

ANALYZING TEACHERS' CONCEPTUAL CHANGE THROUGH THEIR REFLECTIVE JOURNALS

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The importance of developing reflective skills has gained acceptance in mathematics teacher education in recent years. To gain insights into the teaching, critical reflection is an essential skill for teachers to develop (Krainer, 1999). Cobb and his colleagues (1997) suggest that if reflection becomes a regular part of the process, teaching and learning will improve. Therefore, this study was intended to provide teachers with opportunities for reflecting on their teaching and learning mathematics experience.

Eight teachers with different teaching experience were asked to share their knowledge and experience in weekly meetings. They piloted journal-writing efforts by reflecting on what was discussed in the meeting. The researcher also responded with written comments to the questions teachers posed in their journals. The teachers were asked to reread their own journal entries in order to promote in-depth reflection rather than simply replicate others' ideas.

The reflective journals of the teachers were analyzed according to the parameters of a three-dimensional diagram that emerged in the course of the present study. "Perspective" describes the ways teachers organized and reviewed their teaching and learning experiences; focusing on mathematics content (M), pedagogy (N), or student learning (P). "View" describes whether participants reflected on themselves (E) or others (S). "Level" indicating the degree of reflection was separated into five levels: descriptive (1), illustrative (2), reflective (3), critical (4), and meta-grow (5). These three dimensions are represented as a 2x3x5 matrix by means of a three dimensional solid.

This matrix is illustrated in Figure 1.

It is found that perspective of reflection was determined by concerns that depend on teachers' professional background. The pedagogical aspects of teaching were reflected on more frequently than mathematical content or student learning.

This study found that reflective writing was an effective tool in promoting conceptual change. The longer the participants took part on the development program, which emphasized a learner-centered approach, the better they understood how their students learned. However, the novice teachers focused more on their own teaching skills than students' cognitive processes in their reflections.

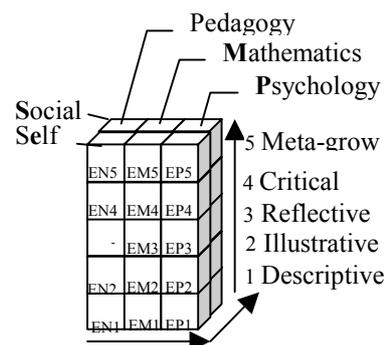


Figure 1 Schema of Analyzing Reflective Journals

Cobb, P., Boufi, A. McClain, K., & Whitenack, J. (1997). Reflective discourse and collective reflection. *Journal for Research in Mathematics Education*, 28(3), 258-277.

Krainer, K. (1999). Promoting reflection and networking as an intervention strategy in professional development programs for mathematics teachers and mathematics teacher educators.

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