

Full Length Research Paper

Research on the learning effects of multimedia assisted instruction on mandarin vocabulary acquisition for Vietnamese students (Part II): A case study

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This study discusses the effects of using multimedia assisted instruction for Mandarin vocabulary learning by Vietnamese students with the assistance of the ASSURE model. The aim is to understand the difficulties encountered by these students and the effects during the learning progress of multimedia assisted instruction. In order to fulfill the above-mentioned study purposes, this study makes use of qualitative research methods such as interviews, participant observation, and document analysis to follow the progress of 11 Vietnamese students for three months. The study results showed that the use of multimedia assisted instruction could promote the learners' speed of understanding and memorization of vocabulary. Better transfer of learning during the simulation scenario was also shown. Moreover, the test results of most students showed significant improvement after using multimedia assisted instruction. However, some difficulties were encountered during the learning process, for example; too much English content in the multimedia teaching materials was not necessarily helpful. Students were also subject to loneliness because of the use of multimedia when practicing by themselves after class. This led to insufficient interaction with teachers and classmates. Students with weak initiative and will power would be influenced and distracted by other information from the Internet.

Key words: Vietnamese students, multimedia assisted instruction, Mandarin vocabulary, Mandarin education.

INTRODUCTION

The study of Mandarin has become very popular, so Mandarin education is valued and has become popularized in countries all over the world. The United Nations classifies Mandarin as one of the six major languages, and the number of people learning Mandarin as a foreign language grows each passing day along with Mainland China market growth. Studies show that the global Mandarin-speaking population now exceeds 1.3 billion with approximately more than 300 million people learning Mandarin. More than 2,500 universities in about 100 countries now provide Mandarin courses. The demand of people all around the world for Mandarin

learning is becoming more and more urgent. Its study has already become a global academic fashion (Baylor, 2001; Liu, 2010; Liu, 2007; Lu, 2005). There are abundant and diverse Mandarin learning resources in Taiwan including the innovation of digital Mandarin learning applications and the development of educational technology. The accumulation of many years of profound research on the language forms a solid educational foundation and Taiwan is now number one in offering Mandarin resources on the Internet (Yu-Hsin and Chang, 2010). The current information technology, besides combining multimedia resources, allows various functions provided by Internet teaching aids. Such tools could already assist and accomplish transnational and borderless Mandarin education (Shu, 2010; Heinich et al., 2002; Heo and Hirtle, 2001; Hsu, 2004; Huang, 2009; Ji et al., 2005;

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Lin, 2002).

LITERATURE REVIEW

Recently, multimedia assisted tools have been successfully applied to the practices (Chen, 2011a, b, c, d, e, f, g, h; Shih et al., 2011a, b, c, d). Originally, teachers used books and oral communication to carry out the process of “learning”; however, the process of “learning” changes as technology advances. Language learning is restricted by time and space, so there are numerous examples of using technology to assist learning (Murray, 2004; Plass et al., 1998; Shelly and Cunter, 2006; Shu, 2010). Technological assistance brings brand-new learning experience to the learners. It does not only provides oral and visual stimuli to the learners, but also changes the abstract oral communication instruction experienced in a class into a concrete learning experience (Liu, 2007; Chen, 1997a, b, c). In recent years, computer assisted language animation has become more effective. If motivation can be strengthened, learners can understand and become more familiar with what they learn (Li, 2008; Guan, 2009; Conklin, 1987; Dale, 1946). The difficulty that learners often face in Mandarin learning is that it is not easy for them to use the vocabulary and sentences introduced in class. The blending of the language into a daily life scenario allows the learners to understand the ideas of language application, which contributes to learning (South et al., 2008). The use of multimedia assisted instruction has already become a trend – using scenarios to allow the learners to make use of specific pictures, animation, and sounds to assist them in learning abstract vocabulary, to achieve the purpose of language learning. This study discusses how to combine Mandarin vocabulary with multimedia resources so as to assist Mandarin learners to learn more effectively (Liu, 2007).

Information is shown in multimedia through different ways and with different appearances; multimedia does not only brings more abundant visual and hearing enjoyment for people, but also increases the interest and effectiveness of learning. It could be more effective than traditional teaching methods. Teachers could use information technology to show teaching material with audio-visual animation effect, to motivate learners and to help them understand and become more familiar with what they need to learn (Li, 2008; Jones et al., 2008; Jones and Plass, 2002; Lemahieu, 2002; Li, 1999). One difficulty that language learners often face in Mandarin learning is that it is not easy for them to use the vocabulary and sentences taught in class. If their newly acquired language could be blended into daily life scenarios, it would allow the learners to understand the ideas of actual language application, which would be contributive to learning (South et al., 2008; Shi, 2003; South et al., 2008; Mayer and Moreno, 2002). The use of

multimedia assisted instruction has already become a trend –using scenarios that allow the learners to make use of specific pictures, animation, and sounds to assist them to master abstract vocabulary, so as to achieve the purpose of language learning. This study discusses how to combine Mandarin vocabulary with multimedia resources so as to assist learners to learn effectively. The paper is extended based on the previous methods developed by Chen and Chung (2011).

RELIABILITY AND STUDY VALIDITY

Different reliability and validity testing methods are needed for different studies. Based on experience and other research documents, Merriam (1991) summarized two methods to strengthen reliability and four strategies to ensure validity in accordance with case studies.

Reliability testing

In this study, the following two methods are used to establish and strengthen the reliability of this study:

- (1) Expounding the investigator’s position: The study background is described in Chapter 1, relevant academic theories are thoroughly discussed in Chapter 2, and the study method, the role of the researcher, the subjects of study by the team, and the source of data collected are clearly explained in Chapter 3.
- (2) Audit trail: The entire study framework and steps for implementation are described in detail, including the method and process of collecting data, to facilitate auditing by researchers in the future.

Validity testing

- (1) Triangulation: Multiple data sources or methods from different studies are used to test the study results. In this study, multiple methods such as teacher interviews, student interviews, direct observation, and document analysis were used to collect data.
- (2) Long-term observation: In this case the researcher was the instructor, who focused on the same phenomenon making observations over a long period of time at the study site.
- (3) Peer examination: The study results were discussed with the authors’ peers. During this analytical process, we asked for advice from experienced Mandarin teachers on the study results. This helped to avoid analytical deviation due to the researcher’s subjective bias and offset any blind spots.
- (4) Clarifying researcher’s bias: The assumptions, viewpoints, and theories were explained in the initial parts of this study.

RESULTS AND DISCUSSION

Mandarin vocabulary learning model of multimedia assisted instruction

The ASSURE model formed the basis for teaching. This model was used for systematic planning by teachers so as to use multimedia effectively during class, and for the planning and design of course content, instructional steps,

software selection, evaluation of effectiveness, and teaching amendment. All this was done according to its steps and theory and the information revised to create a suitable instructional model for this study (Table 1). This model is explained as follows:

Case study

The six types of vocabulary utilized for this study have been tested many times in “multimedia learning pre-tests” and “multimedia learning post tests”. The average test scores of the study subjects’ Mandarin vocabulary in the pre-tests and post tests can be classified into three general groups, where four of them made great progress including S4, S5, S10, and S11; study groups that made slower progress included S3, S7, and S9; and four of them, including S1, S2, S6, and S8 did less well than before. All with the exception of S4 and S6 returned to their hometown after the three-month period of learning and did not come back to Taiwan to continue their studies. The researcher carried out in-depth interviews with three greatly improved students and three students who did less well than before. Since their Mandarin was not fluent enough to answer the questions smoothly, a Vietnamese student, who is a junior in the same college and has lived in Taiwan for nine years, was invited to help with part of the translation, so as to avoid misunderstanding during the interviews.

Interview records of case studies

The interview questions focused on three aspects - teacher, teaching materials, and students - to understand the opinions and ideas of the students. The interview records are summarized into: (1) students who made significant progress, and (2) students who did less well than before.

The interview record summaries for students who made significant progress are as follows:

(i) Interview summary for S5: When talking about the teacher’s aspect, S5 said, “At the beginning I thought Mandarin was very difficult and I didn’t have confidence to learn it well. When I first came to Taiwan, I could not get used to here, so I was afraid to face the teacher and did not finish my homework. Later, since the teacher realized that I am good at computers, she encouraged me to use the resources from the internet to learn Mandarin, and then found my way to study gradually.” When talking about teaching materials, he said, “Besides materials that the teacher uses in class, I can arrange my learning order according to my own time and what I want. There are lots of materials on the internet with strong functions and abundant contents, but many of them are written in English, so sometimes I cannot understand. It would be better if they were in Vietnamese.” For the

student’s aspect, he stated, “I have made great advancement on my tests because of the assistance of the computer, so now I usually make use of the internet or CD-ROM disk to review my homework. However, not many tests can be found through the computer and the teacher’s tests are more difficult. One disadvantage of using computer is that I cannot ask questions like I do in class”.

(ii) Interview summary for S10: When talking about the teacher’s aspect, S10 said, “I am very attentive during class, and after answering the teacher’s questions, the teacher will praise me. If I pay attention in class, I feel it is simpler when reviewing the materials in the dormitory. I particularly like the computer use period. It is very attractive to me. However, I still like the feeling of having a class in the classroom better.” For teaching material, she said, “I like to make use of computer games or the computer test sets to check if I have remembered the word or not. If there is something wrong, I can correct myself immediately and review and practice again, which is very helpful for tests. I feel like I am playing a video game. I hope there would be more kinds of computerized tests, because practicing the same thing over and over can be quite boring sometimes.” For the student aspect, she mentioned that “Because teaching materials on the CD and the internet are very colorful with a lot of pictures, sound effects, and animations, I want to keep using these things for review. Thus, I feel it would not be too uninteresting to study Mandarin.”

(iii) Interview summary for S11: When talking about the teacher aspect, S11 said that the “teacher’s teaching style is very suitable for me. I like to have quizzes regularly because it gives me the power to review the content that the teacher teaches. Also, the teacher assigns a lot of homework to us, so I told myself to do my best to finish it. Nevertheless, using multimedia to practice decreases the chances to practice speaking with my classmates, so the advancement of “speaking” part seems to be slower”. For teaching material, she said, “I like the teacher to use CD-ROMs or materials from the internet to strengthen and supplement our class, because the illustrations shown help deepen my impression immediately. In the dormitory, I can also use computer to review repeatedly, and I can find the answer immediately when I forget something.” For the student’s aspect, she said “although all my classmates say I am the best, I prepare hard for each test. In particular, during the weekend, I go to the cafe by the school to review the materials that the teacher has taught, and also I will review using the computer one more time when I am in the dormitory at night. This is why I do well in test the next day. However I did not use computers that often before, so now I need to ask other classmates about computer using skills or I need to ask for help when my computer breaks down.” The interview record summaries for students who did less well than before are as follows:

(i) Interview summary for S1: For the teacher aspect, S1

Table 1. Mandarin vocabulary learning model for multimedia assisted instruction.

Name of step	Contents of step	Actual implementation
(1) Analyzing learners	The study subjects, teachers responsible for administrative matters related to the Vietnamese students, class instructors, and department heads were interviewed; the framework for Mandarin learning was designed according to the needs of the study subjects; the course contents for Mandarin vocabulary learning via multimedia assisted instruction were drafted.	Front-end analysis carried out by the researcher could be categorized as follows: (1) The time that the study subjects stayed in Taiwan. (1) The personality and learning ability of the study subjects. (3) The current Mandarin fluency of the study subjects. (3) The school life of the study subjects. After analyzing the above information obtained from interview, suitable multimedia teaching materials were selected and course contents were planned immediately.
(2) Formulating the goals of this study	Instructional goals were planned based on the fluency and needs of the study subjects, and weekly instructional progress goals and hours were set.	(1) Study goals: six major groups of vocabulary that were closely related to daily life were selected, including vocabulary related to the human body, food, household appliances, articles for daily use, buildings, and transportation. With the assistance of multimedia assisted instruction, the study subjects could learn 300 Mandarin vocabulary terms and their related expressions in three months giving them the basic language skills needed to live in Taiwan. (2) Course hours: Multimedia assisted instruction was implemented for six hours a week.
(3) Choosing the multimedia teaching materials	Appropriate multimedia teaching materials were selected in accordance with the needs of study subjects and established goals of this study.	Materials with illustrations, pronunciation, phonetic notation, and relevant sample sentences were mainly selected. The first selected teaching material was Mandarin vocabulary e-flashcards. Another was a digital version of an illustrated Chinese-English dictionary.
(4) Using multimedia teaching materials	When using multimedia assisted instruction in class, the researcher also needed to teach the study subjects about the concepts of applying the materials.	(1) The vocabulary that was going to be introduced would be shown to the study subjects first, allowing them to obtain a preliminary impression to illustrate that vocabulary. (2) The study subjects were asked to first try to pronounce the vocabulary items, then click on the “read” function of the multimedia teaching materials to listen to the correct pronunciation so as to correct by themselves and imitate the pronunciation; the researcher could also correct them when needed. (3) Relevant sample sentences were introduced, the help the learner understand the meaning through English and Mandarin-translated words and illustrated examples; the researcher guided the students to create their own sentences to increase the chance of using the vocabulary practically.

Table 1. Contd.

(5) Encouraging the learners to participate	The application of a dynamic interactive system of multimedia teaching materials combined with the excitement of hearing and seeing, and the instant feedback function promoted the learning participation of the study subjects.	The learners could practice repeatedly at their own pace; the built-in interactive functions, the “listening test” and “speak up”, of the multimedia teaching materials could be used by the study subjects to practice listening and speaking by themselves. Users could improve the accuracy of their pronunciation and also know their learning outcomes rapidly through automatic feedback of the system.
(6) Evaluation and amendment	The multimedia teaching materials could be combined with traditional paper-and-pen practice and tests, so as to promote the study subjects' opportunity to practice.	(1) After finishing the instruction for each unit, the researcher prepared paper-and-pen tests based on the instructional content, to check on the learning condition, understanding of terms, and application skills of the learners. Areas where the learners had misunderstandings could be found and corrected accordingly. (2) The instructional strategy and way of showing teaching materials were revised by the researcher according to this evaluation. The types of test questions could include practical skills such as listening, multiple choice, and fill in the blank, allowing the learners to practice their skills in many ways.

said, “The teacher uses illustrations and movies to teach during class time, so I can generally understand. However, I always hang out with classmates after class and do not review when I get back to the dormitory, so I finish my homework right before class or copy from others, and the teacher has found out.” For teaching materials, he said, “When the teacher uses the computer to teach, the lights are dimmed, so the classmate who sits next to me always chats with me at this moment. Sometimes I am not paying attention and do not hear or see the contents that the teacher has just shown, but the illustration does help me to remember things more easily and is more interesting.” For the student aspect, he said, “Because I do not like to use the computer, I do not use it to review what the teacher has just taught after class. I prefer practicing speaking with other classmates in class, because I think using the computer is kind of boring and I don’t want to use it after using it for a while.”

(ii) Interview summary for S2: For the teacher aspect, S2 stated, “I need the teacher to keep asking me to answer questions or discuss them with classmates during class time to keep my concentration.” For teaching materials, he said, “I think I have less chance to interact with classmates when using the computer and it seems that the computer is very inflexible. Maybe I can practice repeatedly, but I don’t want to use this method after using it for a long time. However, using the computer in class can deepen my impression and I might be able to recall the content when I see a similar scenario.” For the student aspect, S2 said, “Although I can use the teaching multimedia material at any time, I seldom use the computer to review the test content when I get back to dormitory, because I seldom use computer, plus my computer skills are not as good as those of the other classmates and the computer can be quite unstable sometimes. I use the materials that I learn in class to finish my

homework, and I do not go online to search for the answer. I will look for the answer from books instead.”

(iii) Interview summary for S8: When talking about the teacher aspect, S8 said, “I pay a lot of attention in class and I think the teacher using the computer to teach is a very clear method, and I can recall what I have learnt in class when seeing similar things outside school. However, if the teaching time is too long, I will feel bored and sleepy. I seldom prepare for the after-class quiz so my score is very bad, and I feel embarrassed to the teacher.” For teaching materials, she said, “Actually, I really like the teacher to use materials from the computer and the internet to supplement the content of the things he teaches, because those materials are very abundant and interesting and are very attractive to me, but not after they are used for too long however.” For the student aspect, she said, “I surf the internet every night, but do not use the computer to review homework

Table 2. The advantages of multimedia assisted instruction.

Difference comparison	Code name of the case					
	Students who made significant progress			Students who did less well than before		
	S5	S10	S11	S1	S2	S8
Promoted the mobility of instruction	✓				✓	
Increases the extension of instruction	✓	✓	✓			
Strengthens the concreteness of teaching materials	✓			✓	✓	
Creates interesting teaching materials		✓		✓		✓
Enriches the diversity of teaching materials	✓	✓	✓			✓
Promotes the preservation of the teaching materials		✓	✓			
Improves the efficiency of learning		✓	✓	✓	✓	
Trains learning independence	✓	✓	✓			
Abundance of internet resources	✓					✓
Strong digital functionality	✓					✓

Table 3. The disadvantages of multimedia assisted instruction.

Difference comparison	Code name of the case					
	Students who made significant progress			Students who did less well than before		
	S5	S10	S11	S1	S2	S8
It is difficult to create a proper environment				✓		✓
More attention is needed for the selection of material	✓					
Cannot place undue dependence on the multimedia tools		✓				
Need to possess crisis management ability			✓		✓	
Need to possess digital operation skill			✓		✓	
Easily influenced by unstable equipment			✓		✓	
Lack of right class feeling	✓	✓		✓		✓
Insufficient interpersonal interaction			✓	✓	✓	✓
Not every aspect could be considered in the evaluation function	✓	✓				
The learner needs to have lasting stability				✓	✓	✓

or prepare for test. I am always attracted by other information that is not related to the schoolwork. Moreover, I prefer the teacher to ask questions or allow us to practice speaking with other classmates in class”.

Difference comparison of case studies towards multimedia assisted instruction

Based on the in-depth interviews carried out with the six study subjects from these two groups, their differences in attitude towards multimedia assisted instruction are compared as follows: (Table 2 and 3).

Discussion of the quality of multimedia assisted instruction

According to researcher's teaching journal, observations

of the study subjects, and integrated analysis and comparison of interview results, the advantages and disadvantages of multimedia assisted instruction in relation to the teacher, teaching materials, and student are generalized. The following are the advantages of multimedia assisted instruction:

- (i) Promote the mobility of instruction: Multimedia instruction can be provided or revised in the classroom immediately based on the demands of teaching giving very great flexibility, allowing the students to obtain the latest information within a limited period of time, so that they do not have to wait for the information or expend more mental and physical effort to find it, which is different from the fixed printing of paper-teaching materials.
- (ii) Increase the extent of instruction: Not restricted by time or place, multimedia assisted instruction can reach

the function of passing on knowledge and adsorbing knowledge. So long as there is computer or an internet connection, the students can learn at any time, and can use the internet and digital sources to preview, review and study extensively outside the classroom, allowing teaching to reach everywhere.

(iii) Strengthen the concreteness of the teaching materials: The illustrative teaching materials strengthen the student's impressions on the topic. Such materials can change the concepts or help understand objects that cannot be explained clearly in words. More abstract concepts can be made more concrete, while movies can be used to create context and feeling. The use of multimedia instruction could not only help the students to understand faster, but also increase the efficiency of the teacher's instruction.

(iv) Create interesting teaching materials: The course content and relevant materials are combined to present a diverse design for the students, which are not boring and will attract students' attention. Furthermore, using digital tools helps provide vivid, lively, and variable visual and technological effects, promoting a lively classroom atmosphere, stimulated the student's interest in learning, as well as promoting concentration and learning motivation. Students are also able to operate and experience the tools on their own, in which the sensory impression of learning could be increased so as to promote better learning outcomes for the students.

(v) Enrich the diversity of teaching materials: Audio-visual animations such as in movies, pictures, and the internet allow the teachers to have more choices for instruction, and the learning of the students can also be more diverse. The traditional idea of instruction where students have to face teachers and a blackboard has been gotten rid of, allowing teachers and learners to enjoy the class more, so as to promote acceptance and understanding.

(vi) Promote the preservation of teaching materials: The teacher does not need to prepare so many props, because the multimedia digital teaching materials can be shown repeatedly, making it unnecessary for the teacher to demonstrate repeatedly. In cases where the students are not so sure, they can repeatedly be shown the material and practice continuously. The teaching material can be used many times; thus, saving cost and manpower.

(vii) Improve the efficiency of learning: The use of multimedia can create and offer students the opportunity to enter all kinds of situations. Sometimes the content of the teaching material is too fast, access can improve the convenience of studying, and the teacher need not be afraid the students will see outdated materials.

(viii) Train learning independence: Students can learn independently. Such materials can better meet the individual student's needs and increase the chance of self-learning, so that students can control their own progress in the course progress. Extending the learning outside the classroom, students have the ability to utilize

multimedia internet resources, are able to study at the best time in accordance with their own schedules, and choose course material that is suitable to them.

(ix) Abundance of internet resources: Digital resources are abundant with an extensive range, and there are a lot of free resources that can be used as assisted instruction. The contents are not limited to the information provided by teachers only.

(x) Strong digital functionality: Multimedia can include music and movies. Students can surf the internet for information. Any computer can do all these things for you. Nowadays many can even use the popular smartphone to provide opportunities for learning at any time or any place. Teachers can use easily-obtained materials from the internet to serve for instructional assistance and presentations. They do not have to prepare flashcards like before. Thus, cost, resources, and manpower can be reduced, and the speed of preparing for classes can be increased, while the outcome could be even better. The following are the disadvantages of multimedia assisted instruction:

(i) It is difficult to create the proper environment: To use digital multimedia instruction, the light in the classroom usually needs to be dim, and dim light is often a catalyst leading to students becoming undisciplined or sleepy. It is easy for students to fall asleep at this time.

(ii) More attention needs to be paid to the selection of material: Choosing the wrong materials can affect the instruction outcome and indirectly distract the students. If the learning direction that is focused on is wrong, then it acts to make the students ignore the learning theme and course content, and thus the concentration of students in class would be distracted.

(iii) Cannot place undue dependence on multimedia tools: Using this multimedia assisted instruction at the inappropriate time might cause a bad outcome, so the teacher needs to make sure they have mastered the instruction process; if not, not much benefit could be brought to the students. It could even lead to laziness which would influence the quality of instruction. Too much use too of digital tools in class might also cause estrangement between the students.

(iv) Need to possess crisis management ability: Multimedia tools could create unexpected situations, so the teacher must be able to overcome various kinds of potential computer problems. Risk exists in the operation of all equipment and software. If the teacher is restricted by or overly reliant on the equipment, this can alter the instruction quality and instruction process. For example, if a file cannot be opened that is needed for the course cannot go on, the computer is down or cannot connect to the internet, there is a breakdown of accessory equipment, or power failure. The teacher needs to have basic crisis management ability in case of equipment breakdown or problems with getting access to resources. These things can happen during class interference with

the smooth flowing of the class.

(v) Need to possess digital operation skill: The teacher needs to possess suitable digital information knowledge, while the students need to cultivate relevant digital skills, because a teacher or student who does not know how to operate the equipment cannot teach or learn. If the computer skills of teachers and students are not consistent, then the outcome of the course arrangement will have an inconsistent influence towards every student.

(vi) Influence of unstable equipment: During the learning process, there are a variety of problems that could arise with the multimedia equipment that could cause some interference, such as problems with the color during projection or audio that is too loud or too soft. Moreover, some learners might not have access to computers for learning, which would prevent them from reaching the learning outcome.

(vii) Lack of the right class feeling: In this type of situation the teacher cannot perceive whether the students are learning attentively or not, nor monitor students effectively. This makes it more difficult to be aware of the learning condition of every student. The teacher is unaware whether the students review independently outside of class time.

(viii) Insufficient interpersonal interaction: The self-learning process may be a little dull and boring to some because of the lack of face to face interaction with teachers or classmates. It also makes it difficult for classmates to discuss their work together or for teachers to give immediate feedback.

(ix) Not every aspect of learning is considered in the evaluation function: Computerized testing does not necessarily examine the total learning result, because of being reliant on built-in questions. Multimedia teaching materials tend to be the same for all students and it is not possible to examine the learning outcome completely.

(x) The learner needs to be persistent: With digital learning, the students can become easily distracted by other materials available on the internet, making it hard for them to concentrate with the passage of time. If the learner does not have a strong motivation, then he/she might become lazy which slows down the learning progress. This could have a negative effect on the original meaning of multimedia instruction and positive learning outcome.

The use of multimedia resources could enrich the contents of teaching materials, as well as making the students' thinking more open. Classroom learning is no longer reliant on traditional teaching methods, and the arrangement of teaching material can be more flexible as well. However, when the focus in the classroom is on digital teaching materials, their interaction with teachers and classmates will be less. Although teachers can prepare the lessons in advance, depending too much on digital teaching materials will lower the teaching quality. The classroom activity is limited to the class hours and physical location. Teachers cannot teach adequately.

Students can use digital teaching materials to review freely after class in order to master their learning which reduces pressure. If students depend too much on after-class learning it might lead to a poor learning attitude. In addition, besides the teaching materials, teachers can suggest websites and articles that are related to the course material so as to extend the topics related with daily life. Students can be encouraged to learn more extensively and think in new ways.

FINDINGS

This study mainly discusses the effects of multimedia assisted instruction on learning Mandarin vocabulary and difficulties encountered by Vietnamese students. The data collected from the observations, interviews, and teaching journals were arranged and analyzed, and the study results are explained in the following two sections.

The effects of multimedia instruction on learning mandarin vocabulary by Vietnamese students

The teaching method used in this study was a combination of multimedia teaching materials and traditional instruction. The learning effects could be observed from the understanding of the study subjects by the students guided in this way, their attitudes and responses during the process, and test results:

(1) Promotion of the speed of understanding and memorization of the vocabulary: The use of multimedia assisted instruction provides abundant and multiple visual, audio, and animation functions, which could strengthen learning interest and concentration for students who were used to traditional instruction methods. When students watched multimedia teaching materials, the concreteness of the illustrations offset the abstract concepts of the words, which strengthened the learner's understanding and speed at which they could memorize Mandarin vocabulary. In traditional instruction, sensory stimulation is weaker and teaching methods dull, so learners' responses during the learning process were not as good as with multimedia instruction.

(2) Transfer of learning in the simulated scenario: Many entities that do not exist or are difficult to explain, or difficult or dangerous scenarios that cannot be experienced by everyone in the real environment can be dealt with. Besides providing knowledge to students through textbooks, if teachers can teach through appropriate simulations it would reinforce the learners' impressions, promoting the learning effect as well. The study subjects experienced and learned through the simulated real-life scenarios described in the multimedia teaching materials, but not memorizing the vocabulary through imagination. If learners have the chance to act in

the same type of actual scenario in the future, then they could recall this scenario and quickly give appropriate feedback.

(3) Better test results after receiving multimedia assisted instruction: From the perspective of promotion of learners' speed of understanding the vocabulary introduced in class and results of using multimedia to review after class, the study subjects could experience the joy of learning that traditional books do not provide. The feedback from using computer self-testing allowed the students to obtain the satisfaction of learning accomplishments immediately. As a result, the learners generally had a positive viewpoint towards multimedia instruction and teaching materials, and the pre-test and post-test results proved that most of the study subjects had significant improvement because of multimedia assisted instruction, showing that learning through multimedia could surely promote learning effects.

Difficulties that Vietnamese students encountered during the learning process of multimedia assisted instruction

Issues that the study subjects had to deal with during the multimedia instruction process and difficulties that they encountered as well as influences produced are discussed as follows:

(i) The presentation of the contents of multimedia teaching materials: In this study process, the two kinds of selected teaching materials caused different degrees of learning difficulty to the Vietnamese students. Although sample sentences were provided with the Mandarin vocabulary e-flashcards to assist with learning, the sentences contained verbs and sentence patterns the students were not familiar with. If the sample sentence involved other syntactical functions or used sentence patterns the students were not familiar with, then it might confuse the learners instead. Both Mandarin vocabulary e-flashcards and digital version of the illustrated Chinese-English dictionary provided corresponding English glossary to students, but this was not very helpful to students whose English was not up to a certain standard.

(2) Insufficient interaction could easily cause loneliness It was difficult to maintain the freshness and interest gained in class during the self-practice sessions after class. The main reason was the cold and dull computer and interaction with the fixed model of the multimedia system. The interaction could not be compared with the general face-to-face classroom. The direct interaction with teachers or classmates and the chance of discussion was missing. When learning setbacks were encountered or operation did not go smoothly, students were easily made to feel helpless. Moreover, there were many scenarios and sudden events that could not be totally substituted for by the computer simulation. Students could get the

answers to their questions immediately as in class, while the computer feedback was also quite different from that of a real person.

(3) Students with weak powers of concentration could be distracted easily: Multimedia learning emphasizes active learning and self-challenge meaning it is more suitable for students with strong will power, because learning procedures and progress are mastered by the students themselves. If the learners do not concentrate enough, they will be easily distracted. If they lack self-discipline or become lazy, their learning will be neglected. In addition, with no real study environment, there are too many external things that could distract the learners attention, so it is even more difficult not to be distracted, especially to resist the temptation of the internet. This is a predicament that the students must overcome.

The multimedia digital tools are convenient and fast, but they are only tools after all. It is important not to be controlled by technology. Regardless of the teacher or the learner, one should use such tools properly but not rely on them. Overusing always bring the opposite result. Although instruction is divided into entity instruction and digital instruction, in fact, the two of them need to complement each other. Similarly, even though there are good digital educational aids, if the teacher does not teach with patience and skill, it is very difficult to motivate students to learn. Especially when learning a second language, the learners need to absorb and then digest it into something that they really understand, before being able to use it. This forms a succession, an absorption and application process, the interlanguage stage, which could be quite long if no one guides and corrects the learners. Moreover, the establishment of the sense of language during the learning process is very important. Digital teaching materials might be able to offer a lot of theoretical knowledge and inflexible exercises, but it is difficult to obtain and establish the language sense that is needed during the process of interpersonal communication.

CONCLUSIONS AND SUGGESTIONS

(1) The multimedia teaching material breaks the traditional style of learning and thinking: During a class that is assisted with the use of multimedia teaching materials, learners can see words, visual aids, illustrations, and animation, which are more interesting and exciting than traditional teaching aids, because of more diverse learning contents. Teachers can also connect to the internet to provide resources and supplementary teaching materials to increase the depth of learning, making the content more immediate and accurate. It can be renewed and conveniently saved at any time. In addition, students can also learn appropriately, meaning they can adjust their learning progress according to their abilities and select and arrange course material according to their own interests and abilities.

This offsets the disadvantage of traditional education that everyone needs to progress at the same learning rate.

(2) Repeated use of multimedia increases learning opportunities: Multimedia teaching materials allow students to watch and listen to the parts where they need to be strengthened again and again as well as get feedback from the test system that is built into the multimedia teaching materials. Computers allow students to practice the topic again and again and the students can check the answers immediately even when the teacher is not next to them. This advantage of being able to practice again and again offers a failure-free space and opportunity for students who need more practice or who worry about being corrected or embarrassed by the teachers in class.

(3) Strong learning desire could develop the greatest efficiency: Students can learn at any time and any place after class without time and space restrictions or classroom and in-class restrictions. Thus, the learning time and learning opportunities can be extended without consideration of distance. However, without interaction with peers, learning through the built-in model of multimedia teaching materials can easily tire the student, and laziness could decrease user time and interest.

Moreover, without teacher instruction, the learners need to have stronger and continuous initiative and self-behavior management; if not, the concentration on the computer can be distracted by the temptation from other websites.

(4) Need to train learners to have the habit of using multimedia: Multimedia teaching materials have the advantages of convenience and functionality and can certainly attract the learners' attention, but traditional paper-based teaching materials are still the way most students are used to. If the students encounter inconvenience during multimedia and platform operation, they might just give up. The teachers need to explain the methods and functions of how to use the interfaces. This is a very important part of teaching. Also, teachers should provide more opportunities for the students to use multimedia actively, so that they can cultivate and get used to learning through multimedia indirectly.

Suggestions

(1) The teacher should prepare the appropriate tools before multimedia instruction: Perfect and extended preparation is the key for successful instruction. Proper and useful teaching materials and teaching aids plus the guidance and assistance of experts could greatly increase the opportunity to succeed. If proper tools are missing, for example, no internet, computer equipment, or digital classroom tools, then the effectiveness of instruction will fall short. Furthermore, the teachers should plan comprehensively to the entire term's multimedia instruction and detailed instruction procedure for every unit. If teachers only rely on the existing

multimedia materials, then the instruction process could become disordered and loose.

(2) The teacher should analyze and arrange each type of multimedia instruction: The process of multimedia instruction can be made smoother by following and effective model, from pondering over the questions, working out the plan, carrying out actual instruction, analyzing the instruction results, to revising the content and style of courses. Thus, the instruction efficiency could be promoted, and the students' learning effect could also be improved.

(3) The content of multimedia instruction should take into consideration the students' special background: In the current market, digital teaching materials are still mainly designed for people from English-speaking countries. In recent years, people from more and more countries with different mother tongues have started to learn Mandarin. Students of different nationalities need different course planning and teaching materials. Thus, more resources and manpower investment are needed for the research and development of multimedia teaching materials. When teachers choose multimedia teaching materials, they should consider the students' background so as to find something that is suitable for their learning.

(4) The teacher should actively participate in the research and study activity of multimedia instruction: Multimedia instruction is an inevitable trend, and sharing experience with each other is an important factor for successful multimedia instruction. The current multimedia instruction mostly focuses on the usage of computerized assisted software, which is still quite different from real multimedia instruction. For digital learning, teachers must master the technique of multimedia instruction to achieve the educational goals, so that they will be able to meet students' needs even better and to cultivate greater competitiveness in the younger generation.

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