

EVOLUTION OF SOCIAL CAPITAL STRUCTURES IN COLLABORATIVE ONLINE LEARNING NETWORKS

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Dr. Reuven Aviv, Dr. Zippy Erlich, Gilad Ravid, Open University of Israel, aviv@openu.ac.il

Abstract

The basic thesis underlying this research is that the evolution of certain social capital structures in online learning networks – in particular cohesion, and bridging & triggering roles is related to the design of the networks on the one hand, and to the quality of the knowledge construction on the other hand. To examine this thesis we analyze various online learning networks. We test the following assertion: marked differences in designs of learning networks is associated with marked distinction in the evolution of cohesion and role structures of the networks, which is associated with marked distinction in the levels of constructing shared knowledge. To test this assertion we analyze online learning networks with various collaboration design structures.

We employ Social Network Analysis to the recorded responsiveness relations that developed between the members of the networks to gain insight into the buildup of social capital structures. Specifically, we search for cohesion and roles structures. Cohesion is identified by maximal clique algorithm. Roles are found by role-equivalence algorithm. This algorithm first embeds all members of the community in a certain 36-dimensional role space defined by the distribution of triads in the network; it then puts learners into role-groups by cluster analysis. We provide quantitative means to assess the clique and role structures as well as their development in time.

A five-level Knowledge Construction Process is used as the basis for Content Analysis of the communication transcripts to assess the levels of critical thinking reached by the learners.

The design of the networks is assessed by the Social Interdependence of Cooperative Learning Theory. The social interdependence parameters that were designed (or not designed) into the operation of the communities are evaluated. This analysis categorizes the communities according to their interdependence-structure level.

Our analysis provides empirical support for the assertion. Thus, Social Network Analysis revealed that highly structured networks of learners developed rich structure of interlinked cliques. Furthermore, in these networks learners implicitly undertook roles of bridges and triggers, without which the ongoing learning process might have lead to split sub-networks or gaps in the process of knowledge construction. These structures developed during the earlier stages of the life time of the networks. Content Analysis of the transcripts shows that these networks of learners reached high levels of knowledge construction. On the other hand, less-structured networks did not developed social capital structures, usually reaching low levels of constructed knowledge.

The implication is that Social Network Analysis can be used as a research tool for gaining qualitative and quantitative insight into the social capital dynamics of online learning networks. Furthermore, if Social Network Analysis tools be embedded into software environment supporting the learning network it will provide the participants a real time monitoring device for the dynamics developed in the online network.