

An experimental Case Study: Comparing Perceived Usability of Two Mobile Environments of a SPOC

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Abstract

The social, mobile, analytics, and cloud technologies collectively referred as SMAC technologies have ushered in the next generation of technological trends. This work focuses on mobile dimension which is presenting both a huge opportunity and significant challenge to large organizations and particularly in education. This work aims to assess and to compare perceived usability of the SPOC Employability, a six-week small private online course created at Faculty of Sciences Ben M'Sik for Master's students and provided on Moodle. An experiment of students in two mobile environments of the SPOC was explored and compared: 1) using a mobile web browser 2) using Moodle mobile application. To assess the perceived usability of each environment; the SUS (System Usability Scale) questionnaire was taken up and adapted.

Keywords: SPOC – SMAC Technologies – Mobile environment - Perceived usability

1. Introduction

The current decade has started to witness a fast changing landscape in technological innovations. Social Media, Mobility, Analytics, and Cloud Computing – popularly termed SMAC can be considered as a future for IT industry[1] which has brought about sweeping changes in different domains and particularly in education. Undoubtedly, Social and Cloud-based learning environments powered by Analytics and Mobile design have brought an in-depth change to the ways in which learners access knowledge, think, collaborate, communicate and learn. In the present work, attention is focused on mobile technologies which have sparked a growing interest in all areas and have become omnipresent in society. In Morocco for example, the individuals equipment with smartphone records a notable growth moving from 38.2% in 2014 to 54.7% and the estimated number of smartphone is 14.7 million units in 2015 (National Telecommunications Regulatory Agency (ANRT) - ICT Survey 2015). The rise of mobile technologies is accompanied by a growing interest in mobile learning (mlearning). Mobile learning research projects, driven by the exploration and exploitation of each new technology in education, have shown how these mobile technologies stimulate learners' involvement and increase interaction and collaboration among them. Based on these advantages, this work focuses on the fusion of the two emerging learning formats: MOOCs and mobile learning. The objective is to assess and to compare the perceived usability in two mobile environments of the SPOC Employability, a six-week private online course created on Moodle, developed at Faculty of Sciences Ben

M'Sik and intended for Master's students. The SPOC was explored in two mobile environments using a) a responsive design and b) using Moodle mobile app.

2. Background

2.1 MOOCs / SPOCs

Massive Open Online Courses (MOOCs) are rapidly growing in the field of online learning thanks mainly to their massiveness and openness dimensions. With time and place flexibility, MOOCs gathers scholars and a high volume for learners around the globe [2] and according to the growing number of MOOCs, these environments will still shape online learning in the future.

Contrary to MOOC, SPOCs stand for Small Private Online Course and aim to offer a tailor-made course intended for small group of learners. SPOCs support blended learning and flipped classroom learning. Like MOOCs, SPOCs are said to have revolutionized universities and the corporate education landscape[3].

2.2 Mobile Learning (mlearning)

The development of the mobile technology gave birth to a new era of learning and teaching. Features like flexibility enable learners to learn anywhere and anytime, mobility features has result in the design of mobile learning materials, Interactivity which is due to the development of touch technology, portability, popularization and personalization [4] are the most important mobile technologies characteristics that have made them attractive tools in education.

2.3 MOOCs and Mobile Learning

The use of social media, collaboration and informal learning are common features of mobile learning and MOOCs. In an ever-changing world both on the technical and pedagogical levels, the two fields remain in a constant exploratory process. Research that investigated the combination of these two learning formats yielded some positive results such as maximizing learner interactions and dialogues, promoting collaborative learning, informal learning, and Lifelong Learning [5], offering the possibility of extending the scope and value of MOOCs not only by improving access to learning materials, but also by providing new forms and methods of learning[6].The differences between the mobile and desktop environments of a MOOC as well as the limitations of their fusion were explored in [7] where the authors/(course creators) analyzed the experiment of learners in mobile and desktop learning environments for three MOOC platforms: Coursera, edX, and Udacity. As MOOCs users increasingly demand the launch of mobile versions, the majority of MOOCs platforms such as edX, Coursera, Udacity and Iversity- offer today responsive designs and/or dedicated native mobile applications allowing mobile access to their corresponding platforms.

3. Methodology

3.1 SPOC Employability

SPOC Employability is a six weeks small private online course designed by Faculty of Sciences Ben M'Sikon Moodle and intended for Master students (MIMPA (Master Instrumentation et Méthodes Physico-chimiques d'Analyse) and ITEF (Master Ingénierie et Technologies de l'Éducation et de la Formation)). The course aims to maximize students' career success and to develop skills needed to find a job.

3.1 Environment and tools used

To test SPOC Employability in a mobile environment, this study explored access to the course using a mobile web browser and via Moodle Mobile app (Figure 1).

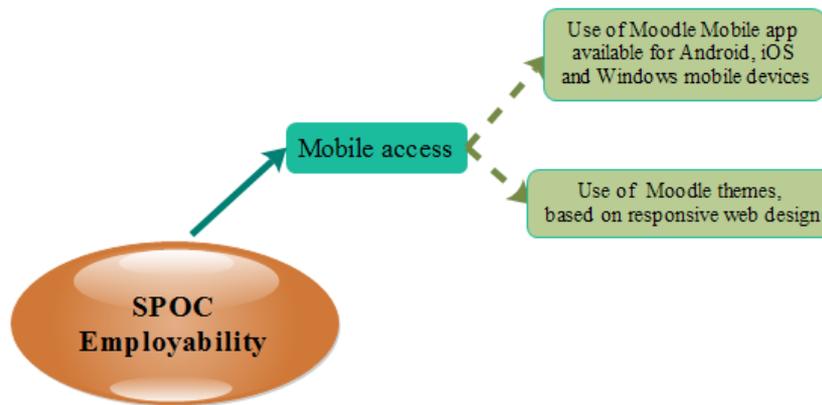


Figure 1: Architecture proposed for a mobile access to the SPOC

Two groups of the Master's degree of the Ben M'sik Casablanca Faculty totaling 50 participants formed the sample of the present work. An electronic questionnaire was developed using Google Forms and managed online.

To assess the usability the SPOC in a mobile environment, the SUS (System Usability Scale) questionnaire [8] was adapted and used.

3.1 Results and Discussion

Figure 2 shows screenshots of the SPOC accessed via mobile.



Figure 2: SPOC Employability screenshots on mobile environment

During this experiment, students used mostly smartphones (96%). To assess perceived usability of the SPOC Employability for each mobile environment, the SUS questionnaire was adapted and used. It consists on ten questions using a Likert scale with five response modalities, ranging from "Strongly Disagree" to "Strongly Agree". The score obtained for environment under a mobile web browser with a responsive design (SUS median = 72.2 out of 100) is lightly better than environment under Moodle mobile App (SUS median

= 55 out of 100) [9]. This is could be explained by the fact that a responsive design adjusts the same content of the SPOC on desktops according to various sizes of mobile devices used. For this reason, students were probably more comfortable with this mobile environment than with Moodle mobile app environment where the SPOC appears in different way from the desktop version with lack of images and labels of video content.

Generally, the SUS scores obtained reflect an overall satisfaction for both mobile environments. Additionally, students enjoyed learning at their convenience and with their portable personal mobiles connected anywhere and anytime.

4. Conclusion

Developing mobile accessibility for a MOOC represents a real challenge to fulfill the learning needs of mobile learners in an era where ubiquitous learning is increasingly rising. This experimental study allowed to assess and to compare the perceived usability of the SPOC Employability in two mobile environments indicating that a SPOC devised using responsive design offers a satisfactory environment with a perceived usability slightly superior than its perceived usability using Moodle Mobile App. The students emphasized their overall satisfaction with both mobile environments, establishing that a SPOC devised using responsive design offers a satisfactory environment and that Moodle mobile App offers the possibility of an offline access to SPOC contents. Mobile technologies are especially appreciated for their portability and easy use anywhere and anytime. The present work also showed that the main constraint of responsive design is the need for Internet connection. Future works will focus on other solutions aligning a SPOC/MOOC to mobile dimension of SMAC technologies.

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