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Chapter IX

Distributed Constructionism through Participatory Design

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ABSTRACT

We present the implementation of Distributed Constructionism (DC) through a Participatory Design (PD) methodology of an Online Learning community. The students collaborate on the content and functionality development of an online Modern Greek language course, peer review and publish content contributions, and participate in participatory design teams. Participatory design was implemented as a four step process (a) Build bridges with the intended users, (b) Map user needs and suggestions to the system, (c) Develop a prototype, (d) Integrate feedback and continue the iteration. Distributed Constructionism was implemented to enhance the learning experience and community development. Finally Social Network Analysis is employed to quantitatively measure the strength of the online community established and the key role our participatory design team participants played in sustaining this online community.

INTRODUCTION

The contribution of this chapter is the presentation of an empirical study of an online learning community collaborating with the design team of the course under the Participatory Design methodology. We measure the student participation during the different phases of the design process, and the changes in their behavior when new design elements are introduced. We implement the different phases of Participatory Design methodology using a four-stage process: (a) Build bridges with the intended users, (b) Map user needs and suggestions to the system, (c) Develop a prototype, (d) Integrate feedback and continue the iteration. Our participatory design methodology was carried out by following the Distributed Constructionism pedagogical theory, and took advantage of the online and distributed nature of the student community to asynchronously design, implement and study the course. Finally we use Social Network Analysis (SNA) to evaluate the student participation on the online discussion forum. We discover that the students who volunteer to contribute in the participatory design teams and contribute most of the additional material are also the central nodes of the SNA analysis. We conclude that the online discussion board can promote student collaboration and the identification of the key community users who can participate productively in Participation Design activities.

Participatory Design

Participatory design (PD) (often termed the "Scandinavian Challenge") (Bjerknes et al., 1987) refers to a design approach that focuses on the intended user of the service or product, and advocates the active involvement of users throughout the design process. User involvement is seen as critical both because users are the experts in the work practices supported by these technologies and because users ultimately will be the ones creating new practices in response to new technologies (Ellis et al., 1998).

Blomberg and Henderson (1990) characterize the PD approach as advocating three tenets:

- The goal is to improve the quality of life.
- The orientation is collaborative.
- The process is iterative.

Distributed Constructionism

Distributed Constructionism (Resnick, 1996) extends the Constructionism theory (Papert, 1991, 1993) to knowledge building communities, where the online learning community (instead of one student) collaboratively constructs knowledge artifacts (Resnick, 1996). The three major activities of DC, within the context of an online learning community are (Resnick, 1996):

1. Discussing Constructions: Students discuss their constructions during the design, implementation, evaluation and reiteration phases
2. Sharing Constructions: Web-based systems allow students to share their constructions and make them part of the shared knowledge.
3. Collaborating on Constructions: The community can use online communication to collaborate on the design and development of the knowledge artifacts.

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