

Preface of Handbook of Research on Mobile Devices and Applications in Higher Education Settings

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The Handbook of Research on Mobile devices and Applications Settings in Higher Education aims at providing research on the situation of new technologies on education and training from a perspective of undergraduate students or faculty members at University. In the last few decades, the new technologies emerged and assumed an important role within the Society.

The use of mobile devices as smartphones or tablets has provided a new concept of communication and has established new methods of Accessing information. The digital era is now a reality and has affected not only the way we are in contact with friends or family, but also how we interact with our teachers or professors. There have been other researches about this topic, for example to analyse the impact of adopting these new technologies (Fuller & Joynes, 2015; Gutmann et al., 2015; Ling, Harnish, & Shehab, 2014; Toktarova, Blagova, Filatova, & Kuzmin, 2015) or to describe the different mobile instruments linked to medical education (Briz-Ponce & García-Peñalvo, 2015; Briz-Ponce, Juanes-Méndez, & García-Peñalvo, 2014a, 2014b; Briz-Ponce & Juanes-Méndez, 2015). However, this edited book collects different general articles and related with the most important issues related with mobile devices and its instructional use. It aims to be a reference source exploring and providing new perspectives and new ways of learning with real apps and mobile devices. It will also demonstrate the challenges that Higher Schools face when they introduce new technologies and how they recommend the use of apps with students, their benefits and their pitfalls. Not only that, the cases studies will allow teachers and all professionals related with higher education to introduce some ideas in their own classroom to prepare the new students for the coming digital era or even to create new thoughts to implement in future cases researches. Therefore, the target audience of this book is composed by university teachers, university students, researchers and professionals, developers, mobile operators, institutions and companies who are interested in new technologies and want to know real experiences of apps and use of mobile devices. Academicians, researchers can also use the book to assist their own research in this field.

In summary, the purpose of the book is fourfold:

- To facilitate the exchange of ideas regarding the use of mobile devices at Higher Education
- Extract the main lessons learnt for the introduction of the new technologies at University, the challenges, problems and difficulties to adopt them.
- Summarize the best cases studies of apps or mobile devices being used in Higher Education and how students and faculty member perceive these tools.
- To assess and illustrate the current situation of mobile technologies and education.

ORGANIZATION OF THE BOOK

The book is organized into twenty-one chapters and these chapters are organized in five main sections. The first section is devoted to introducing a general perspective of mobile devices in Higher Education (Chapters 1-6). The second section presents different specific learning apps and how they could be implemented as learning instruments in a classroom (Chapters 7-8). The third section gathers a collection of different surveys or studies from the students' perception about how these new technologies could be used as pedagogical instruments (Chapters 9-14). The fourth section is very similar to the third section but in this case, it includes also the teachers' perception (Chapters 15-19). Finally, the fifth section collects the main articles from the teachers' point of view (Chapters 20-21).

A brief description of each of the chapter follows:

Chapter 1 makes an overview of the applications of apps in higher education. Basically, it divides the main applications in three statements: 1) Tools that allow students to organize their work, collaborate with others and manage the administrative issues with the institution; 2) Control the anxiety and stress. It makes a description of the biofeedback techniques using with mobile apps that could be very useful for students and 3) the use of apps within the context of learning using the gamification technic.

Chapter 2 claims the use of the TAM and other TAM-based models in the field of education constitutes a growing trend that encompasses more and more educational spheres. The authors explain the increase in the use of this technology acceptance model to understand the factors that promote the success in the integration of ICT.

Chapter 3 explores the state-of-the-art research in mobile-cloud technology and discuss the integration of the mobile devices and cloud-based applications. The chapter also reports some constraints needed to consider implementing this technology but it contributes to provide some insights regarding this field.

Chapter 4 presents the Learning Analytics as a powerful tool that supports learners, instructors and institutions in better predicting and understanding a learner's performance and needs. This research proposes an effective Life Cycle Framework that defines all the components of a smartphone Learning Analytics (LA) techniques surrounding smartphones describing the four stages that it is necessary to follow: Plan, design, analyse and implement and the characteristics and activities related to each step. This proposed framework will be a useful guide for setting up Learning Analytics workflow or can be used to improve an existing system.

In Chapter 5, the authors analyse the characteristics of the students that can promote learning when using mobile devices. The results showed that communication, teamwork, decision making, positive attitudes towards technology, self-learning and collaborative work factors are the ones predominantly exploited to promote learning among students with wireless mobile devices applications.

Chapter 6 centres on a literature review of academic libraries' mobile initiatives from 2010 to the present. The authors reviewed 114 papers and selected materials that discussed libraries' mobile initiatives that centred on the use of tablets or smartphones. Within this search, the authors found the following themes: Mobile initiative research reports (48), efforts to mobilise services and resources (24), librarians' use of tablets (20); quick response codes in libraries (10); the availability of short message service (9) and mobile application development for libraries (2).

Chapter 7 describes the “Global Change” app and the authors identify the key gaps in students understanding in carbon and water cycling and explain how the app addresses it. Example lessons are provided that encourage student self-inquiry in a way that allows flexible, interactive learning. Besides, this app demonstrates how creative design and science can be combined to enhance the engagement of students with complex scientific concepts.

Chapter 8 presents how new technologies such as Augmented Reality (AR) and Mobile Pedestrian Navigation Systems (MPNS) allow the development of contents on different topics for the educational implementation. In this case, authors presents the creation of a MPNS-AR application in the context of territorial heritage as the customization of the content and the processes into subject areas such as history or heritage allows an improvement in the learning process. This allows the gathering of evidence in ways of understanding and adapting to the users (students), improving their educational process as m-Learning having a defined context, and a personalized territorial framework.

Chapter 9 attempts to provide some insights about the use and perception of undergraduate students about the use of mobile devices at University. It collects information of the most relevant aspects that the students consider when they interact with mobile devices; how often they use them and the type of apps they download. Also, it makes an especial mention of training apps and their handling by the participants. This paper also analyses the existing relationships between the different factors that could influence in their attitude to accept the mobile technology.

Chapter 10 shows the opportunities that the hybrid app development platforms could offer to academics and administrators. This approach of hybrid app development offers real advantages over native development in complexity and ease of use for the non-technical individual. Hybrid app development allows for competitive pricing and rapid deployment, as well as providing an acceptable level of end user experience. Therefore, the development platform provides an infrastructure and software solution and educational institutions can benefit of them providing innovative solutions for transition students with minimum levels in investment and technical skill.

Chapter 11 explores the effect of using the iPad on learners’ writing performance.

This study suggests that incorporating mobile devices in writing courses provides support for improved learning capacity and uses a comparative investigation of two conditions: 1) Pen-and-paper; and 2) digital using mobile devices. The aims of the survey questionnaire were twofold. First, to gain a better understanding of the students’ perceptions of writing using pen and paper versus writing using mobile devices. Second, to draw correlation between students’ perception and their actual performance in the written task.

The researchers in the Chapter 12 review students’ experiences using real-time polling in each of the four stages of the Experiential Learning Cycle (ELC): Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE). Student Use of Cell Phones to conduct their own Real-Time Polling. Case study was selected as the research methodology because the researchers wanted to conduct an in-depth analysis on one graduate class. A triangulated approach was used to validate and verify the data to confirm. Data collected for analysis included instructor documentation provided to students, student presentations with real-time polling questions, notes transcribed from classroom observations by independent observers, focus group interview, and a hard copy student survey.

The Chapter 13 employs a constant comparative and taxonomy analysis in efforts to provide themes and codes to organize and analyse the data derived from focus groups, interviews, surveys, and observations. The data revealed that students believed the iPad provided support to enhance student learning. Participants’ perceived the iPad device as portable, convenient and easy to use. Analysis of the survey

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results indicated 100% of students used their device to access the Universities common mobile platform. Most part of students (98%) stated they often completed online searches using their iPad, as well as 85% of the students used the iPad to take notes or view power points (70%).

Chapter 14 deals with the teaching of students in the use of a smartphone application for cell phone filming and mobile journalism at the Media and Society Studies. The training offered to media students is conducted with caution. Students make cell phone films (cellfilms) and practice mobile journalism (mojo) to produce media content. Smartphones and their software are technologies used to create discursive spaces with the potential to democratize communication and representation. These instruments provide new opportunities for debate and discussion and are equally useable in the conventional fourth estate or the emergent fifth estate.

The purpose of Chapter 15 is to investigate how mobile computing could be effectively leveraged and incorporated into tertiary education. The authors propose a new conceptual framework called STUMP in order to identify critical factors in relation to using m-learning and provides a guide for assessing the readiness level of the users. STUMP means: S (Skill, interest and knowledge of the technology to be used); T (Time demands an technical issues in using the technology); U (User's social cognitive composition); M (Motivation) and P (Pedagogic relevance of the technology). The STUMP model was supported with eleven previous theories that were used to establish the theoretical foundation of the model.

Chapter 16 presents a detailed review of the use of social media in Universities by both students and teachers. It overall strengthens collaboration and communication among students as the social media gives them the power to construct their own learning in a social and instructional environment. It covers different aspects related with this field as: how to access the technology, challenges, guidelines for social media use, the student engagement, the emerging pedagogy 2.0, the reduction of boundaries between students and faculty, the needed training for the faculty members to use these new technologies and reports some legal constraints. Finally, the chapter explains some technologies that have been incorporated in Colleges and Universities.

Chapter 17 conducts a survey among lecturers and students at University of Guyana on the factors of the Unified Theory of Acceptance and Use of Technology Model. The results show that the mobile phone is the most popular mobile device among students and lecturers and that both groups have positive attitudes towards using mobile devices for teaching and learning. However, students are more disposed and equipped to use mobile technologies in the near future and have stronger intentions towards integrating them into their learning. In addition, attitude factor is the most important determinant of adoption among students, whereas the facilitating conditions factor is most critical to mobile learning adoption among lecturers.

Chapter 18 evaluates the resources and the implementation of two different apps to learning physics and mathematics subject using multimedia resources. The authors perform an experimental and non-experimental design with students at University and present the impact results of the study. Finally, they give some recommendations and suggestions to the teachers in order to develop and implement the video-capsules for the different courses.

Chapter 19 discusses the use of mobile devices as learning tools but the authors claim that they do not replace the traditional mode of teaching. They conducted a study including a triangulation of sources: questionnaire, semi-interviews and observation to collect both quantitative and qualitative data. Triangulation means that the researchers compare the data collected from different sources using the instruments applied in this investigation. The results could set a basis of prior knowledge of the main competences (skills and attitudes) the teachers and tutors must have as well to be able to lead and implement these teaching-learning processes.

Chapter 20 aims to enhance student teachers' professional development in Field Experience (FE) by adopting mobile technology and cloud services. The authors, in this study, produce sharable theories that have implications for practitioners and designers and how both student teachers and supervisors could build their own e-portfolios. The authors also present a number of good cases of the use of technology in FE supervision. Furthermore, the study has established a workable model for using IT to support learning and enhance the assessment of block practice in FE.

Chapter 21 uses the Technology Acceptance Model to predict instructor acceptance and adoption of a tablet computer for mobile learning in a Ghanaian University. Findings show that instructors' intentions to use the tablet PC for mobile learning are very low, and are significantly influenced by their perceived usefulness, perceived ease of use and attitude towards the device. Implications of these findings for practice and further research are discussed within the context of the adoption of m-learning within the Ghanaian higher education context in particular and the developing world in general. The chapter also add an open-ended questionnaire to decipher and categorize any emerging patterns, ideas, perceptions, assumptions, and experiences during the process.

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