this test is 17. Furthermore, related to the Cronbach alpha about the test is .818 after delete the 3rd question in part 3. All the information was attached at table4.

Table 3. The Internal Validity of Vocabulary Acquisition Test

Cronbach's Alpha	Number
.818	17

Table 4. Details of Internal Validity of the Test

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
posta1	13.16	10.473	.256	.797
posta2	13.06	11.062	.000	.802
posta3	13.26	9.665	.495	.782
posta4	13.39	9.645	.404	.789
posta5	13.13	10.449	.341	.793
postb1	13.45	9.056	.591	.773
postb2	13.23	10.047	.369	.791
postb3	13.19	10.228	.330	.793
postb4	13.35	9.170	.601	.773
postb5	13.26	9.531	.552	.778
postb6	13.35	8.970	.680	.766
postb7	13.13	10.383	.384	.791
postb8	13.19	10.628	.143	.803
spostc1	13.19	10.228	.330	.793
spostc2	13.42	9.585	.412	.788
spostc3	13.74	10.798	.012	.818
spostc4	13.16	10.273	.363	.791
spostc5	13.42	9.518	.436	.786

3.3.2 Learning Motivation Questionnaire

The learning motivation questionnaire that used in this research was conducted by I-Ling Su (The Correlative Study of Students' English Learning Environment and English Learning Motivation, 2007). The questionnaire contains 19 questions, and can be separated to five kinds of concept: learning conscious (question 1-6), self-efficacy (question 7-10), learning ambition (question 11-15), and learning attitude (question 16-19). Besides, according to Likert scale five points measure method explanations, if you get higher score means you are more likely presenting higher characteristic about that part of learning motivation. Then, about the Cronbach α of every column of this research is between .7~.83, and the all questionnaire Cronbach α is .945, the information is at Table 5. Then, the details of Cronbach α on each column were attached at Table 6.

Table 5. The Internal Validity of Learning Motivation Questionnaire

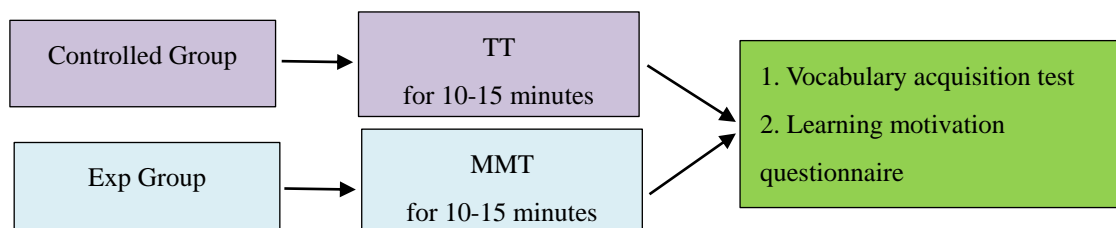
Cronbach's Alpha	Numbers
.945	19

Table 6. The Cronbach α for Each Column

Column name	α
Learning conscious	.8263
Self-efficacy	.7635
Learning ambition	.7031
Learning attitude	.7564

3.4 Procedure

In this research, it was a one-shot test. Controlled group will learn target words by TT using normal classroom; then after teaching, students will do the vocabulary acquisition test and learning motivation questionnaire. In contrast, experimental group will learn words by MMT using the multimedia classroom equipped with projector and audio equipment. Then, students will write the same vocabulary acquisition test and learning motivation questionnaire as controlled group. The teacher for these two groups is the same—the researcher.



3.5 Data Analysis

There are two different aspects that research would like to observe the effect and difference between

TT and MMT. One is vocabulary acquisition; the other is learning motivation.

3.5.1 Data Analysis of Vocabulary Acquisition

In one-way ANCOVA was used to study the differences of vocabulary acquisition performance between the two groups receiving different teaching method and materials after adjusting for their initial language ability. Before the ANCOVA was conducted, the assumption of homogeneity of regression lines was tested, and the result indicates that the assumption was not violated ($p = .339$).

Means, adjusted means and standard deviations are presented in Table 7, and ANCOVA summary table is presented in Table 8. ANCOVA results reveal that the adjusted means are significantly different for the two groups ($F(1, 27) = 8.581, p < .05$). Post-hoc comparisons, with type I error rate adjusted at $.05/3 = .0167$ using Bonferroni method, indicate that students who received multimedia materials teaching (adjusted $M = 15.448$) outperformed those received traditional teaching (adjusted $M = 11.542$). Partial eta squared is .241, showing that “teaching methods” explains 24.1% of variance of students’ vocabulary acquisition performance.

Table 7. Means and Standard Deviation of Two Treatment Groups

Group	N	mean	s.d.	Adjusted mean
1	14	12.57	3.368	11.542 ^a
2	17	15.24	2.773	15.448 ^a
Total	31	14.18	3.291	

Table 8. Summary Table of ANCOVA

	SS	df	MS	F	p	Eta square
Group	76.676	1	76.676	8.581	.007	.241
Error	241.266	27	8.936			

3.5.2 Data Analysis of Learning Motivation

In one-way ANCOVA was used to study the differences of learning motivation between the two groups receiving different teaching method and materials after adjusting for their initial language ability. Before the ANCOVA was conducted, the assumption of homogeneity of regression lines was tested, and the result indicates that the assumption was violated ($p = .765$).

Means, adjusted means and standard deviations are presented in Table 9, and ANCOVA summary table is presented in Table 10 ANCOVA results reveal that the adjusted means are significantly different for the two groups ($F(1,27) = 1.552, p > .05$). Post-hoc comparisons, with type I error rate adjusted at $.05/3 = .0167$ using Bonferroni method, indicate that students who received multimedia materials teaching (adjusted $M = 98.954$) outperformed those received traditional teaching (adjusted $M = 104.830$). Partial eta squared is .054, showing that “teaching methods” explains 5% of variance of students’ learning motivation.

Table 9. Means and Standard Deviation of Two Treatment Groups

Group	N	mean	s.d.	Adjusted mean
1	14	98.98	12.545	98.954 ^a
2	17	104.39	12.922	104.830 ^a
Total	31	101.95	12.835	

Table 10. Summary Table of ANCOVA

	SS	df	MS	F	p	Eta square
Group	266.950	1	266.950	1.552	.223	.054
Error	4643.13	27	171.968			

4. Result

In this research, researcher wants to find out the effect between the multimedia-materials teaching and traditional teaching on 3rd grade students' Vocabulary acquisition performance and learning motivation. Therefore, the result will be presented in two different aspects.

4.1 Vocabulary Acquisition

The research question is about observing whether the MMT and the TT teaching method have significantly different on vocabulary acquisition. The researcher used one-way ANCOVA to study the differences of vocabulary acquisition between the two groups receiving different teaching method and materials after adjusting for their initial language ability. It comes to the result that there are significantly differences between these two groups learning with TT and MMT, and the percentage is .007(<0.05). Also, the partial Eta Squared is .241. It means that "different teaching methods" explains 24.1% of variance of students' vocabulary acquisition performance.

Besides, the most obvious difference is on part two translation part. All the information are listed on Table 11. The percentage is .004(<0.05), then, the partial Eta Squared is .259.

Table 11. ANCOVA for Part Two Questions on Vocabulary Acquisition Test

Dependent Variable: subb1_8						
	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	27.716	1	27.716	9.805	.004	.259
Error	79.148	27	2.827			

4.2 Learning Motivation

The research question is about observing whether the MMT and the TT teaching method have significantly different on learning motivation. The researcher used one-way ANCOVA to study the differences of learning motivation between the two groups receiving different teaching method and

materials after adjusting for their initial language ability. It comes to the result that there are significantly differences between these two groups learning with TT and MMT, and the percentage is .0039(<0.05). Also, the Partial Eta Squared is .176. It means that “different teaching methods” only explains 17.6% of variance of students’ learning motivation. However, according to the different aspects in this questionnaire, we divided the questionnaire into four different aspects: learning conscious, self-efficacy, learning ambition, and learning attitude. Then, one-way ANCOVA was used to analysis these four different columns. After that there are some significantly differences between these aspects, they are self-efficacy aspect, and learning attitude aspect.

In Self-efficacy, the percentage is .038(<0.05), and the Partial Eta Squared is .144. It means that “different teaching methods” explains 14.4% of variance of students’ self-efficacy on learning motivation. Table 12 shows the result of self-efficacy. In learning attitude, the percentage is .009(<0.05), and the Partial Eta Squared is .221. It means that “different teaching methods” explains 21.1% of variance of students’ learning attitude on learning motivation. Table 13 shows the result of learning attitude.

Table 12. Self-efficacy

Dependent Variable: self efficacy7_10						
	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	44.576	1	44.576	4.722	.038	.144
Error	264.298	28	9.439			

Table 13. Learning Attitude

Dependent Variable: learning attitude22_25						
	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	54.162	1	54.162	7.945	.009	.221
Error	190.869	28	6.817			

5. Discussion and Conclusion

To wrap it up, according to the result form the research, we can observe that MMT has significantly differences compared to TT. That corresponded to many researches and professionals point that MMT can raise students’ understanding. In addition, students learn through MMT can make them memorize the vocabulary consistently. As we see on the post-test quiz, students who accept MMT teaching gain more points on the complex questions. Multimedia-materials teaching in this research also prove that, the basis of Dual Coding Theory (DCT) makes sense. When students learn with only images and words, the verbal and nonverbal systems which serve for memories cannot work together properly. However, when students receive video clips that contain images, audios, and words together, they can understand

the vocabulary easily; furthermore, students will comfortably transform the vocabularies into their use of language. In this way, MMT can lead to an efficient way for students to memorize vocabularies and use them in their language. In addition, we also can observe that students who join MMT classroom has higher motivation overall. That means due to the fact that MMT contains different kinds of materials that are able to make learners absorb the information in a more interesting way. Students in MMT class shows very high interest and scores on self-efficacy and learning attitude part. That means ESL/EFL students are also more willing to learn this language with MMT. Therefore, using MMT is a new trend and teaching materials that students can not only learn, understand and memorize vocabularies easier, but also learn more complete and systematic knowledge based on the multimedia sources compared to learn unrelated and dependent information based on the traditional learning method. It is more necessary for EFL learners to accept multimedia-materials teaching to make them learn English with positive and efficiency. However, in this research, the material in the MMT class contains only the combination of images, short video clips, and audios. As we know MMT has a great number of materials that teachers can use to make the MMT class more effective, interesting and abundant. Therefore, more investigations and researches need to be done. There is still a large space for drilling more and more kinds of multimedia-material teaching methods and other kinds of e-teaching system. E-learning is playing the key role in ESL/EFL classrooms in the context of globalization. We hope the learners could get encouraged and motivated by multimedia-material teaching through the instructions.

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