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Examining Pre-service Teachers' Perception of Knowledge-Building Principles for Building Community Knowledge

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Abstract. Previous research suggests that deeper understanding of knowledge-building principles is critical for a teacher to develop a knowledge-building community. Yet, it remains a challenge as to how to effectively help prospective teachers attain necessary understanding of knowledge-building principles for developing such community. As an initial step to address this challenge, this exploratory study assessed prospective teachers' conceptions about knowledge-building. Findings indicate that there exists a significant discrepancy between knowledge-building principles and their practice as perceived by the participants. Further research is necessary to explore this phenomenon.

Keywords: Knowledge building principles, community knowledge, pre-service teachers

1. Introduction

Knowledge-building is a social process focused on the production and continual improvement of ideas of value to a community [1]. To facilitate the process of knowledge-building, a set of 12 knowledge-building principles has been conceptualized (e.g., Epistemic Agency, see [2] for more details about each principle). These principles represent essential knowledge-building concepts for teacher understanding. They also represent design ideals and challenges in support of a principle-based pedagogical design approach [3, 4], as compared with conventional classroom work defined by pre-specified procedures, clear scripts and rules, or componential tasks [5, 6] or any highly-structured, ritualistic learning activities that represent fixed rather than improvable classroom procedure (e.g., the jigsaw method, see [7]).

Previous research has suggested that a deeper understanding of the related nature of principles is essential to help teachers utilize the principles in a more integral and adaptive way for knowledge-building [3, 8]. Despite their importance, however, the questions of how to effectively incorporate the teaching of these principles into a teacher education course and to help better prepare prospective teachers to develop a deeper understanding of these principles for future teaching practice have remained an instructional design challenge. To address this challenge, it is posited that an early assessment on prospective teachers' conceptions about knowledge-building will be helpful.

2. Method

Participants in the present study are 49 prospective Taiwanese teachers. Their ages range from 21 to 31 ($M=24.02$; $SD=2.47$). Data mainly come from a self-designed survey assessing participants' conceptions about knowledge-building. It consists of two dimensions, importance and applicability. Both dimensions are comprised of the same 12 items and each item is presented by a knowledge-building principle and its detailed

description. Using subjects (N=22) from another teacher education program of a comparable university, the Cronbach Alpha reliability estimates were calculated to be .87 (for the “importance” dimension) and .74 (for the “applicability” dimension). All items in both surveys employed a 5-point Likert scale (1=strongly disagree; 5=strongly agree).

3. Results & Discussion

The prospective teachers’ tend to consider the notion of knowledge-building as being highly important (M=4.28, SD=0.67), but relatively less applicable (M=3.36, SD=0.87). A repeated measures test also revealed a significant difference between participants’ perceived importance and applicability of knowledge-building (Wilk’s $\lambda=0.23$, $F=10.43$, $p=.000$, $\eta^2=.77$). Furthermore, specific correlations were computed to examine how each principle is related to one another. In terms of their *importance*, it was found that there are a large number of significant correlations between all principles, ranging from .305 to .617. Of all 66 possible correlations between all principles, there are 41 (62.12%) significant correlations. In terms of their *applicability*, it was found that there are a relatively smaller number of significant correlations between the 12 principles, ranging from .284 to .495. Out of all 66 possible correlations between all principles, there are relatively fewer (only 21, 31.81%) significant correlations. As evidenced from the findings, clearly, there exists a more consistent view of the prospective teachers on how they perceived of the relationships between the principles in terms of the importance of the knowledge-building principles, but not in terms of the practicability. The findings seem to suggest that there exists a conceptual misalignment between the prospective teachers’ conceived knowledge-building concepts and their practice.

The present research represents an initial attempt to design a university teacher-education course whose instructional goal is to help better prepare prospective teachers for a deeper and more integral understanding of the relationship between educational theory and practice, especially from a knowledge-building perspective. Our findings suggest that an effective instructional design in order to close the participants’ perceived discrepancy between knowledge-building principles and their practice will be necessary. The claim, however, needs to be further examined by more research.

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