Students' Meaning Making in a Mobile Assisted Chinese Idiom Learning Environment

Lung-Hsiang Wong, Learning Sciences Laboratory, National Institute of Education, 1, Nanyang Walk, Singapore 637616, lunghsiang.wong@nie.edu.sg

Chee-Kuen Chin, Chee-Lay Tan, May Liu, & Cheng Gong, Singapore Centre for Chinese Language, 287, Ghim Moh Road, Singapore 269623, {cheekuen.chin, cheelay.tan, may.liu, cheng.gong}@sccl.sg

Abstract: In recent years, we witness the rise of communicative and contextualized language learning approaches that is concomitant with developments of Mobile Assisted Language Learning (MALL). In this paper, we present a pilot study in MALL that emphasizes "creative learner outputs" and contextualized meaning making. In learning Chinese idioms, students used smartphones on a one-device-per-person basis to capture photos of the real-life contexts pertaining to the idioms, and to construct sentences with them. Subsequently, in-class or online discussions took place, which would enhance the students' understanding in the proper usage of the idioms. The learning design is grounded in the seamless learning model that encompass in-class formal learning and out-of-class informal setting, and personal and social learning spaces. The students' ongoing, open-ended, personal-to-social meaning making process and artifacts have indeed shown some indicators of "seamless language learning" that has the potential of transforming language learning into an authentic learning experience.

Introduction

A closed system may settle into an undifferentiated state, while an open one is more likely to become animated, and sometimes highly coordinated (Kauffman, 1995). Likewise, in language learning, "closed," mechanical exercises restrict information to only "correct" answers that are unlikely to remain in permanent memory (Stevick, 1996), whereas meaningful and communicative activities build on the classroom to learners' wider knowledge—an almost inexhaustible resource (Bolte & Herrlitz, 1986).

This paper reports on a pilot study of Mobile Assisted Language Learning (MALL) in Nan Chiau Primary School in Singapore. In the study, we facilitated a 5th Grade class to study and apply 29 common Chinese idioms, within the context of learning Chinese as a Second Language (L2). Apart from in-class idiom lessons with contextualized learning activities, the students were assigned with a smartphone each which they kept and accessed 24x7 throughout the nine-week period of the study. They were instructed to carry out photoblogging-like activities by using their smartphones to take photos in their daily lives, and then make sentences with the learned idioms, and subsequently to post them onto a wiki space for sharing and peer review.

The MALL design emphasizes students' proactive association of the contexts that they encounter in the real world with the learned Chinese idioms (a special form of vocabulary). In this paper, we focus on studying the students' individual-to-social learning process, which could be attributed to the process of multimodal, student artifact-focused, ongoing, open-ended meaning making in vocabulary learning. The students' learning processes and outcomes suggest a compelling direction for MALL – seamless language learning.

Literature Review

Constructivist Approach in Language Learning

In recent decades, we witness a paradigm shift of language learning theories from behaviorism and structurism to a communicative approach (Salaberry, 1996). The emphasis of the communicative approach is on real-world communication in environment and situation that language learners might actually experience (Hoopingarner, 2009). Under the emerging paradigm, learning is seen not as a passive activity that requires learners to accept pre-packaged information, but as an active process by which learners create their own understanding. This approach meshes well with the constructivist theory of learning (Jonassen, 1991).

Language learning involves active mental activity such as interaction and hypothesis testing (Gass, 1997) and productive output (Swain, 1985). In addition, prior studies in the L2 classroom have brought our attention to the importance of the negotiation of meaning, also known as social meaning making, in L2 development (e.g., Long, 1985). More sophisticated meaning making involves the mutual transformation in the actions, and perhaps the thoughts and moods, of two partners (Locke & Bogin, 2006). However, the social context has been undervalued as an arena for collaborative L2 learning. Where meaning appears fixed, immutable, to be sent and received, what is lost is the collaborative nature of meaning making (Savignon, 1991).

Vocabulary (Idiom) Learning

As a main component of language learning, vocabulary learning is often delivered in conventional ways, such as providing abstract definitions and sentences taken out of the context of normal use. Such strategies might well

lead to simplistic conception of vocabulary (Miller & Gildea, 1987), as they may deprive the students of pragmatic cues and render the process of meaning making harder (Kumaravadivelu, 1994).

Vocabulary can be classified into two categories, context-free and context-dependent vocabulary. Context-free vocabularies, such as nouns, are those which can stand by themselves without depending on sentence contexts (Elliot & Zhang, 1998). Context-dependent vocabularies could either be prepositions, which are not rich in meaning and are better learnt in sentence as their meanings depend on the presence of other words (ibid), or compound vocabulary such as idioms whose complex nature may result in context-dependent appropriateness of their usage (Deng, 2001) – there are many possible real-life contexts where such vocabulary could suitably (or unsuitably but often mistakenly) be used. As contemporary learning theorists argue that language teachers should create the right conditions for students to 'uncover' grammar (e.g., Thornbury, 2001) through active meaning making (Bourke, 2005), we envisage a similar principle for vocabulary learning.

Over the years, vocabulary learning theorists have advocated productive (apart from receptive) learning (Webb, 2005), inductive meaning making (Lewis, 1997), and contextual learning (Sanaoui, 1995), among others. Furthermore, Nation (2001) proposes three psychological processes for successful vocabulary learning: noticing (a word is highlighted as being salient text input), retrieving (repeat encountering of the word) and creative/generative (a previously encountered word is met or used in a slightly different context). The three-stage model stresses the importance of the coupling of receptive and productive learning, and the learners' generative usage of the vocabulary in alternative contexts. All these point to the trend of emphasizing students' self-construction of understanding in vocabulary usage, and this is done most likely through authentic learning.

Mobile Technology for Vocabulary Learning

As authentic learning (i.e., learning activities that are framed around real-life contexts) comes into the picture of language learning (Widdowson, 1978), MALL becomes a viable solution to the blending of the language learners' learning environment into their real-life contexts. Prior research on mobile learning has shown that the mobility and connectivity of the devices enable students to become an active participant, not a passive receiver, in learning activities (Looi *et al.*, 2009). The recent development of MALL demonstrates a similar tendency.

According to a survey by Kukulska-Hulme & Shield (2007), prior MALL studies could be divided into two categories: content-based (formal learning-oriented; developing learning materials for mobile access) and design-oriented (informal learning-oriented, out-of-class, often authentic and/or social learning activities). Most of the MALL studies in the context of vocabulary learning have conformed to content-based design, whose systems work in the way of pushing of relatively static learning materials or quizzes to the device learning (e.g., Thornton & Houser, 2002; Levy & Kennedy, 2005), which could be attributed to behaviorist learning despite having the advantage of anytime, anywhere. Ogata, Akamatsu & Yano's (2004) design moves one big step by incorporating context-aware technology, as their system enables the learners to use their handhelds to detect the RFID-tagged objects and retrieve their names (vocabulary) and explanations. All the above-stated designs are however still restricted to receptive learning and are usually (not always) only suitable for learning context-free vocabulary. Learning context-dependent vocabulary with the above designs may result in learners' understanding of the general definitions but not necessary the proper usage of them.

Seamless Learning and Language Learning

Recognizing both the importance and the limitation of formal, in-class language learning, language learning theorists have been advocating the integration of formal and informal language learning (which could be dated back to the pre-MALL days, e.g., Titone, 1969). MALL becomes a solution to the blending of the language learners' learning environment into their real-life contexts. The handhelds which could function as a personal "learning hub" creates the potential for a new wave of evolution of technology-enhanced learning. This evolution is characterized by "seamless learning spaces" and marked by continuity of the learning experience across different environments, and emerging from the availability of one device or more per student ("one-to-one") for 24x7 access (Chan *et al.*, 2006). In particular, the integration of individual and social learning could be further enhanced by blending mobile and Web 2.0 technologies to bring to the students the situated mobile learning experiences that take into account both the students' everyday tasks and socio-constructivism (Winters, 2007). Such integration can be expected to balance and bring out the best of both individual and social learning.

The integration of technology-assisted informal learning into the students' lives does not imply the elimination of school-based formal learning. Instead, it becomes more challenging for teachers to inspire students' learning in both formal and informal settings by modeling the seamless learning process (Zhang *et al.*, 2009). In this regard, we are keen to tap on the seamless learning framework to carry out the modern language learning pedagogy for the e-generation. Such framework favors contextualized learning, the integration of formal and informal learning, and, more importantly, the integration of receptive and productive learning.

Study Description

Our one-and-a-half-year study, "Move, Idioms!" (成语，动起来！), consists of a pilot study and a full-scale intervention, in July-September 2009 and in January-October 2010 respectively. This paper focuses on the design, implementation, and our analysis on the students' artifacts of the completed pilot study.

In facilitating the pilot study, we designed a learning process to engage students in ongoing Chinese idiom learning and writing (sentence making) activities. A class of 40 Primary 5 students participated in the study. Each of them was assigned a HTC TyTN II smartphone with built-in digital camera, Wi-Fi access, internet browser and Chinese text input. Furthermore, we used PBWorks (http://www.pbworks.com/) to create the wiki space for photo/sentence sharing and peer reviews. Apart from standard wiki features such as multi-user content editor and page history, an online forum-style comment tool is incorporated on each wiki page. In addition, mobile-optimized animations that depict the meanings of idioms can be accessed by students anytime, anywhere. The animations are sponsored by our research partner, a digital content developer based in Taiwan.

Figure 1 depicts the process of our learning design. The four-activity process is iterative and encompasses formal and informal learning spaces, individual and social learning spaces, receptive and productive activities, and the use of both mobile and Web 2.0 technologies (that is, learning takes place in both the physical world and the cyberspace). The processes of the four activities are described below:
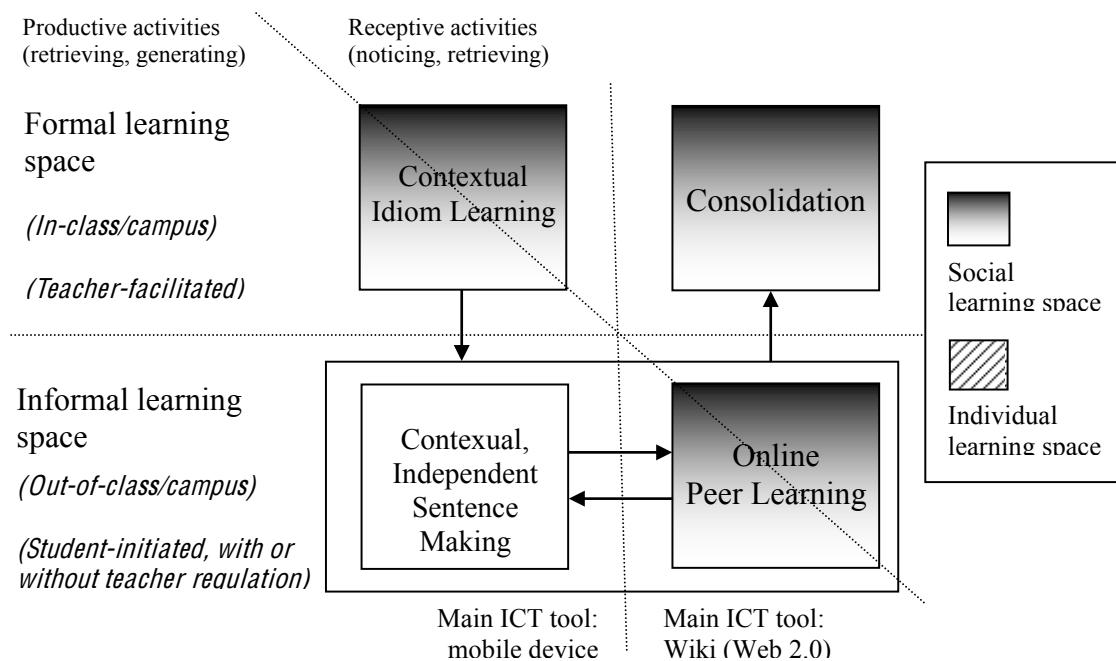

Figure 1. The mobile-assisted idiom learning process.

Activity 1 – In-class contextual idiom learning: The classroom/in-campus activities, to be designed in the form of lesson plans, are conducted with the aim of carrying out the "noticing" and "retrieving" processes in Nation's (2001) framework as well as preparing students to engage in subsequent out-of-school activities ("generating"). During each lesson, a new set of "idiomatic animations" is shown to the class (also accessible by the students after school). The teacher then conduct contextualized learning activities, such as creating linguistic contexts, for instance by providing context-rich images, inviting students to discuss about relevant idioms, and even "mobilizing" the students to take photos in the campus to illustrate the idioms and upload them to the Web.

Activity 2 – Out-of-class, contextual, independent sentence making: students carry the phones assigned to them 24x7. Apart from watching the animations repeatedly, students are instructed to identify or create contexts in their daily lives which could be associated with any learned idiom. They then take photos, make sentences that contain the idioms to describe the photos, and post them onto a class wiki space. In the wiki space, we create one wiki page for each idiom covered in the class for students to post their photos/sentences. This offers convenience for comparing various student-identified contexts pertaining to the same idiom.

Activity 3 – Out-of-class, online peer learning: students are encouraged to perform peer reviews on the wiki by commenting on (with the PBWorks comment tool), correcting or improving their peers' sentences (by making direct modifications on the sentences posted on the wiki pages with a different font color). During the pilot study, they carried out these activities with PC's at home, not the phones, due to technical constraint.

Activity 4 – In-class consolidation: Possible activities include class or small group discussions on selected sentences made by the students, or polls for "the most popular photo/sentence" on each "idiom page".

During the nine-week period of the pilot study, the teacher conducted five "idiom classes" (Activity 1) in the first five weeks with roughly one-week intervals. In the first three classes, the students were required to

enact some of the idioms for peers to take photos within the classroom. In the last two classes, the students captured images to illustrate idioms within the campus. In between, the students were encouraged to carry out Activity 2 and 3. The teacher then facilitated Activity 4 in the seventh week. Students worked in groups of five, with each group being assigned an "idiom page" to discuss and identify erroneous uses of idioms with respect to the contexts in the photos or the sentences made, and to provide recommendation in correcting or improving the sentences. The students returned the phones to the school upon the completion of the study.

The data collected and analyzed for project evaluation consists of: (1) Pre- and post-quizzes; (2) Pre- and post-questionnaires; (3) Pre- and post-interviews with two high-, two medium- and two low-ability students (in terms of their academic performances in Chinese class) selected by the teacher; (4) Field notes taken during the in-class activities; (5) Student artifacts and online interactions. Due to space constraint and since we focus this paper on the analysis of the students' meaning making process, we will not go into the details of (1)-(4).

Findings

Constructivist Approach in Language Learning

Within the nine-week period, the 40 students contributed a total of 481 photo/sentence sets, revised (corrected or modified) sentences for 124 times, and posted 134 comments. However, the variation in the statistics of individual students' contributions was huge (mean = 12.0, SD = 25.9), as the top contributor posted 151 photo/sentence sets (or 31.9% of the entire class's postings) while 70.0% of her peers contributed less than 1 photo/sentence set per week in average. On the other hand, the students' participation levels were more consistent in offering sentence revisions (mean = 3.1, SD = 7.3) and comments (mean = 4.5, SD = 3.4).

Our observation and our interactions with the teacher and the students throughout the pilot study and our post-study interviews with six students had helped us to identify the challenges that had resulted in the widely varied levels of participation among the students, which are listed below:

- Affective issue: Many students showed great engagement during the in-class Activity 1 but when it came to the after school informal setting, they did not treat the smartphone as a learning tool but more a new toy. As what we have found out from the interviews and casual chats with the students, after enthusiastic exploration of the smartphone functionalities available in the initial period, many of the students had resorted to play online or installed games from time to time apart from carrying out the instructed activities. When being questioned about how they could and whether they had used their phones for other out-of-school learning activities, their common reply was: "no idea", except for a student who claimed that he had occasionally checked an online English dictionary with his phone in doing school assignments.
- Technical issue: Some students intermittently encountered and were frustrated by the technical problems in posting photos and sentences to the Web via their handhelds.
- Parental attitudes: Fearing of misplace or damage, most of the parents forbad the students to bring the phones out of their home except for bringing them to school, thus defeating the purpose of 24x7 seamless learning and severely narrowed the contexts that the students could associate the learned idioms with. Indeed, 83.2% of the contributed photos taken outside campus took place within the students' home.

As a learning design informed by the seamless learning framework, which implies the necessity of changing students' belief and, it is unrealistic to expect a significant breakthrough in the students within a nine-week period. Despite all that, after analyzing the student artifacts and their peer learning process, we found that they have shown great potential and promise, which we shall elaborate in the following sub-sections.

Student Artifacts

While the earlier activities – teacher's explanation and students' viewing of the idiomatic animations – would be attributed as "transfer of encoded meanings" of the idioms, it is not the end of the students' learning journey and should instead serve as starting points for the students' subsequent "ongoing, open-ended meaning making" (Hedley, 1992) with the aim of rectifying, internalizing and enriching their understanding of the idioms.

From their artifacts, the students demonstrated their creativity by making up contexts that associate with specific idioms. We analyzed all the 481 photo/sentence sets posted on the wiki and classified them into 12 categories with respect to two dimensions, namely, "types of physical setting" and "types of meaning making". "Types of physical setting" refers to the sources of the physical setting captured by each photo ("natural setting", "physical object manipulation", "human enacted scenario", or "previously published materials" such as book illustrations or TV screenshots). "Types of meaning making" refers to how the associated sentence reflects the student's personal meaning making on the photo (i.e., the relationships between the photo content and the sentence content), which could be "literal meaning making", "extended meaning making" (deductive interpretation) and "creative meaning making" (twisted, creative interpretation). Table 1 features examples of different types of photo/sentence set with the idioms underlined in the original Chinese sentences. To benefit the readers, we translated the Chinese sentences into English with the translations of the idioms underlined.

Here is how we distinguish the personal meaning making types: (1) *Literal meaning making*: The sentence demonstrates a direct interpretation of the photo context – all the elements stated in the sentence are

visible in the photos. (2) *Extended meaning making*: The sentence demonstrates a logically deductive interpretation on the photo context – there are elements in the sentence which are invisible in the photos but they are logical deductions from the photo context. For (E), (F), (G), (H) the additional elements are sports games, scoring full marks, a theft, and catching a fish, respectively. (3) *Creative meaning making*: The sentence demonstrates a twisted, perhaps creative re-interpretation on the photo context (i.e., other photo viewers may not interpret the photo in the same way). For example, in photo (I), there is no sign of feeding and eating in the photo and yet the student made up the "plot" of feeding the geese. Sentence (J) turns the photo of two mouse devices into a metaphor as the student imagined that they were animals which collided with each other.

Table 1: Various types of photo contexts and students' meaning making.

	Natural setting	Physical object manipulation	Human-enacted scenario	Previously published materials
Literal meaning making	(A)这里有两只一模一样的螃蟹。 These two crabs are <u>as alike as two peas</u>.	(B)那些车<u>横冲直撞</u>，真是不知道他们怎么驾车! Those cars <u>are romping about</u>. I am doubtful about the driving skills of the drivers.	(C)小青正在睡觉，小蓝不想吵到小青所以她<u>轻手轻脚</u>地走了过去。 Xiaoqing is sleeping. Xiaolan <u>passes her by quietly</u> so as not to disturb her.	(D)老板<u>怒气冲冲</u>地样子好可怕。 The boss looks fierce when he is <u>in a rage</u>.
Extended meaning making	(E)哥哥平时不爱运动可是却可以在小学的运动会上<u>一鸣惊人</u>地得了第一名 。 My brother does not like sports activities. Yet <u>he excels unexpectedly and came in first</u> the Primary School Sports Meet.	(F)小明<u>手舞足蹈</u>因为他得了一百分。 Knowing that he scored full marks, Xiaoming <u>dances with joy</u>.	(G)小明偷了伟德的钱包，伟德<u>火冒三丈</u>对小明拳打脚踢起来。 Knowing that Xiaoming has stolen his wallet, Weide <u>beat</u> Xiaoming up in his rage.	(H)明明抓到鱼儿时就<u>眉开眼笑</u>。 Mingming <u>grinned from ear to ear</u> when he managed to catch the fish.
Creative meaning making	(I)鹅们<u>津津有味</u>吃我们给的面包。 The geese enjoyed <u>eating the bread we provided with relish</u>.	(J)它们俩<u>横冲直撞</u>，最后意外发生了! They were <u>romping against each other</u> and in the end resulted in an accident.	(K)看到工人这样做，非常危险。所以，我<u>一言不发</u>，怕惊吓到她。 Seeing the worker doing a risky act, I <u>tried to be quiet so as not to</u> frighten her.	(L)整个小岛绿茵环抱，<u>鸟语花香</u>，吸引了很多游人前来度假。 Surrounded by green plants and <u>joyous sceneries</u>, the tiny island has been attracting plenty of tourists to spend holidays there. *(photo source: http://www.pconline.com.cn/)*

The variety of artifacts reflected the students' greater attention to their surroundings and their more conscious attempts to associate their daily life with the idioms – be it in the school, at home, during family outings, when they read books or watched TV. Their sense of the lack of "natural" contexts for them to take idiom-related photos was compensated by their creativity in manipulating physical objects, enacting situations, or appropriation of relevant published materials. In addition, the post-questionnaire results indicate that the students may have extended, perhaps sub-consciously, their mental "habit" of Chinese-idiom-and-real-life-

context association beyond the pilot study, as 75.0% of the students "agree" or "strongly agree" that "after participating in the Chinese idiom learning activities, I think of Chinese idioms more often in my daily life."

Peer Learning Activities

Besides producing their artifacts, the students carried out two types of peer learning - "learning from peers" and "learning with peers". In terms of "learning from peers", we argue that when a student visits or posts a photo/sentence set on one particular wiki-based "idiom page", she is likely to go through the photos/sentences pertaining to the same idiom made by her peers, which might lead to a mental comparison of the contexts and the grammar among the sentences. That is, the student would either learn from better sentences, or identify and correct her peers' grammatical errors or wrong use of idioms. This may lead to "learning with peers" activities where students comment on and discuss about their peers' contributions. As the statistics presented above indicate the students' more consistent levels of participation in peer learning activities (sentence revisions and comments) as compared with artifact contributions, students who had been less active in sharing photos and sentences may have still engaged in peer learning activities (in the forms of "negotiation of forms" [grammar] and "negotiation of meanings" [idiom usage]) and therefore achieved learning objectives to different extents.

Nevertheless, the students' asynchronous online discussions on the idiom usage were relatively trivial in general. We believed that the lack of training in this aspect was the main reason, as we merely presented a few mock-up photo/sentence artifacts and discussions generated by ourselves to the class at the beginning of the study. As such, we (the researchers and the teacher) applied some online forum facilitation strategies (e.g., Wong & Looi, 2010) by tactfully commenting on student artifacts at the right time and in right ways in order to give space for the students to engage in meaningful discussions. We also advised the teacher to promote class-wide discussions on selected student artifacts during "idiom class" 3 and 4, and eventually conduct in-class consolidation (Activity 4) in the 7th week. The students performed much better when they carried out small-group discussions in Activity 4 as they managed to identify most of the erroneous uses of the idioms on the "idiom pages" assigned to the respective groups and offered good recommendations to improve the sentences. The finding seems to imply that small-group face-to-face discussions would yield better outcomes as compared with asynchronous online discussions and class-wide discussions if the students have not yet acquired the skills of peer reviews – with their relatively low linguistic ability and efficacy being two other possible factors.

We take the idiom page of "东倒西歪" as an example. Table 2 features selected student artifacts posted on the page.

Table 2: Four student artifacts posted on the idiom page of "东倒西歪".

| (L)这个橱柜上的东西摆得东倒西歪。 The objects in the cupboard are rickety. | (M)我的水壶东倒西歪，翻倒了 My bottle is rickety and lied down. | (N)哥哥的书柜的书东倒西歪，非常乱！ The books in my brother's bookcase are rickety and disorder! | (O)哥哥把书桌弄得东倒西歪。 My brother makes his study desk rickety. |

Kovecses & Szabco (1996) define idioms as linguistic expressions whose overall meaning (known as figurative/idiomatic meaning) cannot be predicted from the meanings of the constituent parts (known as literal meaning). For some of the Chinese idioms, however, their applicable contexts have to take the literal meanings into account. "东倒西歪" is one of them. The idiom figuratively means "rickety" or "shaky", and literally means "leaning eastward (right-hand side) and tilting westward (left-hand side)" (usually referring to multiple objects leaning toward multiple directions). When the students discussed about the four photo/sentence sets in Table 2, they agreed that (L) was a correct use of the idiom (there are objects leaning toward both left- and right-hand sides in the cupboard) while (O) was wrong (the paper was messily left on the table, but not "rickety"). Some students proposed a correct alternative idiom "乱七八糟" (messy; at sixes at sevens). On the other hand, both (M) and (N) had generated some debates. In (M), a student argued that it was a wrong use of the idiom as the bottle has already lied down on the table and therefore it is no longer "rickety" or "shaky". However, we re-examined the associated sentence and deduced that it could mean "the bottle had been rickety and now finally lie down", and the photo merely shows the consequence, not the previous state of ricketiness. We found this artifact acceptable, though it is necessary to explain to the students that the idiom does not apply to what the photo itself depicts. Finally, we found the books in photo (N) either stand still or lean toward only one direction (not "eastward and westward"), thus questioning the suitability of applying the idiom. All in all, this is a visual-oriented idiom. The students' photos have helped us in visualizing their understanding (or

detecting their misconceptions) in the meaning and applicable contexts of the idiom – something that the conventional ways of assessing them by, for example, sentence making, may not thoroughly achieve. Indeed, we noticed that some of the student artifacts offer seemingly error-free sentences, if they are read independently, but their corresponding photos suggest otherwise (misconceptions in the applicable contexts).

The students' meaningful face-to-face discussions showed that they were on the right track to carry out social meaning making – to bring forward their "individually made" meanings on the idioms in-class and during photo-taking/sentence-making activities to their learning community. Compared with conventional idiom instruction where teachers provide general explanations and demonstrate idiom usage in limited contexts, this personal-to-social meaning making process has effectively pushed the boundary of the learning materials as the students' self-identified contextual uses of the idioms (many of which have caught us by surprise as we have never thought of using the idioms in such contexts) have become a rich resource for the students to perform (essentially inductive) constructivist learning on the idioms.

Discussion

Researchers have been investigating the facilitation of improvisation and/or creative learner output of various forms as a potentially effective means of language learning (e.g., Hodson, 2008). The mobile technology may support *in situ* improvisation and creative output such as taking appropriate pictures in contexts to illustrate the idioms under study. In our study, while such language learning activities could be carried out without technological support, it is the mobile affordance of *in situ* data collection (in particular, the camera function) that offers them the ease of generating their artifacts and helps others to visualize their idiom-and-context associations. As sharing and "rising above" the shared artifacts are the key to achieve students' deep learning of the idioms, the incorporation of the Web 2.0 (wiki) technology further enhances their social learning space by "affording" them rapid artifact revisions and interactions.

This learning process design is grounded in several existing learning language approaches and yet with some novelty. It is inductive vocabulary learning, yet not entirely based on teacher-supplied resources (e.g., Mishan, 2004), but student-generated ones, which are more authentic to the students' daily life. It is language learning by meaning making, yet not through reading or conversational comprehension (e.g., Donato, 1994) but students' idiom-context associations. It emphasizes contextual learning, productive outputs and socio-constructivism. In addition, it reinforces a principle of learning – make errors work for the students and not against them (Rubin & Thompson, 1982). In our study, an "idiom page" that contains both the correct and ambiguous (or erroneous) idiom usages would turn out to be an excellent venue for student discussion. The teacher should hold back his corrective comments to encourage debates among students on diversified views.

The pilot study has also informed us that pertaining to personalized learning, the student artifacts show some indicators of personalized seamless learning, i.e., students' proactive association of what they have learnt in-class with what they are experiencing in daily life, and perhaps with further enactment, reflection and personal meaning making. Pertaining to peer learning, the rich results of the social meaning making practice had facilitated ongoing student discussions and inductive comparisons of varied student-identified contexts. Together with the activities of watching idiomatic animations, this seamless language learning process fulfils Nation's (2001) three-stage process for (essentially personalized) vocabulary learning, and even extends it to involve social learning, and turns the language subject into an authentic learning experience.

On the other hand, the challenges faced in our pilot study have helped us in identifying the implementation. Our original intention of leveraging on general digital natives' eagerness to share their real-life experiences 'on-the-fly', mediated by Web 2.0 (Prensky, 2004) and mobile devices, did not take off. The students were keener on game-playing than blogging. The findings will trigger us to apply additional strategies to prepare the students who will involve in the full-scale study in the following year.

Conclusion

In this paper, we report a pilot study within the MALL paradigm that is both creative learner output-centric and seamless learning-inclined. These two areas, which promised great educational potential, have been seriously untapped in prior MALL studies. In our study, from artifact generation to peer learning activities, we observed a trajectory of noticing-retrieving-generating process, and personal-to-social meaning making among the students, which we wish to analyze further in order to unveil its relation with Chomsky's (1986) distinctions between Internal- and External-language learning, and the general thinking skills involved (such as that with respect to Bloom's Taxonomy). While the results of the study are promising, much work need to be done to ensure the students' learning motivation and enthusiasm at the in-class mobile assisted learning could be extended to their off-campus time when they are assigned handhelds 24x7. Still, with proper design and implementation of seamless language learning, we envisage the potential of MALL to revolutionize language learning by using mobile devices as individual students' personal "learning hubs", and further synergize the formal (in-class) and informal (real-life), as well as the personal and social language learning spaces.

References

Bolte, H., & Herrlitz, W. (1986). Language learning processes and strategies in the foreign language classroom: A reconstructive and interventive model. In G. Kasper (Ed.), *Learning, Teaching and Communication in the Foreign Language Classroom* (pp. 195-223), Aarhus: Aarhus University Press.

Bourke, J. M. (2005). The grammar we teach. *Reflections on English Language Teaching, 4*, 85-97.

Chomsky, N. (1986). *Knowledge of Language. It's Nature, Origin and Use*. New York: Praeger.

Deng, C. (2001). The common mistakes in the usage of idioms and the solutions. *Learning Language, 1*, 40-41.

Donato, R. (1994). Collective scaffolding in second language learning. In: J.P. Lantos & G. Appel (Eds.), *Vygotskian Approaches to Second Language Research* (pp.33-56), Norwood, NJ: Ablex.

Elliot, R. T., & Zhang, Q. (1998). Inference in learning context-dependent words. *Educational Psychology, 18*(1), 5-25.

Gass, S. M. (1997). *Input, Interaction, and the Second Language Learner.* Mahwah, N.J.: Lawrence Erlbaum.

Hedley, J. (1992). Surviving to spaek new language: Mary Daly and Adrienne Rich. *Hypatia, 7*(2), 40-62.

Hodson, R. J. (2008). Media humour in the language classroom. *Proceedings of CLaSIC 2008 (pp.669-679)*, Singapore.

Hoopingarner, D. (2009). Online language learning 2.0: new tools, new paradigms. *Proceedings of ICICE 2009* (pp.57-64), Taipei, Taiwan.

Jonassen, D. H. (1991). Objectivism vs constructivism: do we need a new educational paradigm?. *Educational Technology, 9*, 5-14.

Kauffman, S. (1995). *At Home in the Universe: The Search for the Laws of Self-Organization and Complexity*. Oxford: Oxford University Press.

Kovecses, Z. & Szabco, P. (1996). Idioms: a view from cognitive semantics. *Applied Linguistics. 17*(3), 326-355.

Kukulska-Hulme, A., & Shield, L. (2007). An overview of mobile assisted language learning: can mobile devices support collaborative practice in speaking and listening?. *EuroCALL 2007*.

Kumaravadivelu, B. (1994). The postmethod condition: (E)merging strategies for second/foreign language learning. *TESOL Quarterly, 28*(1), 27-48.

Levy, M., and Kennedy, C. (2005). Learning Italian via mobile SMS. In: A. Kukulska-Hulme and J. Traxler *(Eds.)*, *Mobile Learning: A Handbook for Educators and Trainers*. London: Taylor and Francis.

Lewis, M. (1997). Pedagogical implications of the lexical approach. In J. Coady & T. Huckin (Eds.), *Second Language Vocabulary Acquisition* (pp. 255-270), Cambridge: Cambridge University Press.

Locke, J. L., and Bogin, B. (2006). Language and life history: A new perspective on the development and evolution of human language. *Behavioral and Brain Sciences, 29*, 259-325.

Long, M. H. (1985). Input and second language acquisition theory. In: S.M. Gass & C.G. Madden (Eds.), *Input in Second Language Acquisition* (pp.377-393), Rowley, MA: Newbury House.

Looi, C. K., Seow, P., Zhang, B., So, H.-J., Chen, W., & Wong, L. H. (2009). Leveraging mobile technology for sustainable seamless learning: a research agenda. *BJET*. Published online: 6 February, 2009.

Miller, G. A., & Gildea, P. M. (1987). How children learn words. *Scientific American. 257*, 94-99.

Mishan, F. (2004). Authenticating corpora for language learning. *ELT, 58*(3), 219-227.

Nation, P. (2001). *Learning Vocabulary in Another Language*. Cambridge, UK: Cambridge University Press.

Ogata, H., Akamatsu, R., & Yano, Y. (2004). Computer supported ubiquitous learning environment for vocabulary learning using RFID tags. *Proceedings of TEL 2004* (pp.121-130), Toulouse, France.

Prensky, M. (2004). The emerging online life of the digital natives. Retrieved Sep 21, 2009, from: http://www.marcprensky.com/writing/Prensky-The_Emerging_Online_Life_of_the_Digital_Native-03.pdf

Rubin, J., & Thompson, I. (1982). *How to Be a More Successful Language Learner.* Boston: Heinle and Heinle.

Sagvinon, S. J. (1991). Research on the role of communication in classroom-based foreign language acquisition: On the interpretation, expression, and negotiation of meaning. In: B.F. Freed (Ed.), *Foreign Language Acquisition Research and the Classroom* (pp.31-45). Lexington, MA: D.C. Health.

Salaberry, M. R. (1996). A theoretical foundation for the development of pedagogical tasks in computer mediated communication. *CALICO, 14*(1), 5-36.

Sanaoui, R. (1995). Adult learners' approaches to learning vocabulary in second languages. *Modern Language, 79*, 15-28.

Stevick, E. (1996). *Memory, Meaning and Method: A View of Language Teaching. (2nd ed.)*. Boston: Heinle and Heinle.

Swain, M. (1985). Communicative competence: some roles of comprehensible input and comprehensible output in its development. In: S. Gass & C. Madden (Eds.), *Input and Second Language Acquisition* (pp.235-252*).* Rowley, Mass: Newbury House.

Thornbury, S. (2001). *Uncovering Grammar*. Oxford: Macmillan Heinemann.

Thorton, P., and Houser, C. (2002). M-learning in transit. In: P. Lewis *(Ed.)*, *The Changing Face of CALL* (pp. 229-243). Lisse, The Netherlands: Swets and Zeitlinger.

Titone, R. (1969). Guidelines for teaching second language in its own environment. *Modern Language, 53*(5), 306-309.

Webb, S. (2005). Receptive and productive vocabulary learning: the effects of reading and writing on word knowledge. *Studies in Second Language Acquisition, 27*, 33-52.

Widdowson, H. G. (1978). *Teaching Language as Communication*. Oxford: OUP.

Winters, N. (2007). periLEARN: contextualised mobile learning in the era of Web 2.0. *Proceedings of IADIS Int'l Conference on Mobile Learning 2007* (pp. 89-95), Lisbon, Portugal.

Wong, L. H., and Looi, C. K. (2010). Online discussion and e-mentoring strategies in continuing education courses. In: E.M.W. Ng (Ed.), *Comparative Blended Learning Practices and Environments* (pp. 146-169). Hershey, PA: IGI.

Zhang, B., Wong, L. H., Seow, P., Chen, W., & Looi, C. K. (2009). 'Mobilizing' curriculum materials for seamless learning: opportunities and challenges. *Proceedings of GCCCE 2009* (pp.66-71), Taipei, Taiwan.