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Open and Distance Education for Global Collaboration & Educational Development

Evaluating the social effects of distant education beyond the desktop computer

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Abstract

In this article, we explore the methodological aspects for the longitudinal evaluation of a mass communication system that brings together a physically distributed educational community. There is a significant body of related research, but no integrated approach. In particular, previous academic research has not been evaluated with casual users in public spaces for prolonged periods of time. As a matter of fact, the most interesting effects of distance communication systems on everyday life, such as community identity, community awareness, and civic participation have not been documented. For this purpose, we plan to deploy an ambient and social interactive TV platform that supports social communication between remote and isolated schools. Here, we describe tools and techniques for a systematic longitudinal evaluation of the social effects of the media communication system on an educational setting.

Introduction

In this research program, we examine how the shared experience of mass communication could be extended with collaborative interactivity and user generated content that connects everyday life across physically distributed ('diasporic') communities. The disciplinary scope of this research program concerns interaction design in computer mediated mass communication and includes some novel technological aspects. Besides technology integration, the research program puts particular emphasis on a longitudinal study that will investigate the social effects of locative media in an educational setting.

Previous research on the impact of Information and Communication Technology (ICT) in education settings has focused on the learning process itself (e.g., if and how learning is improved through computers and networks). In the proposed research program, we regard a complementary to the learning process issue that has been motivated by the growth of distance education programs and by the strong interest of the European Commission in cultural exchange programs within educational settings. In brief, we aim to study whether ICT could be employed in public physical settings in a transparent way and whether ICT could have a positive effect on social awareness aspects of the above cultural exchange programs.

In order to provide support for remote and casual social awareness, we aim to *augment the familiarity and accessibility of mass communication with subtle interactivity* (e.g. social presence visualizations) and user-generated content. Despite the criticism concerning the value of television (Putnam, 2001) and mass communication, there are studies that reveal several worthwhile aspects, such as social communication. Indeed, media content is a shared experience and it is employed as a placeholder for interpersonal and group communication (Kubey and

*SECTION B: applications, experiences, good practices, descriptions and outlines,
educational activities, issues for dialog and discussion*

117

Csikszentmihalyi, 1990). Although television has been implicitly assumed as a domestic technology, there are also several uses of media content in public space (McCarthy, 2001.). Previous research has proposed several techniques that *employ sensor data and visualize remote social activity*, but there are no research results on the longitudinal effects of these visualizations. For this purpose, we aim to employ *user evaluation techniques to assess activity visualization techniques on distant community awareness during off-line periods*.

1   Related work

Previous works in Computer Supported Cooperative Work (CSCW) and video-conferencing have been installed in researchers' offices, or student dormitories and have been used to link distant offices of the same organization (Jancke et al., 2001). Researchers have investigated technical feasibility and user acceptance about whether collocated face-to-face meetings could be replicated with video portals that connect remote places. Moreover, researchers have developed computer based tools that support meetings that take place over a distance or over different time-zones (Adams et al., 1999). They reported on several issues, such as the privacy concerns of users and the awkwardness of initiating conversations (Bly et al., 1993). Although video conferencing increases social presence, it also increases privacy concerns (Boyle and Greenberg, 2005). Thus, there is increased reluctance to employ real-time video conferencing as a means of interpersonal communication.

With regard to the education context, the most relevant work has considered the collaboration between teachers who are geographically distributed (Groth et al., 2005). *Although, there is a large body of research that treats ICT applications in distance education, there is no work on the casual aspects of education and on the longitudinal evaluation of ICT that supports social awareness in an educational context*. For example, most of the EC-funded cultural exchange and student collaboration programs employ standard ICT, such as email, chat rooms, forums, and file sharing to support projects' activities. Could the casual aspects of distant education hold some opportunity for enhancing the social aspects of ICT?

There is a research opportunity in the analysis of ICT that supports casual aspects of learning and that is employed in a distance education context. By "casual aspects of learning" we refer to activities that do not support directly the learning process, but which might provide opportunities and motivation for the main learning activities. For example, an always-on video-link might display information about remote students that are currently very active on a joint project. This information might might motivate local students to join them. According to Fish et al. (1990): "The history of video as a communications technology has been a mixed one, showing great successes as a method of broadcasting entertainment, a mixed record as a method of educational distribution, and a dismal record as a mechanism for interpersonal communication."

Communication media differ in their degree of 'social presence' and this is one factor that molds interaction. Short (1976) defined social presence as the sense of awareness of the presence of an interaction partner in a mediated environment. Notably, social presence has been associated with enhanced online social interaction (Tu and McIsaac, 2002). Therefore, it is expected that the proposed system might have positive effects to the core activities of distance collaboration (e.g., learning), although this is not the primary objective of the project. Based on the notion of 'social

SECTION B: applications, experiences, good practices, descriptions and outlines, educational activities, issues for dialog and discussion

118

presence' we describe the methodology for the design and evaluation of our study.

2   Research methodology

2.1   Outline of technological platform

We plan to deploy an ambient and social interactive TV platform (hardware, software, physical installation, content) that supports shared experiences in a positive way. The system will consist of shared screens (e.g., TVs in public space) and several *physical and virtual* sensors. By physical sensors we refer to Bluetooth receivers, video cameras and microphones that monitor the activity in a physical place. By virtual sensors, we refer to software interfaces that collect predetermined school-project data (e.g., forum discussions, exchange of media content), which they remotely visualize in an abstract way (e.g., active discussion threads could be highlighted and exchange of audiovisual files such as photos and videos run in the televised background of the shared screens).

2.2   Evaluation phases

The pilot-study involves pairs of schools, which reside in remote places (e.g. on an island and on the mountains in the mainland), in order to troubleshoot technical and methodological aspects of this study before actual deployment to a remote school in a different country. In this way, we "bullet-proof" the technological aspects (e.g., robustness, acceptance, usability) of the system and pilot the longitudinal data collection tools and data analysis procedures. The same schools that participated in the pilot study will be considered for the longitudinal study in order to assess the differences between the proposed solution and traditional use of ICT. In the final study, each one of the two local schools will be linked to one remote school that resides in a different EU country and they will be asked to perform their eTwinning project of preference.

2.3   Data collection instruments

Data collection will be based on the same cultural probes, data logs from the system's sensors and will be guided by the 'social presence' approach and instruments. The social presence approach is the groundwork for many theories on new medium effects. The idea is that a medium's social effects are principally caused by the degree of social presence, which it affords to its users. Social presence, or the 'sense of being together', is quite distinct from physical presence, or the sense of 'being there' in a mediated environment. One popular subjective method for measuring social presence is Ogood's et al. (1957) semantic differential technique. There are also studies that articulate the construct of social presence and develop a social presence questionnaire for examining on-line collaborative learning (Tu and McIsaac, 2002). Moreover, there are several other enhancement and additions to the original instrument, which are going to be considered before the pilot phase.

*SECTION B: applications, experiences, good practices, descriptions and outlines,
educational activities, issues for dialog and discussion*

119

3   Ongoing research and expected outcomes

We have already seeked for potential secondary education schools that wish to participate in this study. The response from schools has been unexpected, so far: More than 80 (eighty) schools have expressed interest to participate and we have selected a dozen of them for an early ethnographic study of their profiles. In this period, we aim to create enthusiasm and *gather user requirements, based on an ethnographic study of a remote collaboration session between two schools*. The ethnographic study has been performed by the use of cultural probes, which are considered to be a 'lightweight' and non-intrusive user requirements collection method (Gaver et al., 1999). Cultural probes data is currently analyzed and visualized with affinity diagrams (Beyer and Holtzblatt, 1999).

The exact system components, the functionality, and the media interfaces that are going to be displayed on the system depend very much on the findings of the exploratory study at the beginning of the project. In particular, several interaction concepts (Chorianopoulos, 2007) will be explored before selecting the few that are going to be empirically tested in the field. There will be a strong emphasis on the most natural input and output devices, such as mobile phones, touch-screens and big shared displays. The social aspects of the prototype will be evaluated with casual users along six months (the first three months will be a pilot-test of the technology and the data collection instruments) with a longitudinal toolset, as described in related studies of ICT adoption and use (Kraut et al., 2002). Additional data collection instruments include data logging in computers and interviews. The data collection and analysis will be performed continuously, in order to record the temporal effects on the educational community. The analysis of the data will focus on the differences between the benchmarking results and those achieved during the different phases of the system operation. Moreover, the analysis will seek differences due to age, gender, culture, socioeconomic background, as well as differences of attitudes towards the alternative modalities of the interactive video installations (e.g., text versus abstract video representations).

The proposed case study on student co-operation programs in secondary education schools could provide original findings, because there are no similar efforts. Besides the foreseen benefits for the local community, the outcomes of this research could have wide applicability in similar community establishments that take place over a distance (e.g. commercial or governmental organizations). Therefore, the findings of this case study could be consolidated with those from other similar regions of the EU (Groth et al., 2005). Finally, there are several benefits for the eTwinning program, which considers ICT mostly as a tool. The novel approach of the research program could promote the awareness of situated ICT as a complementary communication medium, as well.

Acknowledgements

SECTION B: applications, experiences, good practices, descriptions and outlines, educational activities, issues for dialog and discussion

120

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SECTION B: applications, experiences, good practices, descriptions and outlines, educational activities, issues for dialog and discussion

121