Language Learning & Technology
ISSN 1094-3501

October 2019, Volume 23, Issue 3
pp. 29–38

LANGUAGE TEACHING AND TECHNOLOGY FORUM

Exploring multimedia, mobile learning, and place-based learning in linguacultural education

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Abstract

Culture, as the fifth language skill, enables learners to develop into multilingually and multiculturally aware global citizens. The traditional Chinese architecture is as old as Chinese civilization. The wisdom, stories, and cultural elements behind traditional Chinese construction is a valued aspect of Chinese culture. This article introduces a LiveCode based mobile application featuring a virtual tour of two traditional Chinese architecture sites—Nan Yuan and Humble Administrator's Garden. The application is designed by the author for advanced Chinese learners for an immersive linguacultural learning experience. Built-in tools, rollover hints, authentic multimedia resources and useful links of the application effectively integrate culture with language learning. Pedagogical applications, pilot outcomes, implications, and future directions of mobile learning and place-based learning in Chinese linguacultural education are also addressed in this paper.

Keywords: *Computer-Assisted Language Learning, Mobile Learning, Culture Learning, Place-Based Learning*

Language(s) Learned in This Study: *Mandarin Chinese*

APA Citation: Han, Y. (2019). Exploring multimedia, mobile learning, and place-based learning in linguacultural education. *Language Learning & Technology*, *23*(3), 29–38.
http://hdl.handle.net/10125/44692

Introduction

Why Culture?

If we view language as a social practice, culture becomes the core of language learning. Many scholars today believe that culture and language are inseparable and that culture learning must be an integral part of language learning. However, we may have yet to agree on what we mean when we talk about teaching culture. Cultural knowledge is often categorized into little-c culture (practices) and big-C Culture (products; Herron, Cole, Corrie, & Dubreil, 1999; Herron, Dubreil, Corrie, & Cole, 2002). However, with the everchanging definition of culture itself, what educators mean by teaching culture is also changing. Besides the little-c and big-C cultures, the American Council on the Teaching of Foreign Languages (ACTFL, 2002) has provided a broader guideline in the form of three Ps: products, practices, and perspectives. There is a growing need and interest in enabling students to understand, appreciate, and critically reflect on the three Ps, which will help them refine their own sense of identity during this process and prepare them for global citizenship, instead of just having them memorize cultural facts. These skills, along with language skills, are crucial for today's language learners who prepare to actively head out and engage in a more globalized world as responsible global citizens.

Why Multimedia?

The theory of multimedia learning (Mayer, 2009) suggests that multiple channels of input (e.g., visual, sound, text, etc.) can help learners learn more effectively. For example, in a study that explored the multiple modalities of the video medium, Sydorenko (2010) found that many learners preferred to have access to all modalities (visual, audio, and captions) as they selectively chose what they needed to focus on when

engaging. Thus, the use of an appropriate combination of inputs in multiple modalities in language teaching might be more of an advantage than a cognitive distraction.

With the progress of technology, many educators have been utilizing multimedia for their instruction, especially when teaching culture. Beside the cognitive advantages, multimedia can also present students with authentic and up-to-date cultural information, as well as help stimulate students' interest and motivation in the target culture. A common approach of teaching culture with multimedia is to use videos. Many studies have been done on teaching culture with videos. For example, Herron et al. (1999) looked at beginning-level French learners' gain in cultural knowledge (practices and products) during the semester as they watched 10 videos. The results indicated a significant gain in cultural knowledge with post-test scores significantly higher than pre-test scores. A similar study was conducted by the same authors (Herron et al., 2002) with intermediate-level French learners. By watching eight videos during the semester, intermediate learners also did significantly better on the post-test than the pre-test. Additionally, the immediate post video-viewing free recall test showed that students learned significantly more cultural practices than products from the videos. These findings support using multimedia resources such as video in language classrooms to enhance the awareness and retention of both big-C and especially little-c knowledge. Most of the previous findings or pedagogical suggestions focus on the effectiveness of noticing and retaining information of practices and products from multimedia. In accordance with the three Ps guidelines in cultural teaching (ACTFL, 2002), the possibilities of using multimedia to enhance learners' ability to compare, reflect on, and analyze the three Ps are also explored in the work to expand the literature.

Why Traditional Chinese Architecture?

Chinese architectural history spans thousands of years. The beauty of traditional Chinese architecture and the wisdom of the principles behind it have attracted many people and have become one of the key motivations for learning Chinese. The rich cultural elements behind the intricate architectural constructions can serve as valuable teaching resources to help Chinese learners gain a better understanding of Chinese culture. By learning about Chinese architecture, students can have access to the three Ps: Products (what and where), practices (what people do there), and perspectives (why people built it in the way they did and what beliefs and values are hidden in the constructions and styles). In addition, learning about traditional Chinese architecture benefits those who study abroad in China and want to have an in-depth experience when visiting traditional Chinese architecture sites. Thus, a virtual tour mobile application introducing typical traditional Chinese architecture and the meaning behind each individual construction was conceptualized and created to help students learn about culturally significant sites in Chinese-speaking countries in an immersive, media-rich way.

Why Mobile Learning and Mobile Application?

Mobile learning, including mobile-assisted language learning, focuses on using portable devices to facilitate learning (Ducate & Lomicka, 2013; Stockwell, 2016). A mobile application, most commonly referred to as an app, is a type of software designed to run on a mobile device, such as a smartphone or tablet computer. It is worth mentioning that mobile technology can unchain us and allow us to explore places we would otherwise be unable to visit (Holden & Sykes, 2011). With the help of mobile technology, those who do not have a chance to physically explore culturally significant sites in the target culture can still learn about Chinese architecture in an immersive virtual tour. Additionally, mobile devices can be carried around at any time and in any place, meaning that learning can be self-paced, giving students access to learning materials whenever they want them. Moreover, because these devices can go with learners wherever they go and be aware of where they are through GPS (Holden & Sykes, 2011; Stockwell, 2016), mobile applications can enhance the interaction between users and the environment by feeding users location-specific information. The location-specific features of a mobile application can benefit those who physically go to these sites by offering in-depth cultural explanations for the specific constructions, acting as an artificial curator.

Why LiveCode?

LiveCode (see Figure 1) was used to design the virtual tour mobile application introduced in this article. LiveCode is a rapid application development tool. It creates applications that run in many supported devices (smart phones, tablets, and laptops) and yet is easy to learn for those who do not have a programming background. LiveCode uses a high-level, English-like programming language called Transcript that is dynamically typed (see Figure 2). The media can simply be dragged into LiveCode stacks and cards in a nonlinear manner, which is far simpler than the multitude of linear coding required by typical application compilers. The user-friendly features of LiveCode and its open resources online allowed me to create a mobile application without a professional programming background in a relatively short amount of time. There were many free tutorial resources available explaining how to build an application using LiveCode. LiveCode's official website provided a full LiveCode dictionary, a beginner's guide, step-by-step lessons, and learning courses. Taking advantage of these open resources enabled me to get familiar with LiveCode in a short amount of time.

Figure 1. The logo of LiveCode

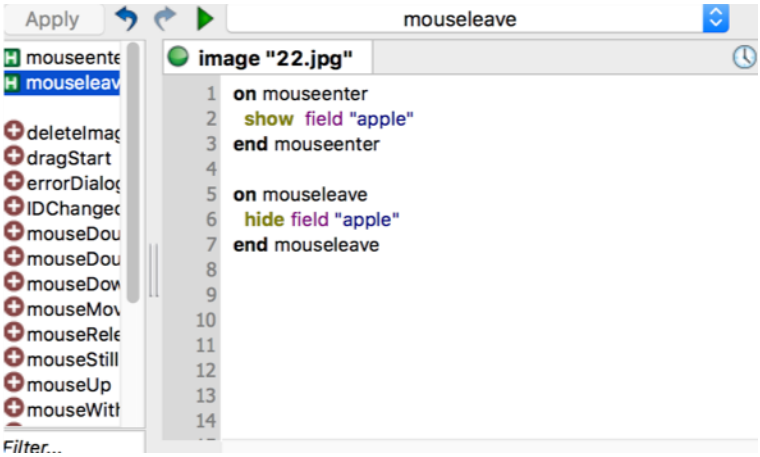

Figure 2. Example of English-like programming language of LiveCode

The Virtual Tour Mobile Application Design

Target Users

There are many applications on the market that target beginner-level Chinese learners. Unfortunately, there is a lack of advanced level Chinese learning applications. The Chinese architecture sites virtual tour application addressed in this article (see Figure 3) was designed for learners who have reached the advanced-low to advanced-high level of proficiency, as designated by the ACTFL (2012) proficiency guidelines. These levels of proficiency generally correspond to a 400-level Chinese as a foreign language (CFL) course in U.S. college settings or to an HSK 5–6 according to the People's Republic of China CFL language skill criteria. The text content in this application was presented in Chinese to create an authentic immersive environment to help reach the goal of enhancing learners' language proficiency.

Figure 3. The launch screen of the application

Built-In Tools

The built-in tools were designed to offer learners sufficient scaffolding and multiple channels of input to make good use of the application. After clicking on a certain piece of construction, learners were led to a content page containing pictures, pinyin of the construction, brief introduction and cultural meaning in Chinese, an audio clip of the content, rollover hints of the construction, and a back button (see Figure 4). For example, if learners clicked on the first picture on the left in Figure 4 (i.e., a door named *ping'an men*), they saw three pictures of ping'an men, each having a different shape. Every time they touched the picture, a hint of the certain shape (e.g., 苹果 [*apple*]) appeared in Chinese and disappeared when they moved their finger away. When clicking on the little speaker button, learners heard an audio clip of the cultural content as if they were listening to a tour guide explaining the meaning behind the selected construction or design. All the built-in tools were straight-forward and easy to use. With various icons whose functions could easily be understood with a simple click, the learners were free to access images, audio clips, text, and videos.

Figure 4. An example of built-in tools including audio clips, images, and text

Multimedia Resources

Following the guidance of multimedia learning theory, multimodal resources were leveraged in this application to provide multiple modalities of language and cultural input as well as to make the immersive virtual tour more authentic. For a module on Nan Yuan, the author went to the site in person and worked with a local tour guide. They spent three days taking pictures, shooting videos, and writing down all the information needed. The materials were then selected and shown in the application. For a section on the Humble Administrator's Garden, most of the pictures selected were from the internet. An introduction video (see Figure 5) of the place was downloaded from *Youku* (a Chinese video sharing site). The author also collected information from a tour guide of the Humble Administrator's Garden to refine the content. This multimedia content also helped to bridge the gap between linguacultural learning and the real world, because place is an especially abstract concept in foreign language classrooms where language is often isolated from the communities, cultures, and places in which it is spoken (Kramsch, 2002; Thorne, 2009).

Figure 5. Video showing a bird's-eye view of the Humble Administrator's Garden

Link to More Online Resources

As shown in Figure 6, some culture-specific symbols and creatures might be difficult for learners to understand, even at an advanced level without the help of their first language. For example, a creature commonly used in traditional Chinese architecture is called *Pixiu*, a mythical creature in Chinese culture with a rich cultural background. A *Click Me* (点我) link was placed below the Pixiu image, which linked learners to the English Wikipedia page of Pixiu to help them learn more about this creature and its cultural meanings. A link to a documentary film (in English) introducing a Chinese-specific construction *Fang* [舫] was also created in the Humble Administrator's Garden section to help students learn more and more deeply about this specific construction and its cultural significance.

Figure 6. The Pixiu page with a *Click Me* link to the Pixiu Wikipedia page

Pedagogical Applications and Implications

Multimedia Learning and Flipped Classroom

While the application was still in its beta release, it was tested out once in a 400-level advanced Chinese as a foreign language classroom in a U.S. university. A flipped classroom approach was adopted in the lesson plan. The teacher simply walked students through the application at the end of the class. Students were asked to use and explore the mobile application as homework outside of the classroom before the next class meeting. There were several homework tasks that students were required to do after using the application. They were asked to

- highlight and annotate words or passages that remain confusing to them;
- for the problematic words or passages, try to look them up on their own and prepare to share their research experience and outcomes in class; and
- do a cross-cultural comparison between Chinese architecture and the architecture of their own culture.

The Chinese architecture lesson happened one week after the introduction of the application in class. Students completed the homework tasks before the class meeting. The class adopted the following agenda.

Warmup

The class began by letting students put together a list of difficult words and expressions in the virtual tour application. The teacher asked students who did research to guide others through the questions. Some students brought multimedia online resources to class and shared them with the students. For example, one student introduced bilibili (a Chinese video sharing site) to the class where he found a documentary introducing traditional Chinese architecture. The teacher assumed the role of a facilitator during this question-and-answer section. She guided the discussion and helped students with the questions. She also had students share their research strategies, resources, and experiences with others. The students assumed the role of researchers, responsible for guiding other audiences through the text medium. Students practiced not only language skills, but also learner agency. In addition, it was helpful for them to share resources, tools, and strategies with each other. After the question-and-answer section, the teacher checked on students' understandings again and ensured that the students were familiar with the key vocabulary and concepts of

Chinese architecture. Chinese was the primary language used in class. The teacher also used English in explanations when necessary.

Interpersonal Class Activities

In the second section, students were asked to share their cross-cultural comparisons on architecture from different cultures. Because it was an advanced-level Chinese language class, the activities were carried out mainly in Chinese. The teacher scaffolded students when they had difficulties expressing ideas in Chinese. Students started by comparing differences in design and style (practicing descriptive sentences). The teacher then guided them to think deeply about the beliefs and values behind the differences. Sample questions included the following: What are the cultural connotations and symbols behind the specific shapes of the doors and windows? How does this relate to Chinese philosophy on gentleness and harmony? Students were encouraged to share their understanding after learning from the application and their personal travel experiences.

Assessment

An in-class role-play activity served as the assessment for the class. The teacher played the role of a tourist. The students assumed the roles of tour guides of Nan Yuan and the Humble Administrator's Garden. Each student was in charge of an individual piece of the construction. They were asked to introduce and walk the teacher through the cultural significance and perspectives of certain constructions or designs. At the end of the class, a best tour guide was selected by the students.

Learning Outcomes

After having covered the necessary vocabulary, the students were motivated to talk and engage in the classroom discussions. Many students were willing to guide others through questions. Several were able to use new words and concepts in Chinese when doing cross-cultural comparisons. Students did well in the role-play assessment. From the aspect of cultural learning, the comparisons they made between Chinese architecture and Western architecture showed their understanding of cultural knowledge. Moreover, students were also able to analyze and reflect on cultural perspectives rather than simply to memorize facts. The pilot in-class application revealed the possibility that students might be able to learn content knowledge by themselves outside of the classroom using the application. This enabled the teacher to devote class time to learner-centered, communicative activities instead of lectures. The multimedia-assisted flipped classroom design also enhanced learner agency and engagement in Chinese linguacultural learning.

Students as Researchers and Designers

From the above pilot application, we can see the potential value of integrating a multimedia mobile application into our class design. A possible and powerful expansion of the pedagogical design is to have students step into the developer role by choosing another typical Chinese architecture and creating their own mobile virtual tour application. This form of experiential learning could be more effective in cementing their learning. As introduced above, LiveCode is an easy-to-learn application development tool for non-coders. Therefore, it can be a good tool for language learners who do not have a programming background to utilize in creating their application. During this process, learners are not left as passive participants as they usually are in a traditional classroom setting. Their learner agency is promoted by becoming a genuine part of application design, and they can gain a deeper understanding of Chinese culture by doing their own research and by designing something to help fellow learners learn about Chinese culture. Such a hands-on project can be integrated into a higher-level Chinese language and culture curriculum and serve as an assessment tool. By turning learners into both researchers and developers, teachers are transforming the traditional teacher-centered classroom to a learner-centered one and helping students build problem-solving skills and confidence to study and work on their own (Mull, 2013). Additionally, having students work together and produce digital products based on their language and cultural knowledge can be beneficial to the development of digital literacies and success in the digital era. This is especially pertinent with the growing interest in the development of multiple literacies (New London Group, 1996) and digital literacies

(Reinhardt & Thorne, 2011) in second language acquisition. It is worth mentioning that students should receive training on how to use LiveCode before they start the project in order to alleviate technical anxiety.

Study Abroad and Place-based Learning

Another possibility of integrating the virtual tour application into Chinese linguacultural learning is to use it and design correlated learning activities in a study-abroad context. The long-existing problem of language classrooms is that language learning is often isolated from the places, communities, and cultures of real life (Kramsch, 2002). As language pedagogy moves away from focusing solely on linguistic knowledge toward meaningful, life-ready learning of meaning-making, more study abroad programs are organized to provide students with greater mobility and more opportunities for language socialization in the real world. In light of this positive pedagogical shift, innovative use of technology can contribute to meaningful, place-based learning. Place-based learning is the process of placing students in local communities, environments, landscapes, and cultures and using these as a starting point to teach language arts, social studies, science, or other subjects (Sobel, 2005). The mobility and portability of mobile devices can support more authentic, context-aware place-based learning by providing location-based, contextually relevant content in the real world (Stockwell, 2016). For example, in a study-abroad program, we could take students on a field trip and let them access the information from the mobile application before a get-together discussion session instead of lecturing them in a classroom environment. Learners could use the virtual tour application to assist them in gaining an in-depth and immersive experience of visiting and learning about traditional Chinese architecture that they would encounter as part of their site visits. In order to better assist students who are studying abroad, a built-in, location-based map function could be used in the virtual tour application. As students visit the sites, they would be able to navigate using the map function and make use of multimedia resources when necessary. In addition, the use of the application could help enhance the cultural awareness of students studying abroad.

Some of the constructions and designs introduced in this application can be seen commonly in other traditional Chinese architecture or hybrid modern architecture. Students might be able to use the application to gain some cultural knowledge about traditional Chinese architecture and apply the knowledge to other typical traditional architectures. They could then become more sensitive to commonly seen traditional constructions and be able to link the construction or design to its cultural meaning. Thus, the construction or design would not be a mere superficial decoration when encountered, but rather a meaningful cultural symbol. Follow-up learning activities could be designed to support the place-based learning of Chinese architecture. For example, learners could be asked to keep blogs on cultural comparisons containing reflections and thoughts on Chinese architecture.

Future Directions: Situated Learning, Virtual Reality, and Augmented Reality

Emerging technologies such as virtual reality (VR) and augmented reality (AR) are not new concepts in the field of second language acquisition (see Godwin-Jones, 2016). VR interfaces, such as Oculus Rift or HTC Vive, immerse people in a three-dimensional virtual world as if it were the real world. AR interfaces, such as Microsoft HoloLens, augment the physical world by overlaying digital information on top of the environment for people to interact with. However, these are fairly new areas that are beginning to be implemented on larger scales in many fields. Just as technology has been part of the education landscape for decades, the application of emerging technologies might take language learning to a new dimension in the future. In this section, I provide some suggestions as to how this application can be developed into future VR or AR applications to facilitate meaningful, situated linguacultural learning.

A version of our application in the VR medium, or other VR applications of virtual tours of culturally or historically significant sites, could have promising future possibilities to help those who are not able to have an opportunity to study abroad and to experience immersive language and cultural learning in a reality-based context. For students who are able to study abroad, the idea of a virtual tour application might work better in a GPS-based AR, as AR can "augment user's physical world with information" (Vazquez et al.,

2017, p. 2173). Therefore, AR could empower the learning experience by raising the awareness and interaction with the physical world, supporting meaningful place-based and situated learning. An AR version of digital tour guide applications of culturally significant sites in Chinese could provide location-based, media-rich information on sites and maximize learning experiences by linking what students learn with what they experience in real life. This could further assist in learning on the move, due to the distinctiveness and depth of the information presented.

Conclusion

This article introduced a LiveCode based mobile application created by the author, aiming to introduce traditional Chinese architecture and integrate culture with Chinese language learning. Due to the time and knowledge constraints throughout the writing of this article, attention should be paid to some limitations of the application. The author only included two historical sites in the application. Since Chinese architecture is as old as Chinese civilization, there are many rich resources that could be drawn from. More places can be included in the development of future digital tour guide applications. Further development of the application is needed to increase functionality. For example, a location-based map feature will be added to the application. The author will refine the application and collect more learner feedback and perceptions in the future.

The pedagogical implications suggested in the article may help enrich the design of a higher-level Chinese language and culture class. In addition, the discussion of future possibilities may help language educators be aware of the changing affordances of emerging technologies for linguacultural teaching and learning. This article attempts to provide some insight for those interested in exploring multimedia, mobile learning, and place-based learning for linguacultural teaching.

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