Affective Support for Self-Regulation in Mobile-Assisted Language Learning

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ABSTRACT

Mobile-assisted language learning (MALL) research includes examination and development of second language learners' cognitive and metacognitive self-regulated learning skills, but the affective learning component of self-regulation in this context remains largely unexplored. Support for affective learning, which is defined by learners' beliefs, attitudes, and emotions, has been shown to influence learners' cognitive processes, performance, and engagement considerably, and is therefore critical to promote and foster throughout the learning process. This paper defines the importance of supporting affect in MALL, sets out a theoretical perspective on supporting affective self-regulation in MALL, and elaborates on what designers and teachers can do to facilitate affective development through the use of mobile technology, learning analytics, and artificial intelligence. It examines and further delineates the role of affective computing and the role of the teacher in fully harnessing the affective affordances of MALL.

KEYWORDS

Affect, Artificial Intelligence, Learner Autonomy, Learning Analytics, L2 Learning, Mobile App Design, Mobile-Assisted Language Learning, Self-Regulated Learning, Support

INTRODUCTION

Recent meta-analyses have shown that language learners' affective states have a significant impact on their performance (Dewaele, 2022) and engagement (Shen, 2021). Scholars also stress that positive emotions contribute to the development of self-regulation and autonomy (Oxford, 2017), which are essential for successful second and foreign language (L2) acquisition.

The psychological concept of self-regulation began to attract attention in language learning research two decades ago (Dörnyei, 2005; Oxford, 1999) in relation to earlier established work

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on language learning strategies and learner autonomy. Research on self-regulation has grown in prominence alongside – and in synergy with – the development of technology-supported learning platforms and environments that present opportunities for self-paced and student-directed learning, as well as a growing body of research on language learning on mobile devices (e.g., Hsu & Lin, 2021; Lin et al., 2020). As apps, digital resources and online communities for mobile assisted language learning (MALL) continue to expand, there is a growing sense among teachers and researchers that learners should be supported to expand their abilities, skills and strategies in order to take full advantage of the new opportunities for self-regulated mobile learning in and out of class. In doing so, they can be encouraged to learn regularly and reflectively, with greater self-awareness of how to progress and improve their language learning across formal and informal learning settings (Perry & Moses, 2019). Recently, Lai et al. (2022) examined L2 learners' use of mobile technology in self-directed learning. They stress that students utilise mobile-accessible apps (e.g., Duolingo) to create their own learning environment in which they predominantly do not receive support from facilitators (e.g., teachers), especially when "the whole process is self-initiated" (p.2). However, earlier research emphasises that students are generally bad at calibrating their own learning (Dunlosky & Lipko, 2007), including evaluating and regulating their abilities, strategies and motivations. They often need support to develop and grow their self-regulated learning (SRL) skills, strategies and knowledge (Viberg, Khalil, et al., 2020).

Since mobile technologies provide opportunities for L2 learners to engage in complex interactions involving a multitude of cognitive, meta-cognitive, and affective factors (Peng et al., 2021), self-regulation is a key ability. The lens of self-regulation (e.g., Zimmerman, 2000) is therefore a fitting one for the design and development of appropriate support mechanisms in MALL; even more so considering recent developments in the field of learning analytics for SRL (Viberg, Khalil, et al., 2020; Winne, 2017), and the establishment of the MALLAS framework (*Mobile-assisted language learning through learning analytics for self-regulated learning*). MALLAS is a conceptual framework that captures the dimensions of self-regulated language learning and learning analytics that are required to support MALL (Viberg, Wasson et al., 2020; further explained below).

In parallel with the MALL context, research on *affect* in the field of L2 acquisition has recently gained strong momentum (Shao et al., 2020). However, scholars stress that past research on affective states – that consist of moods, emotions, sentiments or attitudes (Frijda, 1994) – in L2 acquisition has largely focused on negative emotions, including language anxiety (Teimouri et al., 2019). It has left out or toned down the influence of positive emotions, attitudes and beliefs such as happiness, pride, joy, hope and admiration, among others (Shao et al., 2020). The different types of positive emotions have, similarly, been discussed by MALL researchers, oftentimes as the emotions that L2 learners experience when using mobile technology for L2 acquisition (e.g., Kukulska-Hulme & Viberg, 2018). Yet, they are rarely directly supported for the purpose of enhancing learners' opportunities for improved self-regulated *affective* learning. In parallel, teachers also tend to miss out on opportunities to support positive emotions or beliefs in this regard, or to provide the necessary assistance to foster affective learning (Huang, 2018).

This paper focuses on an under-researched and under-theorised aspect of self-regulation in MALL, namely its *affective* component. It defines the importance of supporting affect in MALL through appropriate design and use of mobile technology, learning analytics and artificial intelligence, grounded in the MALLAS framework (Viberg, Wasson et al., 2020). It also elaborates on how teachers can be supported in developing learners' affective learning skills and strategies as part of their self-regulation when using MALL apps.

In the following sections, we consider how MALL is moving into the informal domain and how this strengthens the need to understand and support self-regulation in contexts beyond the classroom, paying special attention to affective aspects of language learning. We also set out our theoretical perspective on supporting *affective self-regulation* in MALL. This informs our proposed designs for

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