Chapter 39
An Approach for Analysing Interactions within Virtual Learning Communities

Manuela Repetto
Institute for Educational Technology, National Research Council, Italy

ABSTRACT

The aim of the contribution is to present a novel systematic model of interaction analysis which was designed and successfully experimented with a wide sample of adult learners in order to enhance and understand cognitive, socio-organizational and emotional-affective processes of virtual learning communities (VLCs). Starting from strengths and weaknesses of the present models and methodologies on interaction analysis, the mixed methodological approach adopted to develop this novel interaction analysis model is illustrated.

The model is organised in five categories and about thirty indicators and it can be applied through the development of a coding scheme, a self-assessment questionnaire for learners, and an assessment grid for tutors. Triangulation of data obtained from these tools and integration of them with ethnographic analysis make this approach for analysing interactions a reliable means to allow assessment and self-regulation of learners, while exploring the nature of learning within virtual learning environments (VLEs).

INTRODUCTION

Dynamics of Virtual Learning Communities (VLCs) have gained the attention of several researchers belonging to the educational field in the last two decades. According to the social constructivist approach, which considers learning as socially grounded, participants learn performing collaborative activities aimed at the realisation of common tasks such as problem solving, case studies or project development. There is evidence that this kind of learning strategies is crucial to promote knowledge building. Nevertheless, the proliferation of online courses has made impelling for the scientific community the development of theoretical models and methodologies devoted to

DOI: 10.4018/978-1-60960-040-2.ch039

detect those online dynamics leading to successful learning outcomes.

Among the several research trends, interaction analysis, meant as textual analysis of the contents of messages circulated within online groups among learners or between learners and tutors, is one of the most widespread methods.

The interaction analysis model illustrated in this chapter was developed starting from the most common interaction analysis models and methods based on collaborative learning within VLCs. The examination on studies lead on this topic was run adopting a critical approach that provided the evidence of convergences and variations within each strand of inquiry and clearly helped the various perspectives of research to come to light. These studies commonly derive from the constructivist paradigm in its interactionist and cultural-situational derivations, according to the participants of a VLC build new knowledge not only on the basis of those mastered, but even through negotiation and sharing of meanings.

Independently from the constructivist perspective, shared in the present work, the purpose of the analysis of previous models was to detect to what extent these studies diverge in terms of underlying approaches and theoretical references. The exploratory nature characterising the present studies on this topic is probably due to the lack of reliability of the coding systems elaborated so far, that make difficult to replicate them. The majority of the models are descriptive and one-dimensional, detecting mainly participation. Even in so called multidimensional models the main dimension investigated is "social presence", while other relevant dimensions like the cognitive or the affective ones are not deeply analysed.

The main epistemological assumption of this research was that learning derives from the interaction of three core components: the cognitive dimension, the socio-organisational dimension and the affective dimension. These dimensions have been investigated both separately – trying to understand dynamics at cognitive, social and emotional level – and jointly, according to an holistic approach and adopting a constructivist perspective, in order to detect how these are related in generating relevant learning experiences.

The methodological approach applied to develop the interaction analysis model is mixed. Part of the research was carried out on an empirical level according to an experimental perspective, through techniques gathering structured data organized in matrices, and elaborated with statistical techniques; another part of the research was realized through a hermeneutic approach, by means of qualitative techniques capturing aspects not formalized. Firstly, categories and indicators for analyzing the conferencing transcripts have been identified through a recursive process, combining a data-driven approach inspired to grounded theory with a theory-driven approach. The resulting model was organized in five categories and about thirty indicators. The next step was the application of this model with a sample of about 320 persons through the development of a coding scheme, a self-assessment questionnaire for learners, and an assessment grid for tutors. Data obtained with these tools were triangulated and integrated with results coming from the hermeneutic approach.

The interaction analysis model developed and experimented within this research allows understanding cognitive, organizational and emotional-affective processes of the VLCs, even with incursions in disciplinary areas different from Education. Starting from the investigated phenomena, the main tendencies and configurations assumed by VLCs can be detected to better understand which elements and conditions make these situations virtuous or critical for individual and collective learning. At an individual level, dynamics triggered from the assumption of specific roles can be analyzed; at collective level, typical phases (organizational, affective and cognitive) crossed by groups during a series of collaborative activities can be identified.

Moreover, overcoming the individual and inter-rater logic to catch the specific peculiarities of the