Designing User Interfaces using Activity Theory

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Abstract

The mainstream framework of computer-interaction research of cognitive psychology has come under increasing criticism lately because of the gap between research results and practical design. According to Kuutti [8], the main criticism is that traditional cognitive psychology of design is not able to penetrate the human side of the interface. To overcome these limitations, an alternative approach to interface design is necessary. Activity Theory, which originated within Soviet psychology, appears to have much to offer. Activity Theory incorporates notions of intentionality, history, mediation, motivation, understanding, culture and community and it is these aspects that have proved attractive to interface design. We believe that Activity Theory offers several benefits to interface design, compared to the traditional cognitive psychology approach.

This paper describes a case study involving the use of Activity Theory for the design and evaluation of a tourist information kiosk.

1. Introduction

Researchers in recent years have criticised the gap between research results and practical design in HCI. Bennon [1] lists several limitations of the traditional cognitive psychology approach. Firstly, in the traditional approach, the human actors are simply passive elements in a system, not an autonomous agent that has the capacity to regulate and co-ordinate his or her behaviour. Secondly, the problem of using predetermined fixed requirements for product design. Instead of considering only a single individual, features of co-operation, communication, and co-ordination are often vital in the successful performance of tasks. Thirdly, restricted and artificial laboratory experiments have been the trend instead of work practices. Finally, there is a growing recognition that the actual use of a system is a long-term process that cannot be adequately understood by studying just the initial steps of usage.

There is an emerging consensus among researchers that the cognitive approach to HCI may be limited. It does not provide an appropriate conceptual basis for studies of computer use in its social, organisational and authorial context, in relation to the goals, plans and values of the user or in the context of development.

In this paper, we present a case study involving the design of an information tourist kiosk using Activity Theory. To make activity theory useful, we also applied an activity checklist to guide us in the specific areas when trying to understand the context in our design and evaluation. The paper is in four parts. We start with this introduction, followed by a brief review of activity theory in section two. In section three, we describe the case study. Section four concludes our paper.

2. An overview of activity theory