

Local vs. Global Networks: Network Analysis of a Multi-User Virtual Environment

Kirk Job-Sluder
639 North Maple Street
Tel: (812) 339-6068
Email: csluder@indiana.edu

Proposal Abstract

Quest Atlantis is a social game-like learning environment for late elementary students. Participants in Quest Atlantis interact in a three-dimensional, multi-user environment with an extended backstory about visitors from Atlantis seeking knowledge from our world to prevent the destruction of their world. Barab, Thomas, Dodge, Carteaux and Tuzun (in press) describe Quest Atlantis as a learning environment that incorporates entertainment, education and social commitments. Quest Atlantis includes participants from multiple cities in the United States, China, Singapore, and Denmark. This dissertation will attempt to address three questions about Quest Atlantis as a social environment. First, to what degree does shared face-to-face participation in classrooms affect the online social networks created by participants? Second, to what degree does gender affect the online social networks created by participants? Third, are the effects of gender and co-location independent or is there an interaction effect where one gender is likely to participate in global networks?

In order to answer these questions, this dissertation will examine the three modes of communication most accessible from the chat environment. Chat consists of short messages sent from a participant that are received by all participants currently logged in and located in the same virtual space as the sender. Telegrams are longer messages that are stored for viewing by a single person. The recipient can read telegrams at any time. Internal email consists of extended messages of any length sent privately from sender to recipient. A sample of messages using all three modes consisting of all chat, telegram and email messages sent during a single month of interaction will be used for this research.

First, a brief narrative case description of Quest Atlantis participation will be constructed to highlight what participants are typically saying using the three modes. Structural Discourse Analysis (Herring, in press; Ko, 1996) will be used to identify differences between chat, telegrams and email. Structural discourse statistics such as words per message, and word length will be contrasted not only between modes of conversation, but between participant gender and classroom membership as well. Semantic Discourse Analysis (Herring, in press; Herring & Nix, 1997) will be used to identify who engages in conversation with whom. The data of conversational interactions between participants will be used to conduct social network analysis. The ratio of conversational interactions across genders as opposed to within genders will be used as a statistic for measuring to what degree interactions are gendered. The ratio of conversational interactions with classmates to non-classmates will be used as a statistic for measuring to what degree participants are creating global social networks (Degenne & Forsé; 1999)

There are three main goals for this research. The first goal is to improve Quest Atlantis as an environment that fosters discussion between groups by evaluating current interactions, and providing suggestions for increasing inter-group interaction. The second goal is to improve the development of other Internet-based social learning systems by creating a better understanding of how location and gender shape social networks. Third, this research is one step towards building a methodology for evaluating "sociability" as a design goal of social learning systems.

References

- Barab, S. A., Thomas, M., Dodge, T., Carteaux, R. & Tuzun, H. (in press). Making learning fun: Quest Atlantis, a game without guns. Submitted to *Educational Technology Research and Development*.
- Ko, K. K. (1996). Structural characteristics of computer-mediated language: A Comparative analysis of InterChange discourse. In S. Herring (ed.), *Computer-Mediated Discourse Analysis*, special issue of the *Electronic Journal of Communication* 6(3).
- Herring, S. C. (in press). Computer-mediated discourse analysis: An approach to researching on-line behavior. In S. A. Barab, R. Kling & J. H. Gray (Eds.), *Designing for virtual communities in the service of learning*. New York: Cambridge University Press.
- Herring, S. C., & Nix, C. (1997, March 11). *Is "serious chat" an oxymoron? Pedagogical vs. social uses of internet relay chat*. Paper presented at the American Association of Applied Linguistics, Orlando.
- Degenne, A. & Forsé, M. (1999). *Introducing Social Networks*. Thousand Oaks, CA: Sage Publications.
- Wasserman, S & Faust, K. (1994). *Social Network Analysis: Methods and Applications*. New York: Cambridge University press.