

# Chapter 95

## Students as Customers: Participatory Design for Adaptive Web 3.0

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### ABSTRACT

*The World Wide Web is changing, from the early Web 1.0 to the Social Web 2.0 and beyond to Web 3.0 interfaces, but more importantly, the users of the Web are also changing, and their numbers are increasing rapidly in line with this evolution. In e-Learning, it is essential to be able to keep up with these trends and provide personalized social interaction. Here, our main customers are our students, but these customers do not come unprepared: they already have a great deal of Web experience, especially in the areas of Social Networking Sites (SNS) and online interaction. Thus, it is essential to improve approaches used in the past, where learners were only involved in the receiving part of the delivery process. This chapter therefore proposes and explores applying participatory design methodologies in the early stages of the social adaptive educational hypermedia system design process, showing also its benefits for further design, implementation, and usage.*

### 1. INTRODUCTION

The Web of today looks totally different from that of the past. Its main driving forces are less the technologies and mechanisms, but its thriving user communities. There are over 2.4 billion Web users in the world, according to KPCB Web Trends (Meeker & Wu, 2013). Moreover, younger

generations have embraced the Web as a normal part of their lives, on which they spend a great amount of time. For instance, according to Everfi (Everfi, 2013), 13% of the 5500 American young teens surveyed admitted to spending more than five hours a day online, 16% of them admitted to spending 3-5 hours, and 40% of them admitted to spending 1-3 hours.

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In education, e-Learning is flourishing, with most universities and even schools having a clear e-presence and a varying proportion of online materials, including usage of e-Learning systems and learning management systems (such as MOOCS, Moodle, or older systems such as Blackboard, WebCT, etc.). However, e-Learning lags somewhat behind in embracing the new technologies, techniques and interaction models, for instance e-Learning in the business (through lifelong learning) or mobile sectors (ubiquitous learning).

In this global context, there is already a good body of research available to support the benefits of personalized education, both offline and online. Targeting the latter, the research area of Adaptive Hypermedia (AH) and Adaptive Educational Hypermedia (AEH) (Brusilovsky, 2001) has been growing rapidly during the past 20 years. It has resulted in a plethora of AEH systems (AEHS) to support, verify and evaluate the newly proposed models, system architectures and methodologies. Researchers in this area have been focusing on posing and answering the six major questions that define the core of adaptation, initially introduced by Brusilovsky (1996), namely, 1) *what can we adapt?* 2) *what can we adapt to?* 3) *why do we need adaptation?* 4) *where can we apply adaptation?* 5) *when can we apply adaptation?* and 6) *how do we adapt?*. Asking (and answering) these questions enables researchers to define adaptation process, in order to design an AEHS that better identifies a learner's knowledge level, learning goal, preferences, stereotypes, cognitive and learning styles, etc. (Brusilovsky, 2004) to provide adaptive and adaptable learning content, navigation, presentation and interaction. Whilst researchers (and system designers) are of importance during the AEHS design process, the other crucial role that has often been neglected is that of the *customer of an AEHS* (such as the learner or end-user).

Indeed, with the ever-increasing commoditization of learning, and the rise in fees (especially for higher education), students tend to act more

like customers than passive recipients of knowledge, as they have often been considered in the past. They also come normally with a very good background on Web 2.0 (as in *social*) and some Web 3.0 (as in both *personalized* and *social*) systems and platforms, albeit with less knowledge in the area of e-Learning (including pedagogy and meta-cognition of life skills such as Learning to Learn). Indeed with the rise of this 'student-as-client' paradigm, the business of higher learning has broken the bounds of the traditional university structures and 'exploded' onto the Web. MOOCs are an excellent example of this, with vast numbers of students (often 100,000+) being able to access courses designed by leading teachers and researchers. These courses, like all previous non-AEH courses, fall into the 'one-size-fits-all' trap (Brusilovsky, 2012), in that delivery of these learning materials are not personalized to the learner in anything other than a superficial manner. Therefore AEH research and development has a great deal to offer the *business of education*, especially in using MOOCs (and Learning Management Systems (LMS) such as Moodle) as a vehicle for delivering a personalized lesson to a large scale audience over the course of their working life.

Furthermore, in the Web 2.0 era, a growing number of researchers have been exploring the ways to facilitate adaptive e-Learning by introducing a social dimension and integrating various Web 2.0 technologies. This identifies the advantages of providing social media tools and supporting linking learners, e.g., inquiry-based collaboration (McLoughlin, 2007). Learners have been found to also be more motivated to contribute to creating an effective learning environment and enriching learning experiences, supported by collaboration and feedback from their peers (Dabbagh, 2011), which brings the benefits of not only engaging creating and sharing information and knowledge within a collaborative learning context, but also enhancing adaptation by monitoring and analyzing learners' social learning behaviors and interactions

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