



Pedagogical content knowledge reconceived: Bringing curriculum thinking into the conversation on teachers' content knowledge

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HIGHLIGHTS

- PCK is reconceived to account for teachers enacting the institutional curriculum.
- Teachers' interpretation of content entails curriculum thinking.
- Selecting pedagogical forms entails ascertaining content educational potential.
- A theory of content stands for teachers' curriculum knowledge.

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ABSTRACT

This article contributes to a reconceptualization of pedagogical content knowledge through exploring what is entailed in teachers' understanding of content within the framework of the institutional curriculum, with a central concern for the development of human powers (capacities or abilities, ways of thinking, understanding worlds). The contribution is made by way of a curriculum making framework and through examining the capabilities approach and Bildung-centered Didaktik. The central thesis is that a teacher necessarily interprets the content contained in the institutional curriculum, identifying its elementary elements and ascertaining its educational potential. The interpretation calls for curriculum thinking informed by a theory of content.

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1. Introduction

Originating from the effort of Lee Shulman and associates to address a “missing paradigm” in research on teaching and to professionalize teaching in the 1980s, *pedagogical content knowledge* (PCK) has become a highly popular and influential concept in the educational community. It has been used to inform policies on teacher certification, licensure examination and professional development (e.g., Haertel, 1991; Phelps & Schilling, 2004; Shulman, 1986b, 1987). It has also been employed as a basis for designing teacher education and continuous professional development programs (e.g., Clermont, Krajcik, & Borko, 1993; Grimmer & MacKinnon, 1992; Loughran, Berry, & Mulhall, 2012; Peterson & Treagust, 1998). It too has been used in large scale international assessment studies on the effectiveness of teacher education programs (e.g., Blömeke, Felbrich, Müller, Kaiser, & Lehmann, 2008; Schmidt, Blömeke, & Tatto, 2011). Furthermore, the concept has spurred a significantly large body of empirical studies devoted to

the investigation and elaboration of this concept in relation to teaching and teacher education, particularly in mathematics and science (e.g., Ball & Bass, 2000; Lederman, Gess-Newsome, & Latz, 1994; Loughran, Mulhall, & Berry, 2004).

As a special kind of teachers' content knowledge that “embodies the aspects of content most germane to its teachability” (Shulman, 1986b, p. 9), PCK includes knowledge of pedagogical representations, of instructional strategies, and of students' prior knowledge and learning difficulties pertaining to the teaching of a particular topic to students of various backgrounds and experiences. With the marshalling of this knowledge and by way of pedagogical reasoning, a teacher transforms the content he or she possesses into pedagogical forms such as representations, instructional tasks, and classroom activities that make content comprehensible for students (Shulman, 1987; Wilson, Shulman, & Richert, 1987).

Over the last three decades, the concept has been subject to numerous criticisms and has been modified, expanded, or further articulated by researchers (see Depaepe, Verschaffel, &

Kelchtermans [2013] for a useful review). However, despite being questioned by several scholars (e.g., Deng, 2007a; Deng & Luke, 2008; Thornton & Barton, 2010), the underlying assumption that a teacher necessarily transforms his or her content knowledge of an academic discipline into pedagogical forms still remains taken for granted. This assumption tends to ignore the fact that in classroom what a teacher works with is the content of a school subject in the institutional curriculum—i.e., the curriculum provided to a school system. This content results from a selection, organization, and transformation of knowledge, skills and values from the related academic discipline or disciplines and other sources for social, cultural and educational purposes (see Deng, 2009; Karmon, 2007). As a result of such a taken-for-granted assumption, what a teacher needs to know and be able to do with respect to the content in the institutional curriculum remains largely unexplored and under-theorized in the PCK literature.

This article contributes to a reconceptualization of PCK through exploring what is entailed in teachers' understanding of content within the framework of the institutional curriculum, with a central concern for the development of human powers (capacities or abilities, ways of thinking, understanding worlds). In this regard, the reconceptualization is geared toward a vision of teaching—particularly exemplified in the German Didaktik tradition— that construes the central purpose of teaching as the cultivation of human powers through interactions with content (von Humboldt, 2000; also see Hopmann, 2007). This vision is rather different from the conception of teaching as the transmission of content or the development of students' more sophisticated understanding of content—a view that tends to be assumed in the PCK literature.

In this article the reconceptualization of PCK is made by way of a curriculum making framework articulated by Walter Doyle and Ian Westbury (two US-based curriculum scholars), and by examining the capabilities approach developed by David Lambert (a UK-based teacher educator) and Bildung-centered Didaktik in the German tradition. The curriculum making framework is employed because it allows us to more adequately conceive of the work of a teacher in relation to the institutional curriculum. Lambert's capabilities approach is examined because the approach articulates what a teacher needs to know and be able to do with respect to content in the UK national curriculum as enacted in classroom, with a view toward the development of human capabilities (which can also be termed powers). Bildung-centered Didaktik is discussed because it provides an elaborate theoretical account of the nature of the content in the state curriculum and of what is entailed in a teacher's understanding of the content for Bildung—the formation of self and the cultivation of human powers. The exploration, as will be seen, brings to light the vital place of curriculum thinking—informed by a theory of content—with respect to teachers' understanding of content for teaching.

To begin with, I provide a brief review of the concept of PCK. I next expound the role of the institutional curriculum with respect to teachers' understanding of content by way of the aforementioned curriculum making framework. Afterwards, I move to examine the capabilities approach and Bildung-centered Didaktik to illustrate what is entailed in a teacher's understanding of the content in the institutional curriculum, with a central concern for the development of human powers or capabilities. What follows is a comparison of the way of conceptualizing teachers' understanding of content for teaching in the capabilities approach and Bildung-centered Didaktik with that of Shulman and associates. I conclude by discussing the implications of the argument for reconceiving PCK and for the development of pre-service teachers' content knowledge for teaching.

2. PCK: background, conceptualization, issues and developments

The rise of PCK is inextricably connected with the attempt to professionalize teaching in the US in the 1980s. As a response to the growing criticism over the quality of American schooling, teacher educators argued for professionalizing teaching as a means to raise the standards of teachers and teacher education (Bullough, 2001). Underlying their argument is the belief that teaching as a profession, like medicine and law, has a knowledge base—a codifiable aggregation of knowledge, understanding, skills, and dispositions possessed by professional teachers (Shulman, 1986b, 1987; Wilson et al., 1987).

The articulation of the concept, too, has to do with the attempt of Shulman and associates to address the “missing paradigm” in research on teaching and teacher knowledge—the absence of attention to content or subject matter. Within the various research programs on teaching and teacher knowledge under the “presage-product” and “teacher thinking” paradigms in the 1970s and 1980s, the question of how a teacher transforms his or her content knowledge into forms suitable for teaching was never asked or investigated. Yet, a teacher's ability to transform the content he or she possesses for classroom teaching lies at the heart of teachers' specialized content expertise (Shulman, 1986a, 1986b, 1987; Wilson et al., 1987).

The transformation process entails three kinds of content knowledge for teaching, (1) content knowledge, (2) PCK, and (3) curricular knowledge (Shulman, 1986b). Content knowledge refers to “the amount and organization of knowledge per se in the mind of the teacher” (p. 9), including knowledge of the substantive structure (essential concepts, principles, frameworks) and the syntactic structure (modes of inquiry, canons of evidence, ways of proof) of an academic discipline—terms coined by Schwab (1964). This concept implies no fundamental difference between the kind of content knowledge possessed by a teacher and the kind by a scholar in the academic community.¹ Therefore, related to PCK is the belief that deep and sophisticated disciplinary content knowledge is crucial to “good” teaching.

As a special domain of teachers' content knowledge, PCK allows the teacher “to transform the content knowledge he or she possesses into forms that are pedagogically powerful and yet adaptive to the variations in ability and background presented by students” (Shulman, 1987, p. 15). It includes knowledge of pedagogical representations, of students' prior knowledge, learning difficulties and misconceptions, and of instructional strategies that tap on their prior knowledge and address their learning difficulties and misconceptions:

for the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogues, illustrations, examples, explanations, and demonstrations—in a word, the ways of representing and formulating the subject that make it comprehensible to others ... Pedagogical content knowledge also include an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of

¹ According to Shulman (1987),

Teaching is, essentially, a learned profession. A teacher is a member of a scholarly community. He or she must understand the structures of subject matter, the principles of inquiry that help answer two kinds of questions in each field: What are the important ideas and skills in this domain? and How are new ideas added and deficient ones dropped by those in this area? That is, what are the rules and procedures of good scholarship or inquiry? (p. 9).

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