

Major, C. H., & Palmer, B. (2006). Reshaping Teaching and Learning: The Transformation of Faculty Pedagogical Content Knowledge. *Higher Education*, 51(4), 619–647.

About

In this article, Major and Palmer recount the implementation of problem-based learning across the undergraduate curriculum of a small, private university in the southeast. The theoretical basis of this project relied heavily on the work of Schulman (1986, 1987, 1991), who developed the concept of pedagogical content knowledge (PCK), which transformed ideas about K-12 teacher education. Whereas content knowledge focuses on the discipline, and pedagogical knowledge focuses on teaching strategies, PCK is concerned with the inextricable tie between the discipline and *how* that discipline is communicated, understood, and represented.

Problem Based Learning (as defined by Major and Palmer)

“Problem based learning is an approach to learning in which complex and compelling problems serve as the catalyst for learning. Students receive a problem and work in teams to try and identify the nature of the problem and the resources they will need to solve the problem. In teams, they work to develop viable solutions to the problem that they communicate in an authentic way (pg. 624).”

Objective

The authors were primarily interested in understanding how faculty PCK changed as a result of an initiative that included course redesign, faculty development, and feedback from students, staff, and experts. Faculty development included the following: “workshops for training faculty in PBL problem-design, facilitation groups, group work skills, and assessment and evaluation in a PBL classroom” (pg. 624). They found that the PBL initiative transformed what teachers *knew and were able to do* as instructors; it also increased their pedagogical content knowledge, as evidenced by the transformations that occurred (described below).

Pre-test Teaching Methods

Although some teachers had previously participated in other instructional development initiatives that had increased their knowledge of pedagogy, many of the teachers described their (pre-test) teaching methods as mirroring how they were taught (often lecture style). Therefore, PBL was a dramatic departure from their normal classroom teaching methods.

Role of the Institution

The role of institutional interventions played a significant role in teachers developing PBL pedagogical techniques. The university had heavily invested in PBL, providing faculty with time off for course planning and workshops; a summer salary for course development; speakers; classroom resources; and funds for conferences/travel. However, not all institutional mediations were financial. For example, the institution developed a supportive culture—faculty members felt encouraged to take risks and *try again* when they had experienced obvious flops. Participants also formed a built-in cohort of teachers experimenting with PBL. This peer group provided a space for collaboration (idea sharing) and camaraderie, which helped teachers build confidence in their efforts.

Perception of Instructor and Student Roles

Teachers' perceptions of their own roles and the roles of their students changed during the intervention. Within the PBL environment, faculty recognized the teacher role as being that of a facilitator and guide; further, this helped them understand how teacher roles change across pedagogical contexts. As facilitators in the PBL class, teachers relinquished some amount of authority; this authority was transferred to students. Classes became more student-centered (students couldn't be "factored out"), students acted with greater autonomy and agency, and teachers came to see students in a professional light. One participant stated:

...with PBL, you can't factor out the students, you can't, if you want to be successful, anyway, you can't. And I think a class, a regular class can be successful, or you can think that its successful without factoring in the students or factoring in their perspective or their opinion. (632)

Faculty Pedagogical Content Knowledge

Faculty understanding of disciplinary knowledge grew more complex and more open to connections, contributing to feelings of "rejuvenation." For example, faculty who had previously used textbooks to guide their curriculum realized how the categorization of concepts created artificial boundaries in terms of disciplinary knowledge. By creating a unique curricular structure, based on what they believed students needed to know, the boundaries broke down, and students were provided with a more realistic portrait of how the discipline functions in the real world.

Faculty Pedagogical Knowledge

Although faculty differed in terms of pedagogical preparation, faculty generally felt that PBL allowed them to become more intentional about their teaching and about the outcomes of their teaching. Having the opportunity to consider fundamental questions about their goals as teachers informed how they would assess goal attainment. On a more general level, teachers learned that pedagogical decisions have consequences.

Expression of Knowledge

Changes in expression of knowledge took several forms: expression of knowledge about pedagogy (teachers could explain pedagogical decisions), expression of knowledge about pedagogy with colleagues (teachers had a shared vocabulary and could discuss teaching practice and innovations), expression of knowledge about pedagogy through teaching other teachers (teachers could demonstrate what they had learned to other teachers), and expression of teaching as scholarly inquiry (worthy of scholarly inquiry and dissemination).

Main Takeaway

Problem based learning environments help teachers develop pedagogical content knowledge, pedagogical knowledge, and student-centered courses.