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How Mobile Learning Can Support Student Motivation and Achievement

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Developments in information, communication, and technologies (ICT) enhance and extend the learning possibilities beyond the traditional learning tools. Among the most used ICT for educational purposes is smartphones (Hashemi, Azizinezhad, Najafi, & Nesari, 2011). Smartphones have become ubiquitous and an important tool in today's society, and thus offer learning supportive functions. For instance, according to Hashemi et al. (2011), the possibility for interaction, collaboration, ease of use, and game-like experiences might contribute to perceive such tools, relative to traditional tools, as more relevant, engaging, and interesting, which in turn might enhance intrinsic motivation, positive moods, and achievement (Jeno, Grytnes, & Vandvik, 2017).

There have been several studies investigating the effectiveness of smartphones on student learning (e.g., Schmid et al., 2014), however, there is further need to employ experimental designs on the effect of smartphones on learning, using well-developed theories (Zydney & Warner, 2016). Building on the theoretical perspective of SDT, the present paper presents results from a randomized controlled experiment. According to Self-Determination Theory (SDT; Ryan & Deci, 2017), a leading motivation theory, the experience of autonomy, competence, and relatedness enhances students´ intrinsic motivation, which in turn, predicts intrinsic motivation, psychological well-being, and learning.

In the present study, fifty-eight undergraduate biology students were randomized to two conditions; an experimental (smartphone) and a control (traditional textbook). Pre-test and post-test measures of positive and negative affect were collected, as were post-test measures of intrinsic motivation, autonomy, competence, and achievement. Results were in line with our theoretical assumptions; students in the smartphone condition showed significantly less negative affect from pre-test to posttest.

Moreover, there was a significant increase in negative affect and decrease in positive affect for the students in the traditional textbook condition. Lastly, results from a path-analysis revealed that using a smartphone indirectly accounted for increased achievement and increased positive affect. The study contributes with new insight into why and how smartphones might affect student motivation, well-being, and learning which has previously been unstudied. Moreover, the theoretical contribution allows for the ability to design smartphones applications that might support students´ psychological needs for autonomy, competence, and relatedness.