

MyCLOUD: A Seamless Language Learning Environment for Vocabulary Learning and Formal-Informal Cycles of Writing Activities

Lung-Hsiang WONG^{a*}, Guat Poh AW^a, Ching Sing CHAI^a & May LIU^b

^aNational Institute of Education, Nanyang Technological University, Singapore

^bSingapore Centre for Chinese Language, Singapore

*lunghsiang.wong@nie.edu.sg

Abstract: MyCLOUD (My Chinese Language ubiquitous learning Days) is a design-based research study with the aim of developing a holistic and scalable mobile- and cloud-assisted seamless Chinese Language (CL) learning environment for Primary 3-5 (3rd-5th grade) students in Singapore. The project involves a 2 ½-year school-based intervention. The intention is to *enculturate* students in perpetually carrying out CL vocabulary learning and communicative writing activities that encompass formal and informal learning settings. In this paper, we focus on describing the initial design framework, and pedagogical and technological design of the MyCLOUD learning environment in cycle 1, with the enactment process and outcomes being synoptically reported. It will be followed by an analysis and reflection of the challenges faced and pitfalls identified, and finally the proposal of a new framework for project cycle 2.

Keywords: Seamless Language Learning, Mobile Assisted Language Learning, Vocabulary learning, communicative writing, Design-Based Research, scaling up

Introduction

MyCLOUD (My Chinese Language ubiquitous learning Days, 语飞行云) is a design-based research (DBR) study with the aim of developing a holistic and scalable mobile- and cloud-assisted Chinese Language (CL) (specifically, Chinese as second language (L2)) learning environment for Primary 3-5 (3rd-5th grade) students in Singapore. The project involves a long-term school-based intervention to *enculturate* students in carrying out vocabulary learning and communicative writing activities that encompass formal and informal settings. Apart from the experimental school, four other schools will work towards adopting MyCLOUD by 2014.

The MyCLOUD project is inspired to address the limitations of the mainstream CL classroom practice (which can be characterised as being transmissionist and behaviourist) or CL e-learning platforms (which tend to 'lock' learners in the cyberspace throughout their learning processes). Both approaches are perhaps not conducive in creating a crucial condition for successful language learning, i.e., to facilitate or leverage real-life applications of language and active meaning making of daily experience with the target language [1][2].

The overarching learning principle of MyCLOUD is seamless learning [3][4], a learning approach where a learner experiences a continuity of learning across a combination of locations, times, technologies or social settings. Under this approach, students are assigned mobile devices on 1:1 (one-device-per-student), 24x7 basis in order to stimulate and support their language learning both within and beyond the classrooms. A

cloud-based, device-independent MyCLOUD learning platform leveraging mobile and cloud computing technologies has been developed for the purpose. Another aim is to design new classroom practices that will be integrated into the existing formal curriculum as well as foster students' competency to engender deep CL learning.

The first DBR cycle of the project (cycle 1) covers the 10-month intervention period between August 2011 and May 2012 in three experimental classes of a neighborhood school. Despite facing multiple challenges, we have gradually ironed them out and established a foundation to advance the study. Conforming to the principle of DBR, we have recently analysed and reflected upon the project cycle 1, and revised the design framework proposed earlier. Our intentions are not only to improve both its theoretical rooting and operational rigour, but also to learn from the practical experience in order to inform future scaling-up endeavours. Thus, it is timely for us to revise and refine the overall research direction, and advance to project cycle 2.

In this paper, we focus on describing the initial design framework, and pedagogical and technological design of the MyCLOUD learning environment in cycle 1, with the enactment process and outcomes being synoptically reported. It will be followed by an analysis and reflection of the challenges faced and pitfalls identified, and finally the proposal of a new framework and the design of new pedagogical and learning activities for project cycle 2.

1. Literature Review

1.1 Mobile Seamless Learning and Seamless Language Learning

The ready-to-hand access of mobile devices creates the potential for a new wave of evolution of technology-enhanced learning, characterised by 'seamless learning spaces' [3]. Such spaces are marked by continuity of the learning experience across different environments. Each learner, who has 24x7 access to at least one mobile device (1:1), would have plenty opportunities to learn across formal and informal contexts, physical world and cyberspace, as well as personal and social learning spaces – thus achieving a holistic and perpetual learning habit that do no over-reliant on any specific learning space (e.g., formal schooling or any online learning portal). In a related note, paralleling to the paradigm shift in language learning theories from behaviorism to a communicative [5] and authentic [2] learning approach, the focus of Mobile-Assisted Language Learning (MALL) is swinging from content-based (delivery of relatively static learning content through mobile devices) to design-oriented (authentic or social mobile learning activities) studies [6]. It is expected that such a trend can make MALL a viable solution to blend learners' language learning environment into their daily life.

Indeed, one of the critical problems in traditional second language (L2) classroom practices is the excessive amount of decontextualised information, indirect and abstract language knowledge, and 'secondhand' experiences confined in classroom context (e.g., [7]). Therefore, language learning theorists have been advocating the integration of formal and informal language learning, which can even be dated back to pre-MALL days (e.g., [8]). In turn, we envisage a Seamless Language Learning (SLL) model for on-going execution to address the research gap. With proper learning design, the mobile/ubiquitous technology could facilitate the transformation of language classroom instructions into a more learner-centred, personalised, perpetual and participatory learning process across multiple learning spaces.

1.2 From Vocabulary Learning to Writing

Vocabulary, or lexicon, is often considered the basis of all language. Many difficulties in both receptive and productive use of the target language arise from learners' inadequate vocabulary knowledge [9]. Nation [9] divides vocabulary into two categories: *receptive* vocabulary and *productive* vocabulary. The former refers to the words users can understand while reading and listening (language comprehension). The latter refers to the words that users are able to freely use in writing and speaking (language use). In the study of L2 vocabulary acquisition, investigators realise that vocabulary-knowledge acquisition is a multi-level continuum, not a simple dichotomy such as "known" and "unknown" [10]. In order to ensure that the learners are in good command of the vocabulary, measurement, judgment, revision and consolidation during the process of vocabulary production is required.

Krashen [11] makes a distinction between language *acquisition* and language *learning*. Young kids acquire their home language easily without formal teaching. This acquisition is gradual, based on receiving and understanding messages, building a listening (receptive) vocabulary, and slowly attempting verbal production of the language in non-stressful situations. Therefore, apart from meaningful exposure to language, kids need language interactions. Swain [12] proposes that when kids work together to solve problems, it gives them authentic reasons to communicate, which in turn refines their language production. In addition, Krashen [11] put forward the hypothesis of "affective filter". When learners are placed in a stressful situation in which language production or performance is demanded, the students' ability to learn or produce language is impaired. The hypothesis stresses that for students to learn effectively, their motivation and self-esteem must be supported while diminishing their anxiety (i.e., without having to worry about being embarrassed). This facilitates the language learners to take in information, process vocabulary and eventually produce language because their affective filter is not interfering with thinking or learning.

2. MyCLOUD: Project Cycle 1 (January 2011-June 2012)

The MyCLOUD project is a leveling up effort of the completed study of "Move, Idioms!" [13]. In the MyCLOUD project, we are iteratively designing, implementing, evaluating and refining a mobile- and cloud computing-assisted SLL environment for Primary 3-5 CL learning that is both integrated into the formal lessons and for promoting students' after-class learning. Instead of prescribing pedagogies for the teachers to adopt, we have been facilitating dialogues between research and practice by proposing a high-level socio-techno-pedagogical design framework, followed by engaging teachers in pedagogical co-designing sessions where their practical experiences have been respected. In addition, the lesson plans are also tapping on the national textbook as one of the main learning resources. 85 Primary 3 students from 3 classes with mixed ability in CL are involved in the study. Each of them is assigned an Acer Iconia Tab W505 (Windows-based tablet) with a 3G broadband plan for 24x7 access throughout the 2 ½ years of intervention.

Figure 1 depicts the original socio-techno-pedagogical framework of MyCLOUD [14]. The design framework intertwines between two dimensions, namely, the seamless learning dimension and the language learning dimension. The seamless learning dimension constitutes the cyclic learning process that encompasses four activities: 'in-class vocabulary learning' (for learning engagement), 'contextual personalised learning' (e.g., after-school photo taking and sentence making), 'online peer learning' (e.g., peer reviews), and 'in-class consolidation'. Guided by the above-stated FSL framework [15],

this learning process design reinforces the bridging of formal and informal learning, personalised and social learning, and learning in both physical and digital realms. The language learning dimension was focusing on vocabulary learning, with three stages of learning activities being specified: ‘contextual vocabulary learning’ (photo taking and sentence making in and out of class) (e.g., [9]), ‘generalisation of vocabulary knowledge’ (through peer discussions) (e.g., [16]) and ‘construction of mental lexicon’ (simply put – students to draw concept map-like vocabulary maps) (e.g., [17]).

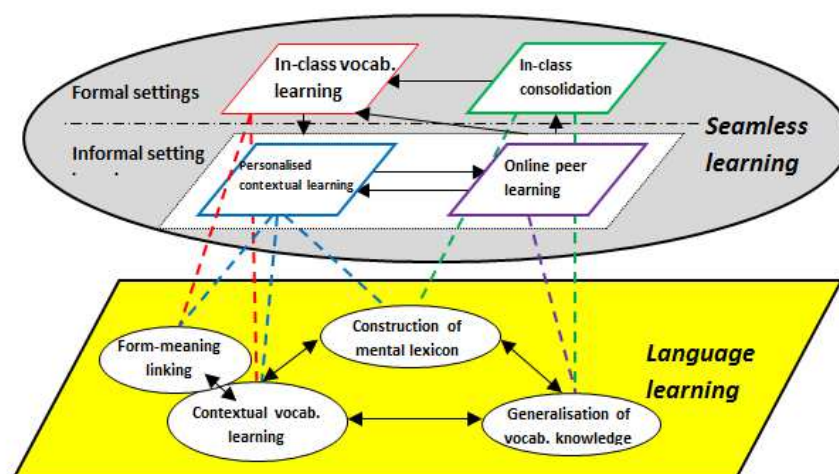


Figure 1: The original socio-techno-pedagogical framework of MyCLOUD

In addition, we laid out a 2 ½-year intervention plan in as shown below,

Year 1 (Primary 3; 2nd half of the year only – orientation; motivation): The students focused on contextualised learning (e.g., photo taking and sentence making to describe their daily life) and simple social networking activities (typical microblogging-and-comment activities as another form of contextualised, productive learning), plus relatively casual peer discussions.

Year 2 (Primary 4 – towards greater quality of linguistic artefacts and peer learning): With the contextualised learning activities still going on, the teachers will foster more meaningful, inductive peer reviews among the students. In the second half of the year, they will deepen their learning through the construction of simple mental lexicons.

Year 3 (Primary 5 – constructions of mental lexicons): While the other learning activities are still going on, the students will construct more complex personal and group mental lexicons.

In addition, we launched MyCLOUD version 1 platform in July 2011, with the following components being deployed in MyCLOUD classes and students’ daily learning activities,

- My Mictionary (我的C动词典): Mictionary refers to mobile dictionary, which serves as students’ personalised vocabulary learning e-portfolio. Students can expand their vocabulary base as well as refine their usage of vocabularies anytime, anywhere over a sustained period of time, and build contents on individual vocabularies by pooling relevant online resources or uploading photos/sentences. In addition, there is a special space for students to write full compositions and share it on the platform if they wish.
- My e-Textbook: The textbook passages are digitised and linked to a web-based text-to-speech service for the system to read them aloud. Meanwhile, students can highlight unfamiliar vocabularies and add them to My Mictionary.
- Co-Mictionary: Co-Mictionary refers to “Community Mictionary”. The system generates one “vocabulary page” for each vocabulary added by any student into their

own My Mictionary's and consolidates all the artefacts created by different students with the same vocabulary onto one page. This is to facilitate peer comparisons and discussions, thus achieving social generalisation of the vocabulary knowledge.

- MyCLOUDNet: This is a social networking space for students to tweet or carry out micro-blogging, and reply to these tweets, in Chinese. A tweet posted by a student can be linked to My Mictionary (depending on the vocabulary that she incidentally uses).
- My Teaching Pal: This is a classroom management UI for teachers to create lesson, send messages to all or selected students, manage the classroom learning flow, as well as enable all or selectively limit students' usage of the features on MyCLOUD platform.

After the initial orientation period in Year 1, the participating students and teachers have been gradually getting used to the new learning approach and platform, thus exhibiting some promising progress as summarised below,

Student motivation: The participating students exhibited increasing motivation in MyCLOUD activities, which is evident by the significant growth of the activity levels over the first 10 months of intervention. In particular, the average amount of artefacts created was increased from 1.1 per student in the first 5 months to 15.2 per student in the next 5 months; and the average amounts of peer comments during the two periods are 0.6 and 20.3 respectively. We argue that the rise of students' motivational level can be attributed to the decrease of affective filtering, as MyCLOUD provides students a relatively 'risk-free' learning environment to try out the language that most of them found it frustrated to master and difficult to apply. In addition, at their ages, most students love to gain attentions (i.e., peer comments) to their postings on MyCLOUDNet. The improvement in their Chinese computer input skill and speed over the time has also resulted in the reduction of their anxiety in writing the tedious logographic Chinese script, thus increasing their motivation in sentence compositions and peer interactions.

Improvement in the quality of student artefacts: Through various scaffolding strategies co-designed by the team and the teachers since March 2012, the students had been gradually picking up the 'awareness' and the skills for generating more enriched and better quality artefacts. More creative contexts are exhibited in the artefacts; more complete and complex sentences were composed through extended meaning making on the photos; and more meaningful self-revisions and peer reviews ensued.

Teachers' professional development (PD) and transformation of classroom practice: After the first 3 months' techno-pedagogical orientation period, the 3 participating teachers have progressively achieved a good understanding in seamless learning, and have become more adept in facilitating MyCLOUD learning processes. By June 2012, they co-designed 11 lesson plans with the team, which were customised to suit varied class cultures and student competencies. Lesson enactments are getting smoother and more student-centred. The teachers are more willing to let students try out challenging activities, rather than conveniently assuming that "they are not at the right levels of motivation/competency" and therefore simplifying the activities.

3. Challenges and Gaps in Project Cycle 1

Similar to our reflection upon "Move, Idioms!", despite of the promising outcomes in project cycle 1, challenges and gaps are inevitable, which we summarise in the following points.

- 1) *Reflection on the framework & the learning goals:* After 10 months' intervention and ongoing exchange with international scholars, we recognised the pitfall of the framework in Figure 1 for not being able to theoretically reconcile the seamless

learning and language learning dimensions – the former is socio-cultural in nature while the latter is more individual cognition-oriented. In addition, the over-focus on vocabulary learning has been challenged in the aspect of holistic language learning. Since March 2012, we have revised the framework by re-focusing on the socio-cultural aspect of SLL, which will be explicated below.

- 2) *Student learning and learning behaviours*: As stated before, the first 10 months' intervention sees the students becoming more motivated in MyCLOUD activities including creating and sharing artefacts, and carrying out peer interactions. Nevertheless, being motivated is not necessarily an indicator of self-directed learning (SDL), as they still perceive those as extensions of schoolwork. As well, students' habit of mind in social networking (on MyCloudNet) is not yet established. To transform typical Singapore students who tend to be very exam-minded to become seamless learners, it takes an *enculturation* process [15] which should be accomplished by a longitudinal intervention.

4. Refining MyCLOUD in Project Cycle 2

To address point 1 in the previous section, the major change is to de-emphasise mental lexicon aspect (a psycholinguist concept which is individual cognition-oriented), and treat vocabulary learning as a stimulus to advance students to proactively make effective use of the social networking feature of MyCLOUDNet for CL writing and communication. Figure 2 depicts the revised socio-techno-pedagogical model of MyCLOUD. The basic structure of the division of the two intertwining dimensions of seamless learning and language learning, and the FSL process framework within the seamless learning dimension are retained.

Conversely, the language learning dimension has been revised. Whereas the students will continue on cycles of contextualised vocabulary learning and generalisation of vocabulary knowledge, the writing activities are further foregrounded on top of the vocabulary learning cycles with stronger emphasis on social-networking-based written communication (through composing sentences and paragraphs, and comments), which will also be linked to personalised composition writing. Practicing writing through composing sentences and paragraphs is known as 'small-chunk writing' (小练笔) in the context of CL writing instructions. Such an approach is not only as a means to build up linguistic skills in a bottom-up manner, but also to reduce students' affective filter in writing in L2. What is unique in MyCLOUD's 'small-chunk writing' is to blend such activities into students' daily life with the eventual aim of transforming them into self-directed writers (which is also to address point 2 in the previous section). Special software features and teacher scaffolds will be designed to link students' content building for My Mictionary and MyCLOUDNet (informal writing) into classroom composition (formal writing) process and vice-versa, thus seamlessly bridging formal and informal writing. The linguistic artefacts generated by the students (sentences/paragraphs/ compositions) will serve as a basis for them to socially performing generalisation of vocabulary knowledge.

Within the seamless learning and language learning dimensions of the framework, "bridging of learning spaces" [16] and "motivation" are foregrounded respectively as the fundamental success factors that encompass the entire learning processes. We shall strive for creating conditions to achieve both factors in designing and facilitating MyCLOUD learning activities. The goals of the two dimensions are the target students' "readiness for SDL" and "vocabulary and writing competencies" respectively. The green arrow denotes that the FSL framework at the bottom will be guiding the flow of the language learning activities.

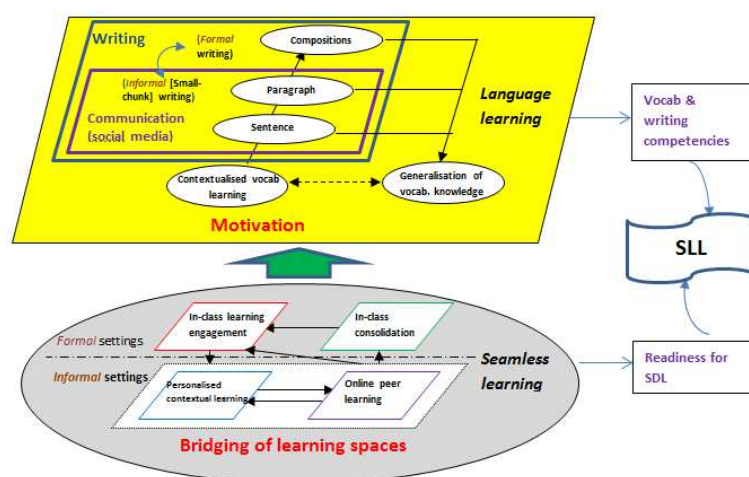


Figure 2: The revised socio-techno-pedagogical framework of MyCLOUD

With the reflections made on the lesson designs, the experience gained during the enactment, and the new focus on vocabulary-to-writing trajectory, new features are required in the platform. The MyCLOUD version 2 platform is planned for upgrades in the following major aspects: (1) supporting self, peer and teachers' evaluations in various spaces; (2) supporting the bridging of formal and informal writing; (3) improving social networking features to make the platform more attractive to students in carrying out informal learning; (4) group management features to enhance small-group activities in and out of classroom.

5. Conclusion

In this paper, we present MyCLOUD, a mobile-assisted seamless language learning environment with the aims of impacting classroom practice, nurturing self-directed learners and improving learners' CL vocabulary and writing competencies. Specifically, we narrated our first DBR cycle of framework and platform development, teachers' PD, lesson design and enactment, students' learning behaviours and outcomes across multiple learning spaces, and our reflection upon the entire project cycle that facilitates us to move on to second DBR cycle with a major revision on the framework and learning process design. With the eventual goal of scaling it up in five schools in mind, we are working towards preparing the schools in translating and sustaining the MyCLOUD approach. Critical success factors, learning design guidelines, and PD plans for a greater population of teachers need to be distilled or developed in order to inform, guide and support the schools upon taking over the ownership in practicing MyCLOUD. Apart from the prospective impact to school practice, the potential academic contribution of this study is the development and enactment of a seamless language learning environment to address the gaps of conventional language instructions. Further investigation and analysis of students' externally-facilitated or self-initiated learning processes and outcomes will shed light in the nature of seamless learning, and what it takes to make seamless learning happens, and how it may result in effective learning. It is hoped that all these research inquiries and practical aims can be accomplished by the end of the project cycle 2.

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