

# Network and Content Analysis in an Online Community Discourse

Maarten de Laat

University of Nijmegen

[m.delaat@ped.kun.nl](mailto:m.delaat@ped.kun.nl)

## ABSTRACT

The aim of this paper is to study interaction patterns among the members of a community of practice within the Dutch police organization and the way they share and construct knowledge together. The online discourse between 46 members, using First Class, formed the basis for this study. Social Network Analysis and content analysis were used to analyze the data. The results show that the interaction patterns between the members are rather centralized and that the network is relatively dense. Most of the members are involved within the discourse but person to person communication is still rather high. Content analysis revealed that discourse is focused on sharing and comparing information.

## Keywords

Social Network Analysis, content analysis, networked expertise, community of practice, organizational learning

## INTRODUCTION

The aim of this paper is to study the nature of networked expertise within an organization, and the way its members share and construct knowledge together. In a learning organization, workers are stimulated to share and develop knowledge together. Workers tend to form networks of expertise to facilitate individual learning, collaboration and to discuss work related problems together. Sometimes these networks transform into communities of practice. In a community of practice (COP), participants, who share a common interest for the field they work in, come together to help out each other, solve problems, and share and create knowledge collaboratively. Over time these mutual interactions and relationships build up a shared body of knowledge and a sense of identity. They constitute an informal, social structure initiated by members and reflecting on their collective learning (Wenger, 1998).

This study focuses on the exchange of information through a CSCL-environment (First Class) within the Dutch police organization. The members of this network frequently exchange information and discuss work related problems together. Their shared interest for drugs issues in criminal investigation resulted in the establishment of a shared practice. This network can be characterized as a community of practice because of voluntary engagement, existence of this network over time (two years), and realization of a shared practice (Wenger, 1998).

The way people participate in expertise networks provides insight in the process of learning. A CSCL environment provides ideal possibilities to study interaction patterns between the members of a network. Social network techniques can be used to describe patterns of relationships between individuals. Insight in communication patterns within a certain network alone is not enough. Also the content of the discourse must be taken into account (Henri, 1992; Gunawardena, Lowe, & Anderson, 1997). This way information can be gathered about the quality of the learning and the social construction of knowledge.

## METHOD

An existing community of practice within the Dutch police organization was studied to analyze the interaction patterns and quality of the discourse. They used the program First Class as a communication tool in which the discourse took place. In this study we focus on the following questions:

1. *How active are the members in the discourse?*
2. *Who are central participants in the discourse?*
3. *How dense is the participation within the network?*
4. *What is the quality of the discourse?*

## Subjects and procedure

Communities of practice can't be built they emerge. Therefore we followed an existing community of practice within the Dutch police to analyze their activities. This COP consists of 46 members who are affiliated with or conducting drugs related investigations. They use First Class as an electronic environment to discuss work related problems, exchange information and to maintain their expertise. First Class is a communication forum that facilitates an asynchronous discourse. The members operate in a shared workspace in which they can read and write messages. The data that was analyzed during this study is from the period of January till June 2001.

## Instruments

To answer the research questions we successively used the following instruments. First Class generates log-files about the activity of the members. Social network analysis (SNA) is used to analyze the social structure of the COP. First we conducted centrality measures to find the central participants within the network, then we conducted a density analysis to describe the overall linkage between the participants, and finally we visualized their interaction pattern using multi dimensional scaling. To assess the quality of the discourse the coding scheme from Gunawardena et al. (1997) was applied. This coding scheme examines the negotiation of meaning and social construction of knowledge in CSCL-environments.

## RESULTS AND DISCUSSION

The results indicate that the members are relatively well engaged in this COP. They wrote 233 messages to the entire network, with an average of 5,07 (SD 6,72; min 0, max 32) messages per person. 14 members of the community did not write any message to the whole group. In total the written messages were read 7486 times with an average of 162,74 (SD 83,15; min 1, max 249) per person. Centrality measures indicate that the interaction patterns between the members of this network are rather centralized. All the members sort of gel around the more active members of this COP. There are no subgroups within this COP, and most of the members are somehow involved within the discourse. Some members are more passively engaged in this COP, and that the person to person communication is still rather high. This might be attributed to the culture of the police organization, where there traditionally is a lot of face to face communication. People tend to share information and solve problems through their personalized networks. Density calculations indicate how active the members are involved in the discourse. In the case of sending and reading the messages that were exchanged through First Class the COP had a density of 57%. The quality of the discourse in terms of social knowledge construction remains mainly in the phase of sharing information (72% of the messages). However the members of this COP want to use First Class not just as a tool for sharing information. Their intention is to recognize drugs related trends throughout the whole country and to develop collaboratively an approach to meet those new developments. This involves not just processes of sharing information, also discussion and negotiation resulting in construction of knowledge are necessary to maintain and develop their expertise. A suggestion to stimulate this process of knowledge construction is to form small subgroups around central discussion themes to develop deep understanding, and use all the members of the COP for feedback on their results and input of new trends and information.

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