Faculty of Cognitive Sciences and Human Development

EXAMINING THE IMPACT OF MULTIMEDIA PRESENTATION ON MANDARIN LANGUAGE LEARNERS

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EXAMINING THE IMPACT OF MULTIMEDIA PRESENTATION ON MANDARIN LANGUAGE LEARNERS

NORFATIHAH AMANDA BINTI ABDULLAH

This project is submitted

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The project entitled 'Examining the Impact of Multimedia Presentation on Mandarin Language Learners' was prepared by Norfatihah Amanda Binti Abdullah and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirements for a Bachelor of Science with Honours (Cognitive Science).

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ABSTRACT

This study examines the impact of multimedia presentation of Image-Narration (IN) and Image- Narration- On-screen text (INT) on Mandarin language learners to see which multimedia presentation aids in learning and teaching as well as to see if the gender stigma of females' verbal abilities can be generalised to Mandarin language learning. 40 undergraduate students (20 male and 20 females) participated in this study and they were non-native speakers. Participants were given a personalised link to go through Study Phase and Test Phase. The initial plan was to collect the data by conducting a normal experimental manipulation but since the data collection was carried out during the period of Movement Control Order (MCO), therefore Google Form was used with a Timify add-on from Google to ensure control on the design aspects of experiments. Participants were given a personalized link that only they can access via email address and will be brief about the experiment through Whatsapp. They were permitted to withdraw from the experimentation at any time and were given another link to answer 20 questions of the Mandarin language and if they score 3 and below then they will be selected for the next phase. Next, the selected participants will be assigned randomly to the IN or INT group. After learning the mandarin language via the respective multimedia presentations, participants were given the previous 10 basic questions with another 10 extra phrases (that are taught via video uploaded to Youtube) to measure their retention on mandarin vocabulary. A two-way independent ANOVA was conducted on the experimental data and the findings revealed that there was no significant effect between the types of multimedia presentation used and also gender does not affect an individuals' learning capabilities hence no significant effect was found in gender. This finding offers an ambitious view to provide students and teachers with increased knowledge of elective approaches for studying and displaying foreign languages (e.g. Mandarin) that can improve and strengthen memory consolidation of acquired vocabulary.

CHAPTER 1: INTRODUCTION

Background of study

In this era of globalization, acquiring a foreign language is essential in order for us to gain more and on par with the advanced countries. This is reinforced by Weatherford (1986) where, in his research, he claimed that "learning a foreign language is an opportunity for the future that can offer many advantages, whether for one's job, travel experience or personal development," thereby showing the value of a foreign language for non-native speakers. Genesee and Cloud (1998) stated that learning an unknown dialect can take numerous long stretches of commitment, in any case, the undertaking will assist with making the way for some chances and it is also confirmed by Zaim (2014) in his report The Benefits of Learning a Foreign Language, in which he stressed that the value of learning a foreign language lies in the development of jobs and international business prospects. He also emphasized on the social benefits as it increases the global understanding and reduce the misunderstanding and miscommunication on daily basis. A related work done by Eddy (1981) on the effect of a foreign language study at high school on verbal abilities, where he claimed that "when studying an unfamiliar dialect, you do have a lot of chances in the administration market." Findings from past studies (Eddy, 1981; Genesee & Cloud, 1998; Zaim, 2014; S. Liu, 2019) highlights the importance of foreign language learning is essential in order for us to improve our knowledge and more likely to gain benefits from it.

Learning Mandarin language specifically as a foreign language can give a bigger benefit since it will likely become a global language in future and this has been debated in a journal article written by Jie Lu (2016). In this article, the researcher claimed that Mandarin will become a global language due to China's economic strength that monopoly businesses, foreign trade and technology, and the fact that cultural exchanges frequently - Mandarin as a

communication tool plays an important role as a bridge in exchanges between China and the world, therefore, would grab the world's attention. Further, Farrow and Baker (2015) argued on the fact that Mandarin Chinese language has over a billion speakers around the globe and seeing the ongoing financial status and political significance of China inside the world, the Mandarin Chinese language has the possibility of turning into an overall language. The advantages of learning the Mandarin language are not constrained to the researchers as it were but also to those involved in business, companies, schools, universities, and the government as China has transformed into a world market. This study is on par with the prediction of language development conducted by Liu (2019) in China where the researcher concluded that in the next few years based on formulas and data, Mandarin would be the first language given attention to. In the study, the researcher set up the multivariate regression model for imitating the distribution of language users and forecast its changes in the next 50 years and came to the conclusion that Chinese, Spanish and Hindi language users would steadily increase. Given the current chances and broad utilization of the language the ideal opportunity for non-local speakers to learn Chinese, explicitly Mandarin Chinese, has apparently never been better. A website of ThoughtCo., written by Qiu (2018) emphasized that having Mandarin as the second language would benefit the learner in the aspect of business, travel, and culture. This is due to the fact that individuals who communicate in Mandarin have an immense preferred position in taking advantage of the Chinese market. Employees these days on JobStreet.com and job-seeking platforms too would put forth Mandarin speakers as it is a lot simpler to build up immensely significant connections. Not only that, speaking Mandarin would open up to more opportunities in networking and traveling as most countries have Chinese speakers.

As much as we are very eager to learn the Chinese language, we would also be aware that it is not an easy language to learn. In a study by Ting (2019) at UiTM Mukah, Sarawak,

the results are that these non-native Mandarin learners have encountered a certain degree of Mandarin-speaking anxiety, and thus endorse Luo 's literature in 2015 and 2013 where the use of multiple regressions has shown that the apparent difficulty level of the Chinese language is an aspect of anxiety among speakers. Non-native speakers felt difficult to learn Mandarin because of the Chinese characters, hard to remember, difficult to recognize which mainly is a hindrance averting the advancement of Chinese capability for students of Chinese whose language doesn't have characters. Tone changes epitomize different implications of a word. Compound characters incorporate the phonetic segment radicals that do not generally sound proportionate to the phonetic radicals. These extraordinary semantic highlights of the Mandarin language include considerably more difficulties for the learning of the Mandarin language. In any case, innovation of technologies has been found to ease educating and learning Chinese as a foreign language (CFL) in numerous skilful and usable ways.

Technology and multimedia have been proven from previous studies (Bai, 2003; Williams, 2013) as a tool that changes and enhance foreign language education in many aspects. Issa et al. (1999) stated that multimedia is efficient and effective because it incorporates video/audio creation to enhance a learner's contact with the course material, so it would close the distance between the learner and the knowledge being processed and state that multimedia offers flexibility in the learning process because it is self-regulated and can enhance a student's sense of responsibility. In a study by Fung (2018) related to acquiring Chinese characters and German words via multimedia supports the idea above where multimedia is efficient and effective since in their studies, the researchers concluded that multimedia advances foreign vocabulary learning performance and their verdicts also illustrate that multimedia put forth a diverse Level of effectiveness on language learners with different categories. The findings on the efficacy to use multimedia to improve character learning as found in Thamarana's (2016) research was in parallel with the finding in Pierre

and John (2013)'s study. In Pierre and John (2013)'s study, 36 voluntary participants who had not recently considered Chinese engaged with a preceding the trial, whereby, before the trial, the members were arbitrarily doled out to every one of the three groups was delegated with the consideration of 18 Chinese characters (7 pictographic, 5 indicated, and 6 ideographs) via a variety of character teaching methods using Flash. The Flash collaborations presented three main character highlights: grammar, semantic meaning and written style. Nonetheless, respective was supposed to behave as something else: the TL group prohibited a video during a static interface; the AL introduced a cinematic that demonstrated the vividness of the etymological nature of the characters that altered the learning plan: The TL group and EAL group incorporated a video that indicated an activity of the character's etymological structure vicissitudes, just as anthropological real developments, activities, or signals that delineated both the semantic significance and composed type of the character (Pierre and John, 2013). The fallouts showed that the EAL outdone the other two groups in the absolute reviewed quantity of scholarly characters and in the general post-test result. The AL outdone the TL group; factual connotations and huge impact sizes were found between the AL and EAL groups. Hence, previous findings (Genesee & Cloud, 1998; Thamarana, 2016; Zaim, 2014) proves that technology and types of multimedia presentation affect the learning of the Chinese language for the non-native speakers.

Statement of the problem

In short, the benefits of multimedia learning has been portrayed by Thamarana (2016) on the usage of digital in English language education where by the researcher interpreted the learners' attitude towards the utilization of media in learning and the understudies' study result recommended that most of understudies appeared to have uplifting disposition towards the utilization of interactive media to enhance learning. The result of this study also supports the literature of Pun (2014) and Grzeszczyk (2016) as well as a studied done by Zulkiply

(2014) that emphasised the benefits of multimedia learning in numerous case studies. The importance of learning Mandarin as a foreign language can be sum up as to keep up with Mandarin language that would be the second or global language in future (Jie Lu, 2016; Liu 2019). Farrow and Baker in 2015 also stated that mandarin language itself would be a globally spoken language and not limited to only students but also business and corporate managements as the economic status and political importance of China has gradually improved from time to time. Therefore, it would be thought-provoking if the assistance of INT (Image Narration Text) can be generalized to Mandarin language learning. The enhancements made in this study is that we emphasized the key component of gender in mandarin language learning via multimedia and the degree of difficulty for Mandarin words or phrases.

Based on previous studies (Asperholm, Nagar, Dekhtyar, & Herlitz, 2019; Fernandez-Baizan, Arias, & Mendez, 2019; Reilly & Neumann, 2013), the assumptions of gender and their differences in mental capabilities showed consistency over the decade. Most of the studies are based on Nash's (1979) theory where by in the study it generalized masculine prompts the development of spatial, numerical, and logical aptitudes, whereas feminine identification encourages verbal and language capacities. Recent studies supported the theory Nash's with the result of men are prone towards non-verbal activities and females are best off for verbal activities. Male also outperformed females in mental rotation, spatial tasks but females do well in verbal and episodic memories (Asperholm et al, 2019; Fernandez-Baizan et al, 2019; Reilly & Neumann, 2013). Thus, the present study intended to find out if gender differences exist in learning Mandarin language, and if the females' ability in verbal tasks can be generalized to learning Mandarin language or vocabulary learning. Taken together, this led to the improvements made in this study which was to include gender as the key component.

Next is the degree of difficulty that will be observed in this study as an improvement to bridge the gap between literature. Experts have been investigating this issue— the usefulness of various forms of usage of multimedia presentations and all took into considerations of different structure but not many researches have been done on language that involves characters such as Japanese, Korean and Chinese. For example, Mandarin uses logographic systems symbols to represent the words themselves, has different phonology and the application for research would be time-consuming. Previous exploration's limitation and suggestions that are captivating are by Tsai et al. (2012) where in their study, the limitation was because of the time spent on this research because only short-term effects on writing performances were studied involved novice learners, the researchers did not include high-density characters in the stimuli hence suggested future researchers to cover more complex character or control other possible factor. Hence to conclude the problem statement, most of the studies did not put gender as consideration to measure the effectiveness of different types of multimedia presentations and the impact on learning the Chinese language (Tsai et al., 2012; Williams, 2013; Jie Lu, 2016; Li, Zhao, & Wang, 2017; Fung, 2018).

Therefore, taken together the benefits of multimedia learning and the advantages of mastering a foreign or second language are the prime motivations for this study and the improvements are to include gender as the independent variable, provide two sections in the questionnaires; words and phrases and indirectly measure the retention of information of these participants while learning language by using different types of multimedia.

Objectives of study

This study objectives are to explore the impact of various modes of multimedia presentations on Chinese as a Foreign Language for non-native speakers. Specifically, the study examines the following objectives:

i.   To examine if there is any significant different in terms of Mandarin vocabulary learning between the two types of multimedia presentations (IN vs INT)?

ii.   To examine if there is any significant different in terms of Mandarin vocabulary learning between gender (female vs. male)

iii.   To examine the interaction effect between the variables (types of multimedia presentations and gender).

Research Questions

i.   Is there any significant different in terms of Mandarin vocabulary learning between the two types of multimedia presentations (IN vs INT)?

ii.   Is there any significant different in terms of Mandarin vocabulary learning between gender (Female vs. Male)?

iii.   Is the interaction effect between the variable (types of multimedia presentations and gender) significant?

Variables

Independent variable 1: The different types of multimedia presentation (INT vs. IN)

Independent variable 2: Gender (Female vs. Male)

Dependent variable: Mandarin Vocabulary learning

Conceptual framework

Independent Variable (IV)	Dependent Variable (DV)
Multimedia Presentation (INT vs. IN)	Mandarin Vocabulary learning
Gender (Female vs. Male)	

Conceptual and operational definition of terms (IV and DV)

Multimedia presentation

Conceptually, Multimedia is the domain for computer-controlled processing of text , graphics, illustrations, still and moving images (video), animation , audio, and all other medium where any kind of content can be depicted, recorded, distributed and processed digitally.(Grimes & Potel, 1991)

Operationally in this study, this study divides the multimedia presentation into two types. The first type of multimedia presentation has the elements of Image Narration (IN) and the second type of multimedia presentation has the elements of Image-Narration and on-screen texts (INT).

Gender

According to Merriam-webster, Gender is the behavioural, cultural, or psychological traits typically associated with one sex. The terms male and female associate only to biological forms (sex), while the terms masculine/masculinity, feminine/femininity, woman/girl, and man/boy relate only to psychological and sociocultural traits (gender). In this study, we observe both female and male to see the difference in abilities.

Performance on Mandarin Learning

Performance as defined by Merriam-webster is the execution of an action, the accomplishment of something and also the linguistic behavior of an individual which is the ability to speak a certain language.

Operationally in this study, we use the term performance as to measure the efficiency of multimedia presentation to aid participants in acquiring Mandarin language and also to observe the number of vocabulary and phrases that are correctly answered by participants in this study.

Significance of study

The study's key takeaway has been to assess which multimedia presentation was much more effective in facilitating words and phrases as well as grammar acquisition in the Mandarin language. The findings of this study will be used to observe in the learning of Mandarin vocabulary as Malaysian universities are encouraged to offer foreign language courses for their undergraduates by The Ministry of Higher Education according to Zubairi and Sarudin (2009). Not only learning a foreign language would help them in accessing foreign technologies, beneficial engagement with foreign humanities, politics, or even in global trading and education but also the major advantage of mastering a foreign language enables the undergraduates to become more self-assured in the worldwide culture and is able to be independent wherever they are. The study will also give lecturers an insight on alternatives method in learning Mandarin and can improve their students' performance for those who take Mandarin as their elective class. For future researchers, this study will assist

them with uncovering basic regions in the instructive procedure that numerous researchers could not explore thus improving the pedagogical issues in learning and teaching Mandarin.

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter discusses the previous literature regarding multimedia presentation usage for language learning, gender differences in cognitive capabilities, related theories for language learning such as Cognitive Theory of Multimedia Learning (CTML), dual-channel, limited capacity, and active processing theory will be discussed.

Multimedia Presentations in Language Learning

There is no doubt that multimedia plays an important role and has been highlighted by previous studies that it gave a more positive effect on language learning (Grzeszczyk, 2016; Pun, 2014; Thamarana, 2016). A study conducted by Kaplan-Rakowski and Loranc-Paszylk (2017) examined pupils' understandings of the utility of complex multimedia components embedded in online mnemonics for overt, casual vocabulary learning in foreign languages. The results of nonparametric statistical tests revealed that students perceived the normal flashcards that consists of Foreign Language (FL) concepts to be substantially less helpful compared to other flashcard modules that is digital hence leading to practical insinuations advancement of digital multimedia flashcards in mobile-assisted language feature learning. This indicates that adding the multimedia component in learning can help in teaching. As cited in Kaplan-Rakowski & Loranc-Paszylk (2017), Lin and Yu (2017) utilized four distinct methods of vocabulary presentation on mobile phones: text-only (translation and sample words), text plus picture, text plus tone, and all modes are merged. The plurality of respondents (N=32) regarded vocabulary delivery as inspiring (81.3 per cent), efficient (93.8 per cent) and helpful (96.9 per cent). Correspondingly, Alibakhshi & Mohammadi (2016) did a study aimed to explore whether synchronous and asynchronous multimedia components:

text and text with added graphics will have impacts on mastering English Foreign Language Master among learners. The outcomes additionally demonstrated that text presentation with added graphics was more useful than plain text presentation. and supported by a similar study done by De Sousa et al., (2017). Pierre & John (2013) also studied Chinese character learning by utilizing embodied animations in the early phase. This examination came about that Embodied Animation Learning helped better than Conventional Learning or Animation Learning. Ozer and Kiliç (2018) likewise examined the impact of the mobile-assisted learning setting for educational excellence, adoption of virtual computing resources and cognitive stress of English Foreign Language scholars. The examination demonstrated that understudies acquiring a foreign language in a mobile-assisted learning environment were not cognitively stressed and also learned better compared to the controlled group. Chi-Cheng et al. (2011) analysed the impact media presentation style (sound and text vs sound) of English learning comprehension and cognitive load. Participants were automatically allocated either to single mode (sound) or to double mode (sound and text). Research questions were: (a) that dual-mode learners outperformed single-mode learners in listening comprehension; In the case that the responses to these inquiries are constructive, the modality effect will occur and thus the redundancy effect does not occur. The outcomes demonstrate that (a) text substantially improved English listening comprehension and decreased cognitive load; (b) students with higher English listening comprehension encountered lower cognitive loads and the other way around. The study of the impact on different types of multimedia presentation also applies to other language such as French by Zulkiply (2014) that proposed Animation-Narration-Text on-screen (ANT) presentation greatly increased the acquisition of French vocabulary and researches on other subjects such as agriculture science by Olori & Igbosanu (2016), Social Sciences by (Mcneill, Doolittle, & Hicks, 2009; De Sousa et al., 2017) and

many more. Hence all these studies proved that multimedia learning has been the catalyst to language learning.

Gender and multimedia presentation

Ayres (2015) factually pointed out the lack of research that moderated or perceived gender in digital architecture. Most of the studies done in the previous research are based on Nash's (1979) Theory where he proposed that masculine prompts the development of spatial, numerical, and logical aptitudes, whereas feminine identification encourages verbal and language capacities. This is supported by the past decade study of Sergi & Iachini (2008) where they stated that mental rotation tasks and the tasks that require an individual to develop new information of spatial form memory (spatial inferences) were dominated by males and are still relevant to the recent study from Fernandez-Baizan et al. (2019) where they studied spatial memory by using two strategies which are identified with the watcher's point of view, and allocentric, related to environmental cues Results indicated that men outflanked women on both tasks of spatial memory. Women done much better on Allocentric processes than on Egocentric processes, while men's stats does not show contrasts between procedures subsequently underpins the presence of sex differences in the functioning of spatial memory. Asperholm et al. (2019) investigated the presence of sex contrasts in verbal and other episodic memory tasks in 54 countries. Results demonstrated that females outshined (Cohen's d> 0) males in verbal (42 out of 45 countries) and other (28 out of 45 countries) episodic memory tasks. Jeu & Mohamad (2014) while studying the implications of the Redundancy and Modality Theory on Multimedia Learning showed that the distinctive class of redundancy education and modality learning had a major gap in the supposed impetus for multimedia learning. The researchers have found out that female students in redundancy

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learning had a substantial positive outlook towards perceived support for digital learning relative to male students. Scheuringer et al. (2017) signified a minor feminine preference for phonemic fluency. In the study, 19 women in their luteal cycle process and 23 men engaged in phonemic and semantic fluency exercises with three distinct rules, one neutral, one clustering, and one accentuating the flipping of verbs. The aftereffects of this examination anyway under impartial guidelines focused on that no gender variations were observed in verbal fluency production and techniques, gender differences in communication and general performance were found in semantic fluency with advice involving an exchange approach.

While exploring learner cognitive capabilities and gender earlier exploration again presents conflicting and scanty discoveries For instance, no observable disparities depending on the class of young adults undergraduate in the late spring science program were established (Linnenbrink-garcia & Messersmith, 2015). Broadening enthusiasm out into general inspiration, Yukselturk and Bulut (2009) have noted that there are no major gender gaps between undergraduate PC programming courses in convincing convictions in self-controlled instruction. Twin research was done by Toivainen et al. (2017) indicated that women with male co-twins do higher than females with female co-twins on a behavioural transition. In-uterine transfer of testosterone from males to females (Twin Testosterone Transfer Speculation, TTT) may be assumed to have a beneficial effect on the spatial ability of males. The study further looked into gender differences and the non-verbal and verbal TTT in an immense sample of twins tested longitudinally into 2, 3, 4, 7, 9, 10, 12, 14 and 16 years of age. Man ranked verbally over females at 10 and 12 years of age. The outcome sizes of both changes were low. No gender gaps in non-verbal or verbal skills were reported at 7, 9, 14 and 16 years of age. Thamarana (2016) additionally in her research focused on that students' mentalities towards the utilization of Multimedia advancements for learning English

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understudies, paying little heed to their gender, had uplifting perspectives towards the utilization of Multimedia in English learning with difference of 0.982.

Chinese linguistic features and learning of Chinese characters

Mandarin is one of the hardest human languages in the world. Mandarin, according to Lewis (2009), is the world's most common voice, with 1.2 billion native and second-language speakers. In either case, for most English speakers, Chinese is the hardest language to reach (Mair & Moser, 1991), without a doubt because of its sporadic morphology and unsystematic morphophonemics (Everson, 1998). These characters, called Hanji (in Taiwan; Hanzi in China, Hanja in Korea, and Kanji in Japan), are non-alphabetical orthographic words that are formed and written in a specific logographic format. Chinese has become a common second language for undergraduate studies in the United States. It can be seen easily from the exponential growth in Chinese enrolments. The Modern Language Association (MLA) found that Chinese enrolments rose by 51% between 2002 and 2006. In 2002, 34,153 understudy studies were completed in Chinese classes. This figure rose to 51, 582 in 2006 at 2,795 colleges and universities surveyed by MLA (about two-thirds of all higher learning institutions in the United States) (Furman, Goldberg & Lusin, 2007). An ever-increasing number of analysts have concentrated on how students, Researchers found the beneficial outcomes of utilizing different kinds of activitys on Chinese character learning. For instance, KanjiCard, HyperCharacters, interactive media structure (Wang, 2005), Character Roots, and Chinese Character Information Area (Lam et al., 2001) all have constructive learning impacts. A increasingly cautious and tidy analysis of the feasibility and desirable conditions or drawbacks of a few CCL CALLs may be checked in Lu's (2011) study. Numerous Chinese