

Project Summary for IAL Website

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Project Title:	Leveraging leadership to sustain the dynamic professional development and identities of preschool teachers: The case for Knowledge Building Community (KBC)
Project Number:	GA17-01 DH
Year of Approval:	2018
Funding Source:	WDARF
Objectives and intended outcomes of the project:	<p><u>Objectives:</u> The project aims to build the Knowledge Building Community (KBC) as a technology-mediated, emerging and self-sustaining network among a group of preschool teachers. The KBC fosters a knowledge creation culture that supports teachers' professional practices and attends to their epistemic problems. Such community-based professional development develops leaderships and ownership of progression and practice among teachers, expert and novice. We also endeavour to transpose this model to student-teachers by scaling the KBC network in the form of design principles for other education courses.</p> <p><u>Intended Outcomes:</u></p> <ul style="list-style-type: none"> • The formation of KBC as a model of professional development to seed and diffuse teaching and learning innovations among pre-school teachers. • The development of toolkits that explain the structures, mechanisms, processes, and evidence-driven policies that can be adapted in other networks and kindergartens, allowing the spread of innovative practices. • The consolidation of a theoretical and practice framework on professional development for sustainable learning networks for innovative practices.
Project Team	
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Summary of Project (up to 300 words)

The early childhood education sector in Singapore faces some baseline problems: There is a lack of sustained professional practices and insufficient awareness of preschool teachers' epistemic beliefs and problems among teachers, along with infrequent ICT learning opportunities. Our project aims to address these gaps in this sector by creating a sustainable professional development model – the Knowledge Building Community (KBC) - one that embeds designs of collaboration, ownership of learning and leadership into the professional experiences of preschool teachers.

We envision two enabling mechanisms for sustaining the KBC: (1) The development of "ecological leaders" to broker resources and support the change processes involved; and (2) The creation of "ecological carryover effects" brought about by these leaders who promulgate learning across schools and classrooms. Our model of the KBC adopted in this project is based on an existent case study of a successful framework and network of primary and secondary school teachers.

In this project, we pose three inter-related questions:

- (1) How do the design and strategies of Knowledge Building Community support the developmental trajectory of the teacher community on inquiry-based learning practices?
- (2) How do early childhood educators' participation in a KBC influence their professional identities and competencies?
- (3) How do the KBC foster the ecological conditions (carryover effects) to sustain and spread innovative practices (in this case inquiry-based learning practices)?

This in-depth study of KBC in pre-school setting will contribute insightful findings for building a sustainable lifelong learning infrastructure and culture beyond preschool educators, possibly on other training contexts.

Summary of Project Findings, Deliverables and Impacts (up to 500 words)

The project examined how inquiry-based knowledge building (KB) practices can be developed and sustained within early childhood education settings through community-based professional development design. In short, the two intertwined layers include (i) teachers engaging in within-school and cross-school KB community, (ii) teachers exploring KB practice with their students. The findings reveal impacts on teacher identities as leaders, community-based professional development for teachers, and scalable innovative practices.

First, the study addressed how a structured network approach to professional development can develop KB practice among teachers. Analysis of interview data, reflection notes, and online interactions on the Knowledge Forum (an online collaborative discussion platform) over a sustained period showed that teachers' shared understanding of inquiry-based practices improved over time. Teachers increasingly recognized their roles as facilitators of student learning rather than mere transmitters of knowledge. They began to see inquiry-based learning as a dynamic process where students explore ideas deeply while teachers continuously reflect and adjust their practices. This shift in practice was evident in changes such as asking probing questions, adapting lesson plans based on student ideas and questions, and integrating collective reflective practices into daily teaching. Moreover, network analysis of participation patterns and contributions to the Forum across different teacher profiles showed distributed yet unique contribution patterns by experienced and novice teachers. This finding highlights that KB culture and technologies provided a psychologically safe community for teacher professional development.

Second, the impact of KB on professional competencies was studied. Through in-depth case studies and analysis of meeting transcripts, empirical evidence showed that active participation in the KB community

transformed teachers' epistemic beliefs and pedagogical strategies. Teachers moved from a traditional, procedure-focused approach to one that was more idea-centric and student-driven. KB culture encourages continual refinement and everyone as a valid contributor. Lesson design was seen to be continuously refined through collaborations, reflections, and feedback. The findings also show teachers more readily taking on leadership roles, guiding their peers in developing KB practice. This not only enhanced individual teaching practices but also fostered a collective identity among educators, crucial for sustained professional growth.

Deliverables from the project include the establishment of a robust Knowledge Building Community (KBC) network among preschools that led to sustained innovative practice and the development of a toolkit to guide educators in KB practice. These toolkits include idea cards for students and simple tools to capture student ideas and questions. Additionally, a Teacher Idea Dashboard was prototyped to visualize real-time insights into lesson design ideas to facilitate cross-community interaction. The project also produced a theoretical framework on community-based professional development that outlines how KB communities can be structured to support both administrators and teachers. Initial trials of this framework in adult learning contexts have shown promising results.

Overall, the project has (i) a transformative effect of KB on teachers and their practices, (i) created a viable professional network, and (iii) produced practical deliverables that support ongoing inquiry-based KB practices. KB networks across Singapore schools continue to grow and KB practice is still ongoing in the participating schools.