

MOBILE-ASSISTED SECOND LANGUAGE LEARNING: DEVELOPING A LEARNER-CENTERED FRAMEWORK

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ABSTRACT

The Mobile Assisted Language Learning concept has offered infinite language learning opportunities since its inception 20 years ago. Second Language Acquisition however embraces a considerably different body of knowledge from first language learning. While technological advances have optimized the psycholinguistic environment for language learning, this study narrows the discussion into developing a conceptual framework for Mobile Assisted Second Language Learning (MASLL). It is a logical and analytical concept developed from empirical theories and principles for Second Language mobile learning environments. Second Language Acquisition Theories, Model of Working Memory and Dual Coding Theory are the underlying learning theories for second language acquisition; Cognitive Theory of Multimedia Learning and FRAME Model on the other hand guide the design principles for mobile learning environments. Interest in MASLL derived from the preliminary investigation which highlighted low performance in oral communicative skills among learners of Chinese as a foreign language due to the lack of interactive environments. As such, a mobile chat room which follows this framework is briefly discussed to better inform the concept of MASLL.

KEYWORDS

Oral Communicative Skills, Second Language Acquisition, Mobile Learning, Mobile-Assisted Language Learning.

1. INTRODUCTION

The idea of mobile assisted language learning has permeated through the people for its mobility in accessing information and knowledge across time and space. Having known the numerous technological language learning options available, researchers (Beatty, 2003; Copact, 2004; Doughty & Long, 2003) emphasized creating a learning environment which focuses on learners, concerning pedagogy that drives learning to happen before deciding the use of mobile technologies for instructional purpose.

To create an optimal psycholinguistic second language (L2) learning environment, Doughty and Long (2003) defined 10 methodological principles and pedagogical procedures to inform choices that can be made among the technological options available. This study however highlighted Mayer's Cognitive Theory of Multimedia Learning (2009) which focuses on learner-centered approaches to understand human information-processing system when designing multimedia instructional messages.

The fundamental issue being explored was the unsatisfactory learning outcomes in Second Language Acquisition (SLA), particularly the oral communicative skills for secondary school learners. Expanded from Doughty and Long (2003), Leow, Wan & Zarina (2014) suggested that oral communicative skills can be fostered by creating an acquisition system for subconscious learning, and to impose obligatory intakes in the second language learning environment.

The preliminary investigation from Leow, et al (2014) identified the learning dilemma encountered by learners of Chinese as a second language in Malaysian International Schools. Teachers claimed that environment is the core factor that result in poor performance in oral communicative skills. This is primarily due to learners not using the target language in their interactions; apart from the language complexity factors by nature. In short, the lack of a language-practice environment needs to be addressed, by undertaking the potentially powerful learning technology with multimedia representations, particularly learning with handheld mobile devices.

Just as the oral communicative skills are important assessment components in assessing a person's language proficiency in professional English tests such as Test of English as Foreign Language Internet-Based Test (TOEFLiBT) (Frost et al. 2011) as well as in the TOEFL and TESOL, the same can be said for speaking tests in the Cambridge Chinese as a Foreign Language examination, which sees the importance of overall utterance performance in role plays, presentations and general conversation components. These stress the need to equip second language learners with fluent oral communicative skills.

In accordance with the findings, a mobile chat room environment which integrates mobile technology to synchronously and asynchronously transfer the "speech" in their daily interactions using the target language, is believed to be able to foster oral communicative skills for second language learning. It is believed that Mobile Chat Room can provide an alternative platform for extended learning after formal lessons in school; and to promote independent language learning without time and space constraints. In other words, taken the advantages mobile phones can offer, second language acquisition is much easier if a language environment can be created that can help students perform in the examination and through the real life task-based learning, as well as to reduce teachers' workload and worrying.

Mobile Assisted Second Language Learning (MASLL) acts as the underlying premise when designing the multimedia instructional messages to promise meaningful second language learning with mobile phone devices. To initiate this, an experimental research will be conducted to generate the validity and reliability of this framework. Six research questions were generated to assist the findings with moderating variables for individual differences limited to learners' reactive behavioural patterns.

Further studies are called to investigate the effectiveness of MASLL in other second language learnings, especially for school-based blended learning as well as for distance learning.

2. LITERATURE REVIEW

Learning a second language / foreign language can secure a better future in life, as indicated by The European Survey on Language Competence, ESLC (2012). Hence more than 80 % of students expressed the view that the purpose of learning a foreign language is for future work and getting a good job. In this study, second language and foreign language are treated as the same. Because the aim of this study, is to create a meaningful mobile learning environment for second language learners whose mother tongue is not the target language, therefore to differentiate between them becomes meaningless.

Krashen (2002) explained humans acquire a second language through the natural communication approach. In his "acquisition-learning" hypothesis, he highlighted the terms "acquire" and "natural" which refer to oral communication. This study therefore focuses on oral communicative skills. As Yang (2009) explained, oral communication is the most direct and frequent type of verbal communication in social activities; and it is vital for learning as learners are actively clarifying their thinking and reflecting on their learning (Focus on Literacy: Talking and Listening, 2003).

Therefore when referring to oral communicative skills acquisition, as concluded by Krashen (2002), the first language (L1) may "substitute" for the acquired second language (L2) as an utterance initiator when the performer has to produce in the target language but has not acquired enough of the L2 to do this. This explains the impact of L1 on L2 is significant, particularly for L2 beginners. Hence when teachers or instructional designers are designing a mobile assisted second language learning, a discussion of the role of L1 is crucial.

The advantages of Mobile-Assisted Language Learning (MALL) are tremendous (Chinnery, 2006; Gromik, 2012; Sarica & Cavus, 2009; Schier, Mulvany, & Shaw, 2010; Sharples et al. 2007) yet no efforts towards research have been done in Malaysia, neither on Chinese as Second Language learning, nor on secondary schools' population. From the meta-analysis, there are only studies on mobile learning (m-learning) readiness amongst higher education institutions' learners (Jacob & Issac, 2008; Supyan, Mohd Radzi, Zaini, & Pramela, 2012; Abas, Chng, & Norziati, 2009).

The interest of establishing a Mobile Assisted Second Language Learning (MASLL) in this study is derived from the effort to promote human cognition with the aids of technology, instead of focusing on the power that technology can offer to education. Cuban (2001) revealed that a technology-centered approach fails to lead to lasting improvement in education, therefore we shall learn from these disappointing results in the realm of multimedia technology, by taking the learners-centered approach (Mayer, 2009).

To understand how we can adapt multimedia to enhance human learning, we shall not neglect the readiness and acceptance for using mobile technology in learning. As indicated by Ainol (2009); Jacob & Issac (2008); Supyan, et al. (2012); Abas, et. al., (2009), Malaysian college and university learners show a high acceptance and readiness rate in mobile learning. Statistics from Malaysian Handphone Users (2012) indicate that school learners in the 15-19 age group form the second highest number of mobile phone users in Malaysia, recorded at 11.4% in the year 2012. These reflect the possibility of implementing mobile learning amongst secondary learners in Malaysia. Again however, the focus is on helping learners to enhance L2 learning through the aid of mobile technology.

From the above analysis, an understanding of the underpinning learning theories and principles of MASLL conceptual framework are crucial in order to provide a strong and solid fundamental ground in developing a second language learning environment using mobile phone devices. An experiment using a mobile chat room, in this study, will be used to validate the framework establishment.

3. LEARNING THEORIES

Learning to speak a second language (L2) has often become a challenge, although studies realized that learning a L2 can benefit academic progress in other subjects (Regarding Word Language Education, 2007). To date, studies have predominantly focused on writing assessment (Cumming et al., 2006, Ohkubo, 2009; Plakans, 2009, (Fros Elder, & Wigglesworth, 2011) and reading assessment (Yu, 2009). As pointed out by McCandlish (2012), oral communicative skills have an important social function; in the context of education, it is also well documented that oral language has an important role in the development of literacy skills (Scarborough, 1998). This study, has therefore developed a Mobile Assisted Second Language Learning (MASLL) conceptual framework to assist L2 teachers and learners in identifying the fundamental cognitive process in learning L2 through the aid of multimedia in mobile phones, or more precisely smart phones with internet access.

The theories and principles that explain the limitations in learning capacity and the human information processing system such as Model of Working Memory, Dual Coding theory, and Second Language Acquisition theory give implications when designing a framework for L2 learning; Cognitive Theory of Multimedia Learning explains how the human brain processes information in the multimedia learning environment; FRAME model of mobile learning added the social aspect into discussion. From single review to collective analyses of theories and principles, this MASLL conceptual framework is needed for creating an environment to facilitate L2 learning. This research refers to Chinese as a Second Language (CSL), with oral communicative skills as the research objective to be achieved.

3.1 Second Language Acquisition Learning Theory

The Acquisition – Learning Hypothesis (Krashen 2002) is also known as the natural approach which clearly defines two distinct concepts; both acquisition and learning need to be understood when learning a L2. To acquire a L2 does not need tedious drills but rather involves real meaningful interactions between people in the target language and culture, where the learner is an active player.

Conscious learning such as learning language grammar and structured formal instructions can hardly equip the L2 learners to master the language knowledge in the conversation (Krashen, 1988). Therefore, learning acts as a monitor for corrective process.

The significant impact of L1 on L2 is undeniable hence it becomes a premise underlying in developing conceptual framework of MASLL.

3.2 Working Memory

Baddeley's Model of Working Memory (1986) illustrates the importance of rehearsing verbal information; this is supported by Gathercole and Baddeley (1993) who explain the information that we hear in phonological form fades away in seconds, therefore the subvocal rehearsal process – by repeating the sound of the words and phrases silently or out loud, can help to retain the verbal information in the phonological loop.

Hence equipping L2 learners with oral communicative skills, which involve cognitive fluency, utterance fluency and perceived fluency, is a complicated process because it requires the learners to be able to speak the

language in a manner where listeners can understand. This process therefore needs higher working memory capacity in order to free up capacity for other information (Yoshimura & Macwhinney, 2007).

As in this study, the development of automaticity in using the L2 is important in enhancing oral communicative skills (Gathercole & Baddeley, 1993; Just & Carpenter, 1992). Technology in mobile learning environments allows development of oral communicative skills with its recording and playback functions for rehearsing, retaining and the transferring of verbal information in the voice-messaging technology. In other words to enhance L2 acquisition, technology embedded in mobile phones can assist in promoting human cognition, at a faster pace and more efficient order.

3.3 Paivio’s Dual Coding Theory (DCT)

Paivio’s Dual Coding Theory maps to the Baddeley & Hitch’s Model of Working Memory for the information processing systems (auditory channel & verbal channel), but highlights the mental representations from the same stimulus, which is called “the cross-channels representations” (Mayer, 2009) as shown in Figure 1.

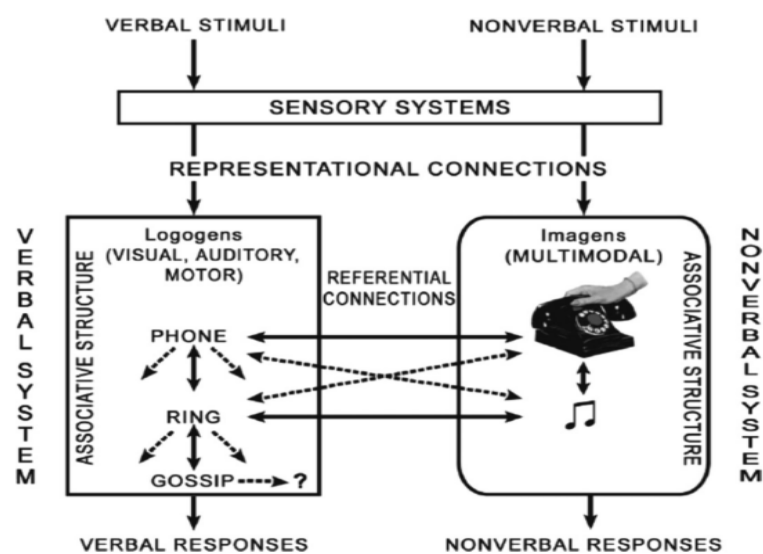


Figure 1. Paivio (2010) Dual Coding Theory and Mental Lexicon

The cross-channel representations which Mayer (2009) highlighted explain Paivio’s hypothesis on the formation of mental images (or specifically called the mental codes) that could aid in learning (Reed, 2010). Sternberg (2003) describes the importance of both verbal and visual codes in mental images for recalling purposes. This study therefore employs Paivio’s Dual Coding Theory in the “learning” strategy, but differs in terms of “acquisition” strategy, to acquire automaticity in oral communicative skills.

3.4 Cognitive Theory of Multimedia Learning

Mayer’s Cognitive Theory of Multimedia Learning (2009) provides a base to instructional design on how humans process information in a multimedia environment. The central concept of this theory taps into the human cognitive processing system which comprises of processes from selecting, to organizing, to integrating information using verbal and auditory channels, as well as the cognitive load principles in designing multimedia learning materials for effective learning, by eliminating the excessive *noise* due to limitation in working memory capacity.

Twelve principles of multimedia instructional design were identified to reduce the cognitive load which consists of extraneous, essential, and generative cognitive processing. Where the MASLL conceptual framework is concerned this theory is essential, yet it requires proper planning when dealing with cognitive load which is likely to happen when dealing with different learning goals and targets, or for particular target skills learning.

3.5 Mobile Learning (Koole's FRAME Model)

Koole's FRAME Model (Koole, 2009) in Figure 2, which is best suited to the purpose of language learning, converges three distinct perspectives: device (mobile technologies), learner (human learning capacities) and social (social interaction) aspects. As Koole mentioned, mobile learning can be implemented effectively in both formal and informal learning from the intersection of these aspects.

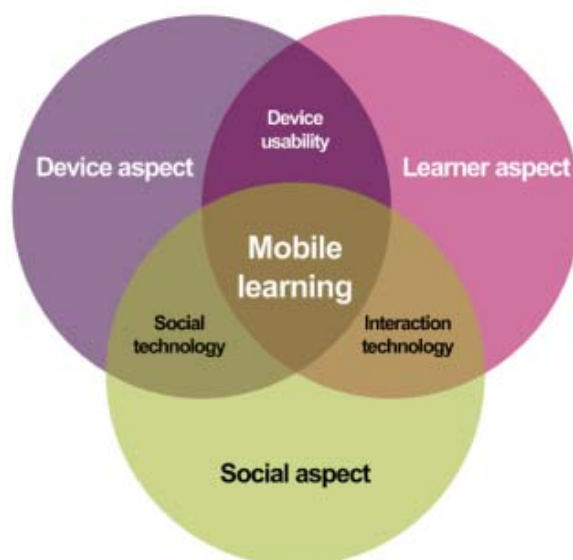


Figure 2. Koole's (2009) Framework for Rational Analysis of Mobile Education (FRAME)

The characteristics of mobile learning run in parallel with second language acquisition pedagogies, therefore the framework creates situated learning for "social and cultural practices" where people bring to the uses of tools (in this study, mobile phone) they share (Russell, 2002).

4. CONCEPTUAL FRAMEWORK

For the purpose of developing oral communicative skills in L2 learning, in particular, the analyses on literature reviews, theories and principles lead to the formulation of the Mobile-Assisted Second Language Learning (MASLL) conceptual framework in this study. The proposed MASLL framework, in Figure 3, believed to be able to improve the oral communicative skills in L2 learning, which will then be used in developing a mobile chat room environment for L2 learning, complements the comprehensive intake environment and communication strategies suggested in the following Table 1.

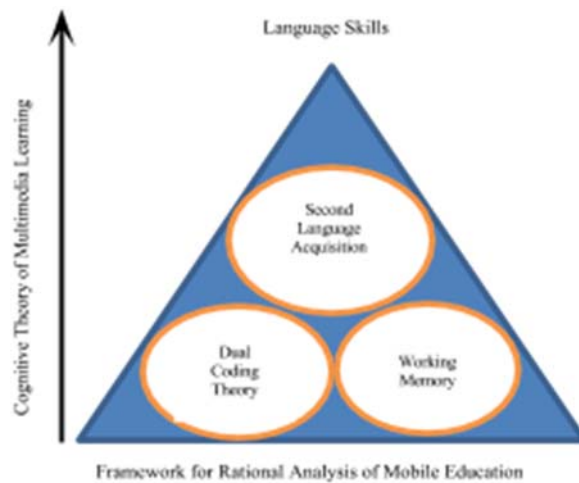


Figure 3. Conceptual Framework for Mobile-Assisted Second Language Learning (MASLL)

This MASLL framework is suggested for second language learning, after realizing the unresolved learning phenomena in classroom-based learning which were constrained by factors such as, among others, teaching and learning time, language learning environment, L1 effects, and target language complexity. This study follows Krashen's Second Language Acquisition theory, for understanding its fundamental acquisition principles in second language learning.

From the macro analysis, Baddeley's Model of Working Memory and Paivio's Dual Coding Theory explain that the human processing information system shall be the main domain for analysis when designing learning pedagogy. Taking this study in particular, we shall therefore investigate how humans process oral information when learning a L2, and to eliminate the overloaded information which could hamper the development of oral communicative skills acquisition, it will use the verbal channel and *pinyin* phonetic symbol for learning.

Adding to that, the micro analysis explains the integration of multimedia into mobile learning, which brought in Koole's FRAME mobile learning and Mayer's Cognitive Theory of Multimedia Learning into discussion. The process of selecting, organising and integrating in Cognitive Theory of Multimedia Learning distinguishes the reactions steps of learners when learning with multimedia as well as providing a stronger understanding of cognitive load theory and working memory model, whereby learners are autonomous in their own learning, but limited to their working memory capacity. Therefore researchers, educators and instructional designers are urged to investigate the fundamental learning theories and principles, for effective learning to take place.

MASLL is believed to be able to provide a more precise analysis into learning a second language, in a mobile learning environment. This MASLL framework will be used in this study to develop a mobile (cellphone) chat room for learning Chinese as a Second Language.

5. CHARACTERISTICS OF MOBILE CHAT ROOM FOR ORAL COMMUNICATIVE SKILLS ACQUISITION

As postulated by Krashen (2002), the major function of a L2 language classroom is to provide intake for acquisition in the learning environment. Apart from the mobile technology that be offered, the intake obligatory and fluency programs shall be designed for L2 acquisition. Grounded with the theories and conceptual framework, the following Table 1 explains the similar aspects and components which a mobile chat room (MCR) should offer when learning a FL.

Table 1. L2 acquisition in mobile chat room, adapted from Krashen (2002) acquisition system, Koole's (2009) FRAME Model, cited from Leow, et. al., (2014b)

	Acquisition: Intake (Obligatory)	Mobile Learning	Mobile-Chat-Room (MCR)
1	Meaningful / Communicative exercises	Social aspect & Interaction technology	Peers learning through informal chat group, extended learning after school (syllabus-based)
2	Extensive reading	Learner aspect	Attachment, hyperlink: Text, pictures
3	Natural method	Social aspect & Interaction technology	Oral and written communication, hand-held, accessible
4	Intercambio	Social aspect / learner aspect	Grouping with native speaker
5	Total Physical Response	Device usability	Video / Audio recording
	Acquisition: Fluency		
1	Communication strategies	Device usability / social technology	Syllabus-based, multimedia (audio, videos, pictures)
2	Routines / patterns (short term)	Device usability / social technology	Synchronous & Asynchronous
3	Role-playing, games, etc.	Social technology & Interaction technology	Apps, games and etc.
4	Writing	Device aspect	Hand - writing / Typing

5. CONCLUSION

This paper analyses the development of mobile assisted language learning, particularly for second language acquisition, with oral communicative skills being one of the experiment components to further validate the usability of this Mobile Assisted Second Language Learning (MASLL) conceptual framework. Despite the fact that many studies have discussed the use of mobile learning in the MALL concepts, a conceptual framework in which to review the learning of a second language is yet to be found.

The development of MASLL conceptual framework is important and is in need of further investigation and validation in other second language learning research, as it is designed to address mobile learning pedagogies for second language acquisition.

In short, it is feasible that mobile phones could be useful learning tools for learning, provided the setting of the learning environment can be defined for its purpose; and can be confined into a cohesive MASLL environment which supports and motivates learning as a whole.

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