Knowledge Building Teacher Network (KBTN) in Hong Kong: Sustaining and Scaling up Knowledge Building through Principle-based Innovation

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Abstract: This CSCL event is designed to introduce knowledge building model and practice (Scardamalia & Bereiter, 2006), to showcase teacher innovation situated in a knowledge building teacher network (KBTN), to explore principle-based innovation for teacher development, and to provide an opportunity for community dialogue about issues of CSCL research and sustained innovation in classrooms. With an increasing number of teachers implementing knowledge building, it may be fruitful to explore the experience of KBTN, with many new teachers coming together to work on knowledge building. How do Hong Kong teachers understand, adapt and implement the innovation in relation to the socio-cultural context with much emphasis on examination? How might teachers and researchers tackle tensions between scaling up versus lethal mutation, a common problem when teachers merely follow surface activities? This CSCL practitioner event examines successes and barriers, and explores principle-based innovation for tackling the challenges of classroom innovation from both practitioner and researcher perspectives.

Introduction

The knowledge building educational model, first developed in the 1980s (Scardamalia & Bereiter, 2006), has been of interest to many researchers and practitioners around the world. Scardamalia and Bereiter postulate the model emphasizing collective efforts for knowledge production and knowledge creation dynamics for 21st century education. While schooling focuses on tasks, knowledge building focuses on ideas, with dynamics of epistemic agency, idea improvement, and the advancement of community knowledge. The annual Summer Institute of knowledge building regularly attracts researchers, teachers, teacher educators, scientists from North and Central America, the Asian Pacific regions, and Europe. The knowledge building team at the University of Toronto has developed an international network – The Institute for Knowledge Innovation and Technology (IKIT) that consists of multi-disciplinary teams of researchers, scientists, teachers, engineers, and policy-makers from worldwide. Hong Kong is one of IKIT's key knowledge building research and practice sites, and now developing a teacher network for scaling and sustaining knowledge building practice in classrooms.

The Knowledge Building Teacher Network (KBTN) first began in Hong Kong with a teacher secondment scheme in 2006 and later expanded with the School-University Partnership project, funded by the Education Bureau (Ministry of Education in Hong Kong). KBTN, led by the first author, hosted in the Centre for Information and Technology in Education (CITE), currently has approximately 70 teachers working on the implementation of an educational model of knowledge-building. The macro-context of educational reform for 'learning how to learn' in Hong Kong encourages schools to engage in new projects for pedagogical and technological improvements. These conditions, in turn, facilitate the growth of the meso-structure of a teacher network in which researchers work with practitioners to advance knowledge building theory, pedagogy and analyses against the background of the socio-cultural-historical contexts of Asian classrooms.

Since the early 2000s, researchers in Hong Kong have been conducting research on knowledge building in classrooms. In 2006, KBTN was first developed to scale up and sustain knowledge building innovation to a range of classrooms. The initial network consisted of 7 experienced teachers 'seconded' from the Education Bureau and more than 20 new teachers recruited from different subject areas and school levels (Grade 5-12, ages 10-16). A special feature of KBTN is its partnership with the government and schools. Through this partnership, seconded teachers' salaries were paid by the Education Bureau, with 50% of their time released from school duties to work directly on the knowledge building project. Most of the first batch of seconded teachers had successfully conducted knowledge building in their own classrooms; they now joined together to work collectively providing peer support and developing knowledge building classroom innovation.

The teacher secondment project (2006-2008) was a welcomed success to the Education Bureau and a larger grant has been obtained for further scaling up with the University-School Partnership project since 2008. Considerable work has been conducted to develop links among different levels (i.e., macro, meso and micro) of the systems such as aligning the requirements and needs of the Education Bureau, school leaders, and teachers for classroom innovation; designing knowledge building approaches to meet the assessment and examination demands prevalent in Asian schools; and helping teachers to understand and foster changes through student knowledge building inquiry.

A key idea of KBTN is that teachers would engage in collective inquiry and building knowledge together as what they would intend their students to develop. Further, an emphasis is placed upon the design for a hybrid teacher-researcher collaborative culture to tackle common problems of understanding (Bereiter, 2002). Various designs are included: 1) *design meetings* in which seconded teachers work with the researchers to engage in knowledge building discourse and to inquire into their knowledge building practices; (2) *area-based meetings* when teachers of similar subject areas, led by seconded teachers, meet to plan the principle-based curriculum; (3) university-based *workshops* among all of the network teachers for collective problem-solving; (4) *school visits*, during which seconded teachers support and mentor new teachers, with the support of the design team. Community-building is enhanced when teachers visit one another to share classroom practice; (5) *technology support* with the use of Knowledge Forum (KF) as a design space for teachers to build knowledge; and (6) *dissemination workshops* for the public in alignment with the educational reform goals of Hong Kong. Although these are common-place activities in teacher development projects, as we will discuss later in detail, a key emphasis is placed upon using knowledge building principles for research-based classroom innovation.

Project evaluations demonstrated various positive aspects. In terms of *breadth*, there is growth in terms of the number and expertise of teachers. For example, the network has increased from 30 to now 70 teachers with around 50 KF databases, suggesting that most teachers have spent a dedicated amount of time trying out the innovation. The number of experienced teachers serving as seconded teachers and teacher associates has increased from 7 to now 15; more than 25 teachers have been sustaining the innovation in the classroom over 3 years and several over 6 years. While there is considerable variation, some have shown *depth of understanding*. Not only do teachers develop more understanding about knowledge building, they are *making shifts* and becoming change agents adapting the innovation and contributing to the knowledge creation process. For example, while knowledge building is mostly undertaken in the science curriculum, the KBTN teachers have developed ways to examine knowledge building principles in the Language and Humanities curriculum. In particular, KBTN supports teacher growth and the transformation of teaching expertise into a community property through our increasing number of open classes for observation and shared KF databases.

Another important development is our international collaboration of students and teachers with other knowledge building networks from around the world. Some KBTN teachers joined the Summer Institute in Toronto and several are engaged in the Knowledge-Building International Projects (KBIP) within a multi-national collaborative knowledge building network working with teachers from Quebec, Barcelona, Toronto and Mexico. This event on the local network (KBTN) will be linked to another one on KBIP to demonstrate the notion of networks of networks for symmetrical advances.

For further information, please refer to the KBTN Website at http://kbtn-resources.cite.hku.hk/

Theme of the Session and Expected Outcome(s)

Scaling and Sustaining Knowledge-Building Practices and Principle-Based Innovation

This CSCL practice event is to introduce knowledge building practice to newcomers, to showcase KBTN teacher innovation, and to provide an opportunity for community dialogue about issues and challenges facing CSCL classroom innovation. With an increasing number of school systems around the world implementing the knowledge building model, it would be fruitful to explore the experience of KBTN, with so many teachers coming together working on knowledge building. How is it possible to implement, sustain and scale up knowledge building? How do Hong Kong teachers adapt and sustain the innovation in relation to the socio-cultural context with much emphasis on examination? How might teachers and researchers tackle the tensions between scaling up versus lethal mutation, a common problem when teachers merely follow surface activities (Brown & Campione, 1996)? This CSCL practitioner event examines successes and barriers, and explores principle-based innovation for tackling the challenges of classroom innovation from both practitioner and researcher perspectives.

Scardamalia and Bereiter (2006, 2007) stress the need to place principles at the forefront in teacher development. While many programs focus on helping teachers learn some pedagogy and tools, we argue for the importance of teachers understanding of the knowledge building principles. The idea is that teachers need to know how as well as why the principles, so they can understand and implement innovation with a sense of ownership, and thus be able to sustain and adapt across contexts. In the early years, KBTN teachers were mostly concerned with infrastructures and lesson plans; but over the years, increased design efforts were put to principle-based innovation. Apparently it is not possible to work with teachers without classroom activities; however, there is a difference in focus. For example, when KBTN teachers provided examples of classroom events, they were encouraged to consider the episode as an object of inquiry, using the KB principles as the analytical lens, rather than merely focusing on teaching activities. For Asian teachers who are used to structures and activities, the experiences of moving towards principles are challenging and fascinating.

While there have been many analyses on knowledge building, this CSCL event, conducted by local KBTN teachers and students in Hong Kong, joined by the international CSCL and knowledge building communities, may provide enriched perspectives on knowledge building innovation. The principle-based approach has been well developed in Toronto classrooms over some years. KBTN is relatively new and it would be useful to examine how teachers with less experience from different educational systems may implement principle-based innovation. In this event, we will hear from teachers how they come to understand the knowledge building principles, how they adapt the knowledge building practice in Asian classrooms, what impacts knowledge building and principles have on their students, what they consider to be success factors and why they continue with the project, and how they tackle challenges and barriers etc. Students from Hong Kong classrooms will also discuss and showcase their work, and policy makers/officers from the Education Bureau (Ministry) will also be invited to join the event. Together researchers and practitioners explore the following questions:

- What is teachers' experience of KBTN? Why do they engage in classroom innovation (or join the project)? What makes them continue/sustain their knowledge building practice?
- How do teachers think about knowledge building principles? How do they come to understand something as complex as knowledge building? How do they see their own changes or growth?
- How are knowledge building principles developed in different curriculum areas? While knowledge building is mostly implemented in science curriculum, how do teachers design knowledge building in Language and Humanities curriculum? And how is it related to the socio-cultural educational contexts?
- How does principle-based innovation work in Hong Kong classrooms? What are the impacts on students' knowledge advances? How does teachers' understanding of student growth sustain knowledge-building innovation?
- What is the role of assessment in principle-based innovation? How does assessment of knowledge-building principles work?
- How are knowledge building principles developed within an examination-oriented curriculum? How do teachers implement innovation in light of socio-cultural influences and constraints?

Expected Outcomes

1. To share experiences, questions, and challenges among practitioners and researchers when implementing principle-based innovation from around the world.
2. To increase knowledge of the specific ways in which principle-based innovation can be implemented in a variety of educational contexts with case examples from the different socio-cultural context of Hong Kong.
3. To gather feedback regarding the specific ways in which principle-based innovation can be implemented for formative evaluation and design efforts towards sustained knowledge building innovation.
4. To increase practitioners' understanding of principle-based innovation for developing a knowledge community of practice, through the sharing of best practice exemplars and a pedagogical discourse that can facilitate professional growth and possibly change, enhanced by technology.
5. To develop some understanding regarding successes and barriers for scaling up and sustaining classroom innovation.
6. To examine CSCL practice-research synergy and explore how practitioners and researchers can work collectively and collaboratively to advance their knowledge.
7. To build communities across different networks internationally focusing on classroom innovation.

Session Activities — Brief Rundown of Each of the Activities to be Conducted in Sequence, with Focus, Time Schedule and Participants Involved

	Session Activities
1.	Introduction to the Knowledge Building Teacher Network (KBTN)
2.	Fire-hose presentation: Each poster presenter will give a 1-2 minute presentation to introduce their poster.
3.	Interactive Posters: Each team of presenters will set up a station showing their posters, power points with classroom videos, KF databases, teachers'/students' work examples, etc. The interactive posters will include the following areas of inquiry: • Teacher Experience and Change Towards Principle-Based Innovation • Principle-Based Innovation and Curriculum Design in Language and Humanities • Sustaining Knowledge Building Innovation and Examination Culture • Students Assessing their Knowledge Building Using Principles Groups of students will also set up stations to showcase their knowledge building experiences and work examples.
4.	Conversations with KBTN teachers and students from local schools
5.	Panel discussion: Therese Laferriere, Laval University, Quebec; Elizabeth Morley, Institute of Child Studies; University of Toronto; Jan van Aalst, University of Hong Kong; Jianwei Zhang, University at Albany, New York
6.	Open Discussion

References

Bereiter, C. (2002). *Education and mind in the knowledge age.* Mahwah, NJ: Lawrence Erlbaum Associates.

Brown, A. L., & Campione, J. C. (1996). Psychological theory and design of innovative learning environments: On procedures, principles and systems. In L. Schauble & R. Glaser (Eds.), *Innovation in learning environments: New environments for education* (pp. 289-325). Mahwah, NJ: Lawrence Erlbaum Associates.

Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy and technology. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 97-115). New York, NY: Cambridge University Press.

Scardamalia, M., & Bereiter, C. (2007). Fostering communities of learners and knowledge building: An interrupted dialogue. In J. C. Campione, K.E. Metz, & A. S. Palincsar (Eds.), *Children's leaning in the laboratory and in the classroom: Essay in honor of Ann Brown.* Mahwah, NJ: Lawrence Erlbaum Associates.