

## **PREFACE**

# **A Call for a Deeper Understanding of the Relationship between Mobile Learning and Special Education**

## **Introduction**

Mobile learning represents one of the most promising frontiers of current educational technologies [1]. Mobile learning here can be defined as "learning across multiple contexts, through social and content interactions, using personal electronic devices" [2]. The widespread distribution of mobile devices, the increasing accessibility of the related infrastructures, and the heterogeneity of apps available on platforms like *GooglePlay* and *AppleStore* have nurtured a healthy environment for the use of mobile applications in teaching and learning.

There have been numerous studies that have attempted to further explore the potential of mobile technology as situated, subjective, dynamic and cooperation-facilitator tool [3-6]. Used in both formal and informal settings [7] smartphones and mobile devices can provide opportunities to reconsider and reformulate traditional learning, supporting learning with authenticity and context awareness [8]. Finally, their improved usability [9] and online features make them instruments with a relevant impact in terms of diffusion, accessibility and participation.

We, as researchers, designers, scholars and educators, are called to carefully consider these tools for both their potential advantages as well as their risks. For instance, research continues to evolve with studies aimed a further understanding of mobile learning from usability [10-12] to learning analytics [13]. However, other studies have demonstrated that key components must be in place for teaching and learning to benefit. Although geolocation of information might sound intrinsically appealing, learning with such tools often requires orientation and a focused planning to obtain desired learning outputs [14,15].

As researchers, we also have the responsibility of examining tools and technologies and their impact on all learners, both in general education and in special education. Here we are defining special education as "specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability, including: (i) Instruction conducted in the classroom, in the home, in hospitals and institutions, and in other settings; and (ii) Instruction in physical education" (20 U.S.C. 1401(29)). This challenging frame concerns every type of disability--physical as well as mental, from autism to speech/language and hearing impairments, representing a cornerstone of the so-called *inclusive learning* [16].

Mobile learning has tremendous potential in supporting a diverse range subjects within special education for at least three main reasons. First, it allows and promotes the use of multi-sensorial inputs able to overcome possible problems of communication—potentially improving comprehension. Second, the personalized support offered by mobile technology is especially important for children who require

individualized attention and instruction. Third, the cooperative dimension that mobile devices can provide through is an emerging, positive trend in disability studies [17,18].

These possibilities have been met with the development of a variety of learning platforms like *Picaa* [19], *Mobile Mood Diary* [20], *LookTel* (2012) and *Map-Mate* [21]. There are also a variety of apps created for those with disabilities (e.g. *Proloquo2Go* or *ISpectrum Color Blind Assistant*). In our own work (partially funded by a corporate gift from AT&T), we have created a database to catalog the multitude of apps (<http://spedapps.kent.edu>).

Paradoxically, despite such a richness of existing tools and apps, research on special education and mobile learning is minimal. The research landscape is not bare. For instance, there has been significant work completed on *Universal Design for Learning* [22]. And, others have completed research overviews [23] case study-based models, and design suggestions [24-26].

Research exists but it is sparse. And, while some learning needs and disabilities have been addressed (e.g., autism and dyslexia; [27]), others remain quite ignored by researchers (e.g., mental retardation, alimentary diseases like Prader-Willi syndrome, socio-cultural bias, etc.). Moreover, topics within usability [28] and participative design toward targets with disabilities are still overlooked according to Human Center Design core features (e.g., [29,30]). Unsurprisingly, the current Mobile Web Accessibility Guidelines still present several obstacles for individuals with disabilities [31]. Finally, we are missing deep studies about when and how mobile apps can be used for specific types of learning needs.

## Special issue articles

Much in light of these concerns, the special issue on *Mobile Learning and Special Education* was created to gain learning from researchers, developers and educators on these important topics. The overarching objective was to have a substantial contribution in our understanding of special education and mobile learning. The special issue features five articles.

- Ilaria Mariani and Davide Spallazzo depict four location-based mobile games, which proved to be effective activators of reflection about special needs in their designing and testing phases. Accordingly, the authors provide useful insights for developing mobile experiences focused on disabilities and similar conditions.
- In the literature review on mobile technology training in teacher preparation conducted by Lindsey Balderaz and Kara Rosenblatt, being hesitant to implement mobile technology into higher education and an insufficient preparation of special education pre-service teachers were found to be critical problems. They suggest the future research needs to focus on pedagogical factors and criteria of assessment.

- Constance Beecher and Jay Buzhardt describe an iterative design-based research project for an app aimed to increase parent engagement. Their article discusses specific features requisite to improve the effectiveness of a mobile intervention.

- Kara Dawson, Pavlo Antonenko, Shilpa Sahay, and Linda Lombardino shed light on the use of the word *dyslexia* by mobile publishers. They discover that the majority of publishers do not intentionally design with dyslexics in mind. Therefore, the authors ask for more collaborations between dyslexia experts and programmers; they also provide resource repositories and evaluation rubrics to assist users.

- Finally, Christopher J. Rivera, Iffat Jabeen, and Lee L. Mason successfully staged a computer-based video intervention based on Apple iBooks for teaching literacy skills to a student with moderate intellectual disability. The procedure can be easily replicated and personalized because of its simplicity and accessibility.

We appreciate the work of these authors and their continued contribution to such an important issue. We hope these insights will help developers, researchers, and practitioners as they build mobile interventions. We conclude with a call to all researchers to continue to explore and deepen our understanding of the relationship between mobile learning and special education.

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