

Promisingness Judgments as Facilitators of Knowledge Building

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Abstract: Knowledge creation depends on pursuit of promising possibilities. This paper reports a case study of a graduate-level course, with promisingness judgments incorporated as an explicit goal of course work. The top-level goal for the course was to have students take collective responsibility for “*the creation of an assessment of collaborative knowledge creation.*” This paper presents the pedagogical design of the course, describes technological affordances to support promisingness judgments, and discusses preliminary findings.

Promisingness Judgments in Knowledge Building

Whether it is industrial designers working on a new product, scientists planning the next experiment in a research program, or policy-makers planning social legislation, decisions must be made about the investment of resources and effort in further development of ideas. “Ideas are the easy part,” says a high-profile design group (Fahrenheit 212, 2010), noting that ideas are usually in abundant supply. Going from an initial idea to an innovation, however, requires time and effort, and calls for evaluation about the potential fruitfulness of ideas in an uncertain future. Bereiter and Scardamalia (1993) refer to such evaluations as “promisingness judgments” and have argued that they play an essential role in creative expertise. In explaining creative processes, Gardner (1994) also describes the process of identifying promising ideas as bringing out “discrepant elements” and making the richness of select ideas evident. According to prior research, judgments of promisingness pervade creativity and decision-making of all kinds (e.g., de Groot, 1978; Dunbar, 1995).

Knowledge-building communities are characterized by a focus on problem solving that requires knowledge advancement through dynamic intellectual collaboration among community members (Scardamalia & Bereiter, 2003). Community members work within a framework of shared goals where contributions to the community knowledge space produce idea diversity and consequent need to select promising ideas and solution paths. The shared goals that frame the work are themselves emergents of the process, with effectiveness of the chosen solution path dependent on ongoing evaluation of new information and possibilities. Previous research has found promisingness judgments contributing to knowledge advancement in a Grade 3 science context (Chen, Scardamalia, Resendes, Chuy & Bereiter, 2012). This study explores pedagogical and technological designs to support work in a graduate-level knowledge-building course and investigates how promisingness judgments might be incorporated more explicitly to enhance knowledge-building processes.

Method

The study reported is part of a larger program of design research (Collins, Joseph & Bielaczyc, 2004) on promisingness judgments with the goal of developing pedagogical and technological “promisingness” innovations to facilitate Knowledge Building. The goal of this particular case study (Yin, 2011) was to gain greater understanding of the dynamics of promisingness by making the process more explicit to participants and engaging them in a knowledge building enterprise in which the shared goal represented a significant knowledge building challenge for all—including the instructor. The case was a 12-week graduate seminar at the University of Toronto—one professor, 15 graduate students from the faculty of education. Students were from diverse academic and cultural backgrounds, with varied experience and expertise in education.

Design of the Learning Environment

The knowledge-building goal for the course was “*the creation of an assessment of collaborative knowledge creation.*” Achieving this goal required students to understand relevant literature and generate novel solutions. Reading and discussion were not focused on individual comprehension of articles but on collective advances in understanding the literature and generating novel solutions.

To facilitate this process the instructor and students subdivided their community knowledge space into seven interlinked areas of specialization: “Intellectual engagement,” “Sustained creative work with ideas,” “Concept development,” “Social dynamics,” “Explanatory coherence,” “Reflection, metacognition, collective responsibility,” and “Epistemic agency.” These were further linked to the top-level community space titled “*assessment of collaborative knowledge creation.*” Students worked in a select area of specialization; they and the professor were all responsible for reviewing contributions to each area of specialization, achieving coherence, and advancing top-level goals throughout the 12 weeks of the course.

The pedagogical and technological design incorporated promisingness judgments as a central

component. The technology, Knowledge Forum (KF, Scardamalia, 2004) was used to support knowledge-building discourse surrounding readings and to enter ideas generated during class discussion. In both the face-to-face and online discussions, an explicit effort was made to connect ideas from the literature, from students' areas of specialization, and to reflect on how advances in areas of specialization contributed to breakthroughs with respect to the top-level goal of creating an assessment of collaborative knowledge creation. To further promote idea improvement, students were encouraged to use a list of expert vocabulary to monitor their understanding of key concepts and to provide constructive criticism of each other's contributions. Most significantly with respect to the current research, a "Promising Ideas" tool was integrated into KF (see Chen, et al., 2012). Students used this to highlight promising ideas in their notes and, if they wished, send them to one of the seven areas of specialization. In this manner, connections were constantly made between the literature, areas of specialization, and the top-level goal, with focus on identifying and refining most promising ideas.

Data were collected over the 12-week term of the course (total 606 KF notes written, 209 promising ideas selected). In this article we focus on promisingness judgments integral to course work and the extent to which they represented quality judgments, as assessed through independent assessments of promising ideas.

Results and Future Work

Temporal analysis showed consistent occurrences of promisingness judgments throughout the course. While some students endeavored to identify promising ideas on a regular basis, others did so during select, intensive periods of work.

To investigate whether judgments of promisingness made by students were of high quality, we rated all notes contributed by students using four different rating scales: idea development, constructive criticism, authoritative source information, and promisingness. We compared quality ratings of "promisingness" between two groups of notes: (a) notes containing no idea selected as promising versus (b) notes with at least one idea selected as promising. An independent sample *t*-test indicated a significant difference between these two groups of notes, $t(109) = -2.48, p = .01$. Mean promisingness scores of notes with promising ideas ($M = 4.70, SD = 1.68$) was about 0.6 higher than those without promising ideas identified within ($M = 4.11, SD = 1.69$). Similar comparisons were conducted on the other three quality ratings. Significant difference for idea development was found ($t(114) = -2.73, p < .01$), but not for constructive criticism or authoritative source information. These results indicated that students' promisingness judgments made throughout their work in the course served to focus on ideas independently judged as more promising and with greater idea development.

Future work will focus on tracing the growth of ideas in notes rated as "promising" versus those not selected. We will (a) analyze user actions with the notes (e.g., build on, reference, export to new context); (b) study the evolution of ideas selected as promising compared to a randomly sampled subset not selected, and (c) tell the story of expansion, redirection, and spread of ideas in these different sets. We will further enhance the Promising Ideas tool to keep ideas on a promising course, as well as foster community knowledge—a principle underlying Knowledge Building. This study contributes to a broader program of research of understanding creative processes and exploring possibilities for schools to operate as knowledge-creating organizations.

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