



# Is teachers' general pedagogical knowledge a premise for noticing and interpreting classroom situations? A video-based assessment approach



Johannes König<sup>a,\*</sup>, Sigrid Blömeke<sup>b</sup>, Patricia Klein<sup>b</sup>, Ute Suhl<sup>b</sup>, Andreas Busse<sup>c</sup>, Gabriele Kaiser<sup>c</sup>

<sup>a</sup>Empirical School Research, University of Cologne, Gronewaldstr. 2, 50931 Cologne, Germany

<sup>b</sup>Humboldt-University Berlin, Germany

<sup>c</sup>University Hamburg, Germany

## HIGHLIGHTS

- General pedagogical knowledge and skills can be distinguished empirically.
- Teachers' noticing and interpreting skills can be distinguished empirically.
- Interpreting substantially correlates with knowledge, whereas noticing does not.
- Knowledge acquired during training does not predict in-service teachers' skills.
- Teachers' cognitions are reorganized during transition from training to teaching.

## ARTICLE INFO

### Article history:

Received 23 March 2013

Received in revised form

17 November 2013

Accepted 22 November 2013

### Keywords:

Assessment

Competences

General pedagogical knowledge

Teacher

Teacher education

Video-vignettes

## ABSTRACT

We examine how the declarative-conceptual general pedagogical knowledge (GPK) assessed via a paper-and-pencil test can be understood as a premise for early career teachers' ability to notice and interpret classroom situations assessed via video-vignettes. Longitudinal data from TEDS-M conducted in 2008 at the end of teacher education and a follow-up study in Germany in 2012 is used. Teachers' skills to notice and interpret differ. Interpreting correlates with the current level of GPK, whereas noticing does not. GPK at the end of teacher education neither predicts noticing nor interpreting, which suggests teachers' cognitions are reorganized during the transition into teaching.

© 2013 Elsevier Ltd. All rights reserved.

During the past decade, the growing body of research on the identification and development of teacher competences led to a remarkable progress regarding the standardized measurement of pre-service and in-service teachers' knowledge from different countries (cf. Baumert et al., 2010; Hill, 2010; Hill et al., 2008; Tatto et al., 2012). Many of these studies draw on a shared model of teacher competences, according to which the different knowledge facets are related to the requirements of successful teaching (Shavelson, 2010; Shulman, 1987; Weinert, 2001). Teacher knowledge is regarded as a multidimensional construct, consisting

of content knowledge (CK), pedagogical content knowledge (PCK) and general pedagogical knowledge (GPK). It is represented in a declarative ("knowing that...") and a procedural ("knowing how...") mode, a distinction typical for cognitive research (Anderson & Krathwohl, 2001; Bromme, 2001; Fenstermacher, 1994). Whereas this structure of teacher knowledge could be validated for many different types of teachers irrespective of their field or country, the respective knowledge levels depend heavily on the courses pre-service teachers had taken (Blömeke, Suhl, Kaiser, & Döhrmann, 2012; Tatto et al., 2012).

Currently, paper–pencil assessments represent the dominating paradigm for the majority of these studies (Baumert et al., 2010; Hill et al., 2008; König & Seifert, 2012; Tatto et al., 2012) enabling an

\* Corresponding author. Tel.: +49 (0) 221 470 61 45; fax: +49 (0) 221 470 49 51.  
E-mail address: [johannes.koenig@uni-koeln.de](mailto:johannes.koenig@uni-koeln.de) (J. König).

efficient and reliable way to measure declarative–conceptual knowledge in large samples. However, the measurement of context-dependent, procedural knowledge goes beyond the limited scope of paper–pencil assessments (Shavelson, 2010). To account for such methodological concerns, the state of the art research underpins the need for instruments that allow an investigation of teachers' situational cognition and the impact of individual differences in teaching experience and opportunities to learn during teacher education (cf. König, 2010). Nevertheless, knowledge acquired during teacher education and represented as declarative knowledge is probably of great significance. Especially the research on teacher expertise has worked out that both declarative and procedural knowledge contributes to the expert's performance in the classroom (Bromme, 2001). Declarative knowledge is frequently regarded as a premise for procedural knowledge (Anderson, 1982; Klieme et al., 2003).

Against this background, in this article we empirically investigate the question of how and to what extent the declarative–conceptual GPK of early career (i.e., four years teaching experience or less) mathematics middle school teachers can be understood as a premise for their skills to notice and interpret pedagogical situations in a mathematics classroom presented to them via video–vignettes. Thus we also aim to address the assessment of situational teacher knowledge by proposing a video-based approach for assessing pedagogical knowledge and skills required for successfully meeting the specific requirements involved in effective teaching and classroom management (Doyle, 2006; Evertson & Weinstein, 2006).

Our research is embedded in the context of the *Teacher Education and Development Study – Learning to teach Mathematics* (TEDS-M; Tatto et al., 2012) carried out in 2008 under the supervision of the *International Association for the Evaluation of Educational Achievement* (IEA). TEDS-M was a comparative study of initial teacher education and the first IEA study on tertiary education as well as the first international large-scale assessment of future teachers' knowledge and competences that used representative samples. The TEDS-M target population were mathematics teachers for elementary and middle schools in their final year of teacher education.<sup>1</sup>

A central component of TEDS-M was to assess the future teachers' mathematics content knowledge (MCK) and mathematics pedagogical content knowledge (MPCK). Three participating countries – the US, Germany, and Taiwan – developed in addition a paper-and-pencil test measuring future teachers' GPK. All instruments were successfully validated through expert reviews in the participating 16 (MCK, MPCK) or 3 (GPK) countries and through confirmatory approaches based on large-scale data from these countries (see for details, König, Blömeke, Paine, Schmidt, & Hsieh, 2011).

In Germany, a follow-up study (TEDS-FU; Blömeke, Kaiser, & König, 2009) was carried out in 2012 sampling TEDS-M participants now in the stage of early career teachers (i.e., four years teaching experience or less).<sup>2</sup> The tests for examining MCK, MPCK, and GPK were applied again and extended by video–vignettes assessing the skills to notice and interpret pedagogical challenges occurring in real classroom situations. Thus, we are now able to relate the declarative pedagogical knowledge of mathematics middle school teachers at the end of teacher education to their procedural knowledge four years later. Given the structural validity of the

above presented teacher knowledge model at the end of teacher education across countries and fields, we assume that the structural results of our study (correlational and longitudinal) are valid across teacher groups from many fields and countries, although caution should be applied (see the final section on conclusions).

## 1. Conceptual framework

### 1.1. Defining general pedagogical knowledge (GPK)

In TEDS-M, it was a challenge to determine precisely what is meant by the term GPK and which aspects this knowledge domain incorporates (see for details, König et al., 2011). In the US, two broad labels – “educational foundations” and “teaching methods” – are needed to cover what may be labeled as “general pedagogy” in another country. Also in Germany the theoretical underpinnings of “general pedagogy” are provided by educational psychology, sociology of education, and history of education on the one hand (i.e., “educational foundations”) and general didactics on the other hand (“teaching methods”). Thus, the shape of general pedagogy and the technical terms used may be influenced by cultural perspectives on the means and ends of schooling and on the role of teachers (Hopmann & Riquarts, 1995), but there is some commonality due to the nature of teaching. A literature review revealed that two tasks of teachers can be regarded as core tasks in all countries that participated in TEDS-M: instruction and classroom management (see König et al., 2011). Generic theories and methods of instruction and learning as well as of classroom management can therefore be defined as essential parts of GPK.

According to Shulman (1987, p. 8), GPK involves “broad principles and strategies of classroom management and organization that appear to transcend subject matter” as well as knowledge about learners and learning, assessment, and educational contexts and purposes. Similarly, and extending this definition, Grossman and Richert (1988, p. 54) stated that GPK “includes knowledge of theories of learning and general principles of instruction, an understanding of the various philosophies of education, general knowledge about learners, and knowledge of the principles and techniques of classroom management.”

Since there was a lack of empirical studies on teachers' GPK (Wilson & Berne, 1999) when TEDS-M started, there were virtually no studies showing how to fill these relatively broad domains of GPK so that one could develop items and actually test teachers (Baumert & Kunter, 2006). In a joint effort, the German, US and Taiwan TEDS-M teams developed therefore a theoretical framework of teachers' GPK that could be transformed into a paper-and-pencil instrument and be tested empirically across countries. Following the notion of “competence” (Shavelson, 2010; Weinert, 2001; specified for the teaching profession by Bromme, 1997, 2001), the study's framework focused on the mastering of professional tasks and its underlying latent cognitive dispositions.

Instruction was identified as the core activity of teachers in all subjects and countries (Berliner 2001, 2004; Bromme 1997); the international state of instructional research served therefore as the rationale to select topics and cognitive demands to be covered in the GPK test. Instructional models used across countries to describe effective teaching (Good & Brophy, 2007; Helmke, 2003; Slavin, 1994) provided four generic dimensions of teaching quality (see Fig. 1): to prepare, structure, and evaluate lessons (“structure”); to motivate and support student learning as well as to manage the classroom (“motivation/classroom management”); to deal with heterogeneous learning groups in the classroom (“adaptivity”); and to assess students (“assessment”).

In addition, three dimensions of cognitive processes describing the cognitive demands on teachers when dealing with such generic

<sup>1</sup> TEDS-M was funded by the IEA, the National Science Foundation (REC 0514431), and the participating countries. In Germany, the German Research Foundation funded TEDS-M (DFG, BL 548/3-1). The analyses prepared for this paper and the views expressed are those of the authors but do not necessarily reflect the views of the IEA, the participating countries or the funding agencies NSF or DFG.

<sup>2</sup> The German Research Foundation funded TEDS-FU (DFG, BL 548/8-1).

Download English Version:

<https://daneshyari.com/en/article/374036>

Download Persian Version:

<https://daneshyari.com/article/374036>

[Daneshyari.com](https://daneshyari.com)