Chapter 7
Using Design Patterns to Incorporate Usability in Notifications from MOOCs

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ABSTRACT
Feedback provided by interactive systems is crucial to ensure a good user experience. In this vein, notifications represent the most common kind of feedback from interactive systems, such as MOOCs. In this scenario, notifications from system to users require a special look from designers since three basic types of interaction/communication converge in MOOCs: User-User; User-Platform (content); User-group. Every kind of interaction may require a specific mode of notifications, nevertheless it is possible to extract the basic types of notifications from MOOCs and then specify them into a pattern-based structure which could be easily incorporated into the systems life cycle. This strategy may contribute both to facilitate designers to create well designed notifications for MOOCs and to enhance user experience through its final application.

INTRODUCTION
Currently Massive Open Online Courses (MOOCs) have had a tremendous impact on education and its popularity increases day by day. Millions of users around the world use MOOCs through courses management platforms such as edX, Coursera, Udacity, and many more (Gutierrez-Rojas, et al. 2014; Riel & Lawless, 2014). This massive availability of contents, tools, and many kinds of learning resources, demands timely effective notifications (feedback from the course) in different levels such as content-user; user-user; course staff-user, among others, disclosing and distributing information about new content available; remainders of specific deadlines; third-parties involved; new activities uploaded; comments from students or instructors; and even the list of student joined to the course (Riel & Lawless, 2014; Kay et al., 2013; Knox et al., 2013).

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In order to provide distribution of notifications or remainders many course management platforms implements e-mail services and SMS instant messages to mobile devices (Kay et al., 2013). This information is complemented by messages from the platform to users showed during the course by means of dialogue boxes; pup-ups; plain text; figures; graphs; stats; among other graphic elements (Agrawal, Kumar, & Agrawal, 2015). Independent to the form of notifications it is important that this feedback goes in-line with the coherent learning sequence of the MOOC; learning materials; assessments; and other activities available to ensure an adequate learning (Kay et al. 2013).

Said notifications are required to help students and other stakeholders keeping track of deadlines and whole set of course activities. Interactive distribution of this kind of information is common and relatively “easy” in face to face courses; nevertheless it becomes a complex task in MOOCs because there are thousands of students enrolled in a specific course and they are in different locations and / or countries.

As mentioned before, notifications are strongly related to the kind of communication (content-user; user-user; course staff-user, among others). In this vein, MOOCs provide several scenarios and tools when feedback and notifications from the system are required, such as forums where registered students in MOOCs courses are able to post comments and ask questions in this scenario feedback from facilitators is also required but the large number of students makes really difficult to provide this kind of feedback in a timely manner (Shatnawi, Gaber, & Cocea, 2014).

Independently of the scenario, students enrolled to MOOCs courses demand feedback that responds questions such as: What it means: good performance? What is my own performance? What it means the difference between current performance and the good one? And, what can I do to close these gaps? Timely feedback represents a crucial factor here and delays may compromise the advances in learning by the students (Yair, 2014). Related to previous aspects, Price et al (2014) emphasize seven principles to consider in order providing good feedback for students enrolled to MOOCs courses. Broadly speaking, these set of principles are addressed to promote incorporate of clear definitions of those levels of performance in order to complement detailed information about the specific student’s performance. Both should be conveyed to students in a proper manner, this means that information should encourage certain reflections in the student on her / his personal learning performance.

As mentioned above, it is very important that feedback related to any communication form valid for MOOCs should be well designed. In this way a good design brings people joy since a well-designed technology helps them to complete complex tasks, long activities, or even those daily little things that care people about (Klemmer, Hartmann, & Takayama, 2006). In order to achieve well designed technologies it is necessary to implement a User Centered Design process (UCD) complemented with Human-Computer Interaction techniques. Before continuing it is important to define these two concepts; User Centered Design emerged from Human Computer Interaction (HCI) is a methodology commonly used, but not limited, for software development and it is oriented to help designers and developers to create technology that meet the needs of the users (Lowdermilk, 2013). On the other hand, HCI focuses in provide tools, strategies, and theories to effectively perform the design, implementation, and evaluation of user interfaces (particularly for those computers related) (Dix et al., 2004). Additionally, well designed technology is oriented to provide good user experiences (UX). According to Lowdermilk (2013), UX is a term used to summarize the entire experience of a (software) product, not only focusing on functionality but also strongly considering how delightful a technology is to use.

Joining together previous paragraphs, it is possible to visualize the importance of providing well designed notifications to MOOCs students, considering important factors such as adequacy to the MOOCs