Chapter 3
Supporting Self-Directed Vocabulary Study: Towards Effective Design of OERs for Mobile Learning Environments

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ABSTRACT

Although open educational resources (OERs) can help bridge high-school – university vocabulary gaps, optimal utilization of OERs requires effective self-directed learning. This bi-national two-year study adopted a design-based research paradigm to collect Chinese university students' (n = 358) perceptions regarding design factors that support self-directed vocabulary learning in mobile learning environments (MLEs). Results showed that additional scaffolding after Year One in the form of L1 translations of high-frequency academic words significantly correlated with improved performance on basic level vocabulary exercises and pop quizzes. However, results suggest that moving mobile learning into the mainstream will require (1) design features that provide additional scaffolding for more complex vocabulary learning, (2) clearer guidelines for students on integrating desktop and mobile devices and (3) ongoing guidance from teachers to develop students' capacity for self-directed learning to ensure optimal benefit from independent study of vocabulary OERs.

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INTRODUCTION

This chapter describes a design-based research study to identify factors that facilitate the migration of vocabulary open educational resources (OERs) for self-directed learning (SDL) across different settings, from desktop learning environments in EU and partner countries to students in China who prefer to use mobile phones rather than desktops to study vocabulary. According to Brown and Campione (1996), understanding how and why an innovation works across diverse settings is essential for sustainable innovation. Thus, our first goal in this study was to understand how participants perceive the constraints that typically characterize mobile learning environments (MLEs). Our main assumption in this study was that desktop computers and mobile phones represent significantly different learning environments, each with their own affordances and constraints that need to be carefully considered when deciding which learning environment to select in order to achieve different objectives. This premise is based on Moore (1973), who over forty years ago observed that there are specific functions for which each medium is best suited, and that the unique strengths of different media need to be combined to attain different educational goals. Based on this assumption, our second goal was to identify what participating students perceive as effective instructional scaffolding that would enable them to overcome these constraints and go beyond bite-sized chunks that all too often characterize vocabulary learning in MLEs.

This bi-national study was based on *Roads to Academic Reading (Roads),* a set of vocabulary OERs that were developed as part of an EU-funded TEMPUS project to align tertiary level EAP courses in project partner countries with the Common European Framework of Reference for Languages (CEFR). The CEFR for teaching, learning and assessing foreign languages is currently being implemented in over 120 countries, from Chile to China, and effective wide-scale dissemination of this framework in additional geographical regions may ultimately depend on the availability of robust OERs that are appropriate for learners in Europe and beyond. The OERs used in this two-year study were originally designed for use in PC desktop-based learning environments, and at the end of Year One we incorporated additional design features based on students' perceptions of what types of scaffolding represent effective support of SDL for vocabulary learning in MLEs. This enabled us to achieve the third and final goal in this study, which was examining whether instructional scaffolding added at the end of Year One correlated positively with student outcomes among a new cohort of students who used the improved website in Year Two.

Before the study began, technical adjustments were completed to make the website 'responsive' (i.e., web pages detect the user's mobile phone screen size and orientation and change the layout accordingly) to accommodate Chinese students' preference for MLEs. This preference has been well-documented in Zou & Yan (2014) as well as in Zou, Li, & Li (2018). No changes were made to website content, and the length of texts as well as the level of difficulty of advanced level exercises remained significantly different from the small chunks that often characterize vocabulary learning on mobile devices. In addition, the vocabulary website provided 'vocabulary netto' without animations, gamification and competitive social elements such as leader-boards and tournaments typically found in vocabulary apps for mobile phones. Wang and Hannafin (2005) point out that advancing design, research and practice concurrently, instead of separately, facilitates improvement of design by enabling design features to emerge from research participants' input. As will be described below, this study created a unique opportunity to iterate through analysis, design, development and implementation, based on collaboration among researchers and participants in a real-world context to make these OERs as effective as possible for self-directed vocabulary study in MLEs.