

Poster proposal: Research Summary

Theme: A 21st-century approach to 21st-century skills

Title: Constructive Use of Information and Improvable Ideas in Knowledge Building Discourse

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Statement of the issue/problem

This study examined how primary and secondary school students engaged in constructive use of authoritative information and investigated their relationships with improvable ideas in inquiry threads in knowledge-building discourse. According to Scardamalia (2002), the constructive use of authoritative sources refers to the importance of staying in touch with the state-of-the-art in a field of knowledge, and having a critical stance toward it. We conjectured that more constructive use of information in a thread was related to improvable ideas. The constructive use of information for improvable ideas is especially important in the knowledge society, where routine tasks are to solve new problems and create new ideas. In knowledge-building classrooms, students need to realize information needs and bring information into their community actively; moreover, information is not only an object to be learnt, but to be improved, and it should be used to refine students' ideas, explanations, and understanding of the world.

From our observation, students' asynchronous discourse is commonly fraught with subjective opinions and objective facts, which represent that students may have difficulties using information for collaborative inquiry-based learning. We try to develop some understanding about the current practice of the constructive use of authoritative sources on Knowledge Forum.

How your research will address the issue/problem

Two sets of Knowledge Forum discourse from two domains, Primary 4 Science and Secondary 3 Humanities, were analyzed. The participants were 68 primary 4 students from two Science classes (4A&4B), 75 Secondary 3 students from two Humanities classes (3A&3B), and 4 teachers from two Hong Kong schools. The teachers practiced knowledge-building pedagogy, and provided relevance websites for students. We developed 4 levels of threads from what seem to be the least sophisticated to the most: 1) Poorly focused ideas regarding issues that emerged, 2) Focused ideas regarding issues that emerged, 3) Ideas being improved slightly, 4) Ideas being improved substantively. As for the constructive use of authoritative information, we developed four categories to characterize the nature of information use: 1) Presenting information as facts, 2) Using information to support one's opinion, without explaining the information, 3) Elaborating and explaining information in light of problems at hand, 4) Evaluating information in light of current contexts for deepening inquiry.

What you have learned/progress to-date.

The inquiry threads (Zhang, Scardamalia, Lamon, Messina, & Reeve, 2007) were identified by researchers and were rated by the teachers into 4 levels. First two levels of

threads were grouped into low level, and last two levels of threads were grouped into high level. Student notes within each inquiry threads were coded and a total score was given to indicate the extent of information use for each inquiry thread. The first two categories of information use were considered as Naïve and given 1 score; the last two categories were considered as sophisticated and given 2 scores. The statistical analysis was performed using PASW (SPSS) 18.0 to analyse whether more sophisticated information use would be related to higher-level inquiry threads. As expected, comparison of high-level and low-level threads showed significant differences in information use.

Table 1: Participation level

ATK indices	Primary (Science)		Secondary (Humanities)	
	4A(39)	4B(29)	3A(37)	3B(38)
Notes Created (mean)	446 (11.4)	198(6.6)	178(4.7)	171(4.5)
Notes Revisions (mean)	76(1.9)	99(3.3)	37(1)	86(2.3)
Notes Linked	79.9%	80.1%	86.8%	64.6%
Notes Read	45.5%	26.1%	31.3%	25%

Table 2: Analysis of Information Use

Class	Low Level Threads				High Level Threads				p-value 2-tailed
	n	Mean	Std	error	n	Mean	Std	error	
		score	SD			score	SD		
P4 Science	20	1.1	2.63	.59	12	6.58	4.08	1.18	.001
S3 Humanities	8	1.13	1.55	.55	10	5.8	5.43	1.17	.032

Major project goals: what do you hope to achieve/accomplish?

This study sheds light on the importance of utilizing information in producing knowledge-building discourse; however, students may often be engaged in chi-chats and conversation or knowledge-sharing discourse without using information constructively for deeper discourse. Understanding the current practice of how students use information in collaborative knowledge building may inform instructional design in improving students' ideas.

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References:

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