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# Multicultural Interaction Redesign Using a Semio-Participatory Approach

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**Abstract.** This paper presents a research in progress about an interaction redesign of an educational software based on a new semio-participatory approach. Brazil is a multicultural country, and its diversity may affect the educational and interactive processes. With the increase of digital technologies use into classroom, the impact of the people culture on interaction with that technologies should be consider. Particular cultural context makes for the people use solely specific signs of their signification systems, ignoring possible signs that are unknown. Based on the Semiotic Engineering and Participatory Design, this study aims to develop a multicultural interaction design approach which support end-users' diversified needs. An action research is adopted to drive an interaction redesign. Using the Semio-participatory approach is expected to be possible to introduce the cultural and pedagogical characteristics of subject-users on the interface, developing a multicultural interaction.

**Keywords:** Interaction design · Multiculturalism · Human-computer interaction · Education · Cultural aspects · Participatory design

## 1 Introduction

Basing this research on Semiotics can understand that interaction is a process of communication and that communication has conducted through the exchange of signs. The Semiotics Engineering theory (a theory of HCI) considers interaction as a communication between a designer and a user. The interface is a collection of signs. Thus, the culture can influence the interpretation of the signs that are in the system interface causing a problem of communication [3].

Our research work adopts a semio-participatory approach of interaction design. The semio-participatory practices carry messages, highlighting the role of the subjects and their understandings through their effective participation in the design. The first part of the expression, the particle “semio” refers to Semiotics. The “participatory” particle refers to participatory approaches. Participatory approaches have as a principle user participation in the product construction process (e.g. Participatory Design, Metadesign, Design Thinking, Codesign) [1]. The use of this interaction design approach generates two questions: a) the semio-participatory design can contribute to the educational and cultural redesign of the interaction of socio-educational networks; and

b) given the multicultural context of the school, the semio-participatory role of interaction (re)design can advantage the school's multicultural profile?

## 2 Proposed of Semio-Participatory Approach

With the third wave of IHC, researchers have trying to understand the daily life and culture of users. According to Bødker [2], the Participatory Design (PD) can contribute to resolution of these challenges. Participatory practices aim to bring users to center of the product construction process. Thereby, the solution may emerge from users [4]. Baranauskas [1] originated the term “semio-participatory” considering design like a semiotic and social process. According to De Souza [3], the interaction process also is an semiotic process. In our approach, the particle “*Semio*” relates to Semiotic Engineering. The particle “*participatory*” concerns the participation practices. The semio-participatory design approach are participatory practices that carry messages to build the meta-communication by interaction design.

The approach is composed of Communication-Centered Design associated with the Contextual Inquiry, BraiStorm, BrainDraw, and Think-Loud techniques (Table 1). The experiment data showed that use of semio-participatory approach can give voice to users speak out problems in accordance with their experience, enabling the end-user development of the interaction causing the signs of the users' signification systems to be inserted in interface.

**Table 1.** Methods and Techniques used in the novel approach

Semiotic	Participatory
Communication-Centered Design	Contextual Inquiry
	BrainStorm
Semiotic Inspection Method	BrainDraw
	Think-Aloud

## 3 Next Steps

In the next steps, we aim to develop a high-fidelity prototypes based on BrainDraw. To do this, students and teachers will be invited to evaluate the interaction of an educational software using Think-Aloud technique.

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