

A Longitudinal Analysis of Inquiry Threads in the Knowledge Society Network

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Abstract

The Knowledge Society Network (KSN) is a bold design experiment that takes advantage of new knowledge media to maximize society's knowledge resources and the effective and equitable mobilization of knowledge. The network is interdisciplinary (representing at least 20 disciplines), intersectorial (from kindergarten to higher education, health care, small businesses, advocacy groups, community enterprises), cross-age (from 4-year-olds to 70+), and cross-cultural (with participants from 12 nations). This poster reports descriptive findings from a longitudinal analysis of inquiry threads (notes in common problem space) to investigate the process through which the KSN serves as a platform for sustained knowledge advancement. Participation patterns are also analyzed to explore the underlying premise that KSN supports collective effort to advance the frontiers of knowledge.

Introduction

Knowledge building, a fundamentally social process, may be defined as the production and continual improvement of ideas of value to a community, through means that increase the likelihood that what the community accomplishes will be greater than the sum of individual contributions and part of broader cultural efforts (Scardamalia & Bereiter, 2003). Knowledge building provides the conceptual framework underlying KSN, which represents a community of communities, with members engaged in improvement of ideas to forward their collective goals. Knowledge Forum®, a computer environment underlies the KSN, and a set of analytic toolkit (ATK¹) underlies Knowledge Forum. The use of these analytic tools reveal patterns of interactivity that suggest progressive and collective knowledge-building among communities, and the possibility of their collective works helping to define the cutting edge of knowledge of individuals in a networked communities.

Data Sources and Analysis

Over the last five years 634 KSN authors have produced a total of 3,853 notes in 252 views (each view defines a working space). Four researchers reviewed the discussions and identified 13 inquiry themes, each represents a conceptual stream in the community knowledge space. The 13 inquiry threads fall into the following four categories.

¹ The Analytic Toolkit provides summary statistics on activity in a Knowledge Forum database. It shows how many notes are in the database, how connected they are, how many notes a user has created, which views a user is working in, what percentage of the notes have been read, whether build-ons, keywords, references, and the social interactions in the community.

- Theoretical advances, inquiry threads include (1) Research methods, (2) Knowledge Building Theory (3) Knowledge Building principles,
- Technological advances, inquiry threads include (4) Technological issues, (5) Analytical and research tool,
- Practice advance, inquiry threads include (6) Subject content (7) Professional development (8) Classroom challenges and design (9) Corporate and healthcare (10) Education Reform
- Network Administration, inquiry threads include (11) Publications (12) Planning/ administration and (13) Shared resources.

(Note: These numbers correspond to the theme numbers shown on the y-axis of Figure 1)

The discussion notes on each theme constitute an inquiry thread (a line of inquiry) represented along the timescale in Figure 1. Each line represents an inquiry thread and starts at the time that the first note is created and ends with the last note created. The three numbers in brackets at the end of each inquiry thread denote the total number of notes created, total authors who created notes and total number of members who read the notes within the theme. Such organization of the data provides an overview of the evolving trajectory of knowledge work that is sustained over a significant period of time within a natural social participatory structure of the community (Zhang et al., in press).

In the following section, we use the analysis results of KSN to highlight how a knowledge building community represents constructive intervention for a self-organizing knowledge society. The spread of activity, with varying intensity over the five years (see Figure 1) indicates ideas that have helped define the culture of KSN. The growth in diversity of each inquiry theme shows that these ideas continued to stimulate the mind of the community and expand into new areas by progressing through a series of convergent and divergent discourses. For example, the inquiry thread 'Classroom challenges and design', developed from a focus on theoretical understanding in the view titled Knowledge Building Pedagogies and Practice, to one that attempted to address the challenge of unlocking the knowledge building principles in class, to inquiries that revolved around specific knowledge building principles such as enacting knowledge building discourse and democratizing knowledge in a class. The analysis indicates that seventy-one percent of the total 3,853

notes were connected to other notes through build-ons, rise-aboves, and reference citations, thus aiding the socio-cognitive progress of various strands of work brought together into a coherent effort to explain knowledge advances. The KSN culture enhances the responsibility of individual participants to achieve collective advances.

Two further analyses within each inquiry theme are reported in both Figures. Theme #7, 'PD' is used as an example to illustrate the results of these analyses. The vertical lines in Figure 2 show connections between two working spaces (views): here, the connections represent referenced links by authors of the notes. This result indicates frequent occurrence of cross-fertilization that supports continual idea improvement within the network. This is a rather exceptional feature of the network for two reasons, one that each working space has very distinct period of intense activity and second, there is no hierarchical or overarching structure to initiate such relations. A second finer semantic analysis was done to show the textual coherence in two distinct periods of discourse. This is represented as overlaying colored boxes in Figure 1, for example, in the PD inquiry theme (#7), there were a maximum of 24% overlap of key terms (extracted by Yahoo! Key term extractor) that appears in different working spaces at different time (i.e. March 2004 and Nov 2005). In the absence of strict top-down organization or directed facilitation, this textual coherence indicates an emerging collective responsibility within the community in terms of comprehension of challenges and concepts for needed advancement for the specific inquiry.

Discussion

High levels of readership and authorship across KSN views (Figure 1) served to spread ideas throughout the communal knowledge and problem spaces. Such idea-driven activity encourages growth of community knowledge and demonstrates that knowledge advancement is both open and fluid and not circumscribed by the knowledge of any one of the members of the community nor by predefined tasks and materials that circumscribe work in each theme. KSN enables more opportunistic work with views, ongoing superordination of views to create increasingly high-level views, and what appears to be a powerful and natural way for community knowledge growth to proceed. Build-on (to one note), rise-above (a group of notes on a focal issue), and reference citation are three features for social interactions in Knowledge Forum.

Challenges and Implications

As is evident in the work in these knowledge spaces, novel ideas are not sufficient. A knowledge society needs to sustain both knowledge work and the continual generation and improvement of new ideas fostered through emergence and self-organization. The interconnectedness of Knowledge Building principles highlights the complex socio-cultural process and the need for a systemic approach to accommodate variation in approaches and change over time and contexts. Future challenges and implications will be

drawn from these findings to inform our next step in experimenting with the KSN, which is to focus on investigating how the interplay between researchers and practitioner may affect the creation of new knowledge necessary for sustainable educational innovation in which knowledge creation is in the social fabric of an organization.

References

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Zhang, J., Scardamalia, M., Lamon, M., Messina, R., & Reeve, R. (in press). Socio-cognitive dynamics underlying knowledge building. *Educational Technology Research and Development*.

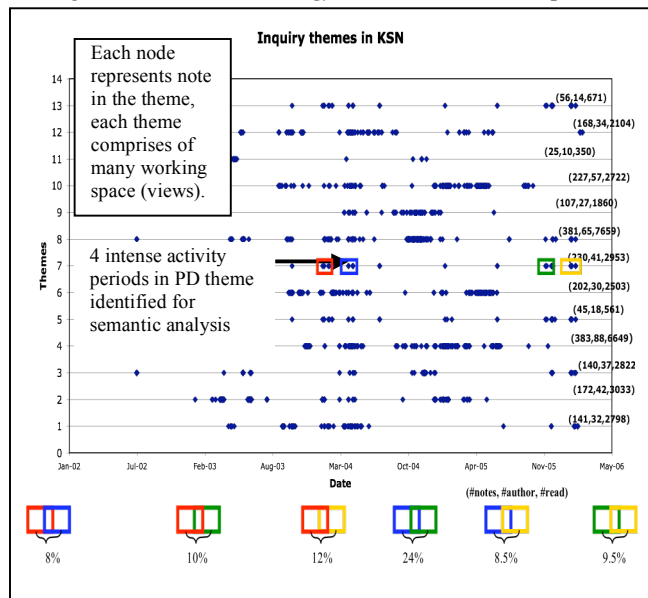


Figure 1. Spread of inquiry threads over time (for all themes) and semantic overlaps (for theme 7).

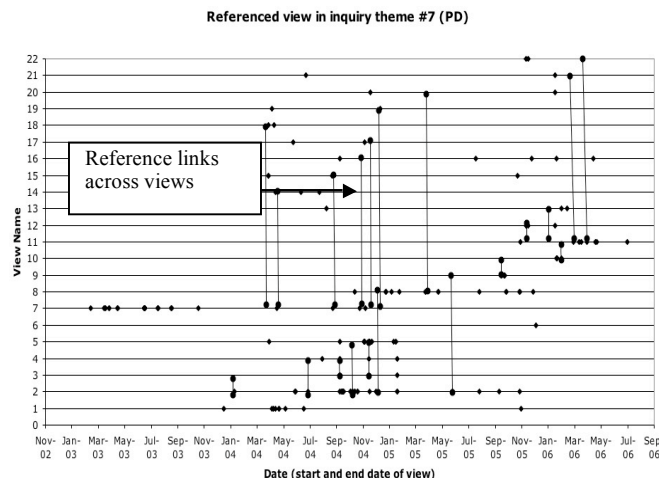


Figure 2. Connections (referenced notes) within working spaces (views) in Professional Development Inquiry Theme (theme #7 on Fig 1)