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Teachers' assessment competence: Integrating knowledge-, process-, and product-oriented approaches into a competence-oriented conceptual model^{☆,☆☆}

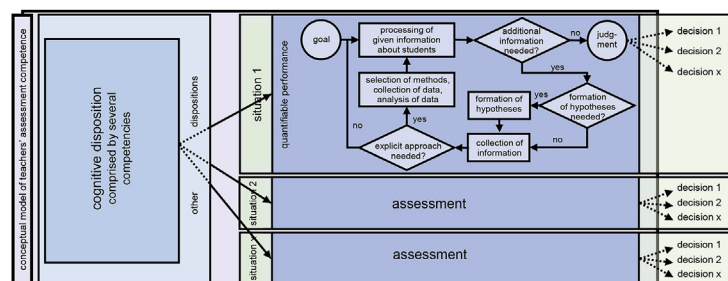
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HIGHLIGHTS

- A new conceptual model on teachers' assessment competence is introduced.
- Competence, as its base, is a learnable situation-specific cognitive disposition.
- The model integrates research on assessment processes, practices, and products.
- We discuss how its elements become measurable in a variable assessment process.
- The model aims to inspire integrative research on assessment.

GRAPHICAL ABSTRACT



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ABSTRACT

In this article, we present a new model of teachers' assessment competence. The model is based on the educational competence concept, thus defining competences to be context-specific, learnable cognitive dispositions that are needed to successfully cope with specific situations. Integrating research on assessment processes, practices, and products, we specify the range of situations our model applies to,

[☆] Parts of this article are based on research published in the book Südkamp and Praetorius (2017). *Diagnostische Kompetenz von Lehrkräften. Theoretische und methodische Weiterentwicklungen* [Assessment competence of teachers. Theoretical and methodical advancements]. Münster, Germany: Waxmann.

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and discuss how its elements may become involved and measurable in a variable assessment process. The model aims to inspire future integrative research on the description, explanation, prediction, and promotion of teachers' assessments in various situations.

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1. Introduction

In various situations of their daily professional lives, teachers need to assess their students to make educational decisions, for example, when planning lessons, adapting the pace of instruction, choosing assignments, giving feedback and deciding on grades, placement, and tracking (e.g., Allal, 2013; Furtak, Bakeman, & Buell, *this issue*; Furtak et al., 2016; Glock, Krolak-Schwerdt, & Pit-ten Cate, 2015; Helwig, Anderson, & Tindal, 2001; Praetorius, Berner, Zeinz, Scheunpflug, & Dresel, 2013; Thiede et al., 2015; Vogt & Rogalla, 2009; Voss, Kunter, & Baumert, 2011). To give some examples: First, teachers may need to decide whether they can start with a new aspect of a topic or whether the students need more practice. To make this decision, they need information about their students' current understanding (Ruiz-Primo & Furtak, 2007). Second, teachers may have a student who does well in class discussions and homework but fails in tests. In this case, teachers should learn more about the reasons for these discrepancies to provide adequate support (Karing, Dörfler, & Artelt, 2013). Third, teachers may need to grade their students' performance via a written exam. In this instance, they need to come up with a well-constructed test and to arrive at valid and reliable grades (Brookhart, 2011, 2013). Fourth, depending on the school system, teachers may need to recommend their students one of several secondary school tracks. To make a responsible decision, they need to consider comprehensive information about the students' characteristics that are relevant for learning (Trautwein, Lüdtke, Marsh, Köller, & Baumert, 2006).

Accordingly, these assessments and their quality are highly important and assessment competence has been considered a foundation of teaching expertise for decades (e.g., Weinert, Schrader, & Helmke, 1990, speaking of *diagnostic competence*, which is used largely synonymous with assessment competence in German research). *Competence* is usually understood as a complex ability construct that is relevant for mastering real-life situations (Koeppen, Hartig, Klieme, & Leutner, 2008). One major advantage of basing teacher quality research on competence constructs is that the complex interplay of different teacher characteristics and the

environment is explicitly taken into account (Kunter et al., 2013). Whereas the concept of assessment competence is also emphasized in current research on (mathematics) teachers' general professional competence (Hoth et al., 2016; see also; Blömeke, Busse, Kaiser, König, & Suhl, 2016), it has not yet been conceptually modeled as a core competence of teachers in detail (cf. Philipp & Leuders, 2014). Such a conceptual model, however, would be an essential base to study teachers' assessments within the framework of professional competence.

Several research approaches exist that deal with teachers' assessments from different angles (e.g., assessment processes, Pit-ten Cate, Krolak-Schwerdt, & Glock, 2016; assessment practices, Black & Wiliam, 2009) but they (a) are largely unrelated to each other, (b) do not incorporate the ideas connected to the competence literature, and (c) are not comprehensive from a cognitive perspective and a measurement perspective. To close this gap our scientific network of 16 researchers from different backgrounds has developed a new conceptual model of teachers' assessment competence (for an overview of the network's results, see Südkamp and Praetorius, 2017). Our model incorporates research on assessment products (i.e., judgments; e.g., Südkamp, Kaiser, & Möller, 2012), on assessment processes (e.g., Allal, 2013; Krolak-Schwerdt, Böhmer, & Gräsel, 2013), and practices (e.g., Black & Wiliam, 2009; McMahon & Jones, 2015) as well as their quantification and thereby extends the focus of existing models (e.g., Black & Wiliam, 2009; Böhmer, Gräsel, Krolak-Schwerdt, Hörstermann, & Glock, 2017; Karst, 2012; Klug, Bruder, Kelava, Spiel, & Schmitz, 2013; Südkamp et al., 2012; Xu & Brown, 2016). Furthermore, we based our model on a current conceptualization of professional competence. This conceptualization adds a focus on teachers' knowledge, beliefs, and motivations (e.g., DeLuca, LaPointe-McEwan, & Luhanga, 2016a; Xu & Brown, 2016) and assumes competences to be learnable and enacted measurably in classes of professional situations (Kaiser et al., 2017; Koeppen et al., 2008). Our approach thus allows for cognitively based explanations of teachers' assessments via valid measurements in varying situations. Consequently, it also allows deriving ways to promote teachers' assessments that draw on underlying dispositions and

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