Chapter 3

Interpretation of Computer Based Interaction Analysis Indicators: A Significant Issue for Enhancing Collaboration in Technology Based Learning

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ABSTRACT

DIAS is an Asynchronous Discussion Forum Platform, mainly developed in order to offer extended monitoring and interaction analysis support, by providing a wide range of indicators jointly used in various situations, to all discussion fora users (individual students, groups, moderators/teachers or even researchers/observers), appropriate for their various roles in different activities. This chapter focuses on the explanatory and interpretation issues that arise when the integrated Interaction Analysis (IA) features are used by teachers – moderators. The importance of applying additional interpretative value to seemingly simple quantitative measurements is highlighted through several implemented case studies. This research indicates that the teachers’ tasks can be supported using such approaches. More complex diagrams, with potentially increased underlying interpretation power, provide a more insightful examination of the status and evolvement of a discussion, as well as the contribution and performance of the participants (as individuals or as groups). Students cooperate more fruitfully, by utilizing IA indicators for assessing and selfregulating their actions, thus facilitating the moderator’s tasks. It relies upon the moderator to manage this aspect of such tools to his/her benefit. Core objective of this chapter is to

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INTRODUCTION

The past few years we witness increased research mobility concerning tools for analyzing and supporting technology based collaborative learning activities, by distance in particular. Recent developments in learning theory have emphasized the importance of context and social interaction (Stahl, 2006). In this vein, Computer Mediated Communication tools (CMC) and in particular asynchronous discussion fora are widely used in formal or informal educational contexts, applying principles of constructivism, emphasizing in social interaction during learning activities (Gunawardena et al, 1997).

Actually, an asynchronous discussion forum is a characteristic example of a computer supported tool, used collaboratively in multiple ways. In general, intense research has been conducted over the years in order to support, improve and enhance collaboration in various areas (e.g. CSCW, CSCL, etc). Computer-based Interaction Analysis (IA) is an emerging field of research within the academic community, focusing in the analysis, in an automated way, of interactions among users, in various collaborative situations (Dimitracopoulou et al, 2005). Apart from selecting the raw data and designing the appropriate analysis algorithm, the results’ visualized presentations, as well as the interpretation of the produced depictions are very important issues for consideration. In this chapter, we discuss these issues using examples from research conducted by implementing IA tools in order to support the participants of asynchronous discussion learning activities.

The chapter is structured as follows. First an overview of the IA research field is presented. Then the implemented research approach is described, including: a) the theoretical background, b) an overview of the existing Forum Type software and the corresponding support tools, c) a description of the system (DIAS) which was designed and implemented specifically for the presented research approach and the integrated IA indicators, d) an extended discussion of the Interpretation issue by presenting the notion of an Interpretative Schema, e) results from the implemented research, and f) conclusions. Finally, the chapter is summarized with a concluding discussion, in which the research trends of the IA research field are presented focusing on the positive outcomes for the e-Collaboration area in general.

INTERACTION ANALYSIS

Computer-based Interaction Analysis (IA) is defined as the automatic or semi-automatic process aiming at understanding the computer mediated activity, drawing on data obtained from the participants’ activities. This understanding can be utilized for supporting the human or artificial actors in order to undertake part of the activity’s control, by contributing to awareness, self-assessment or even regulation and self-regulation (Dimitracopoulou, 2009).

Research Field Overview

The Interaction Analysis process consists in recording, filtering and processing data regarding system’s usage and user activity variables, in order to produce the analysis indicators. These indicators may concern: a) the mode, the process or
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