

A review of research on the pedagogical content knowledge (PCK) of history teachers in German-speaking countries: A plea for an integrated approach

Revisión de la investigación sobre los conocimientos pedagógicos de los profesores de historia en los países de habla alemana: Una defensa de un enfoque integrado

Martin Nitsche

FHNW School of Education. University of Applied Sciences and
Arts Northwestern Switzerland

martin.nitsche@fhnw.ch

0000-0003-4261-5583

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Resumen

Este artículo aboga por un enfoque integrador para la investigación sobre el Conocimiento Pedagógico del Contenido (CPC) de los profesores de historia, basado en estudios de la didáctica de la historia en lengua alemana en el contexto del discurso en lengua inglesa. Se comparan investigaciones anteriores y se debaten las orientaciones futuras. Los estudios sobre CPC son menos frecuentes que los que se centran en el conocimiento de los contenidos o las creencias. Los estudios usan enfoques sistemáticos, en los que el CPC se relaciona con conceptos de competencia profesional y se examina con métodos cuantitativos o métodos mixtos. Pero este enfoque posee diversos problemas de índole metodológica. Por el contrario, los estudios cualitativos son más comunes en el discurso en lengua inglesa, lo que dificulta hacer afirmaciones generales. Por lo tanto, se deben combinar enfoques de ambos contextos para promover el CPC entre los futuros docentes de historia y permitir evaluaciones válidas.

Palabras clave

Formación del profesorado, Competencias, Formación de docentes, Revisión de la literatura, Didáctica de la historia.

Abstract

This paper argues for an integrative approach to research on history teachers' PCK, based on studies of German-speaking history didactics against the backdrop of English-language discourse. A literature review is used to compare existing theories, the elements and methods employed in studies, and their results to discuss future directions. The review reveals that studies on PCK are less prevalent than those focusing on content knowledge or beliefs. The studies are often based on systematic approaches, in which PCK is related to overarching concepts of teachers' professional competence and examined using quantitative procedures or combinations of qualitative and quantitative methods. However, the studies faced several methodological difficulties. In contrast, qualitative studies on individual aspects of PCK dominate the English-language discourse, making it difficult to draw general conclusions. Therefore, approaches from both contexts should be combined to systematically promote PCK among prospective history teachers and enable valid assessments.

Keywords

Teacher education, Skills, Teacher training, Literature review, History didactics.

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1. Introduction

Roughly fifteen years ago, the professionalisation of history teachers was not a prevalent subject within the field of German-speaking history didactics (e.g., Hasberg, 2010). In contrast, the preceding decade has been characterised as a “heyday” (Nitsche, 2021, p. 21). Meanwhile, about 18 studies related to pedagogical content knowledge (PCK) were conducted in German-speaking countries (Table 2 in section 3) as part of more than 40 studies on the professionalisation of history teachers (see Nitsche, 2021; Resch, 2022; Schreiber, 2022; Waldis, 2020). The remaining studies primarily focus on subjective constructs, such as teacher beliefs (more than 15 studies; e.g., Bernhard, 2021; Nitsche, 2019, 2024; Muckel, 2025; see also Nitsche, 2022), content knowledge and related procedures (more than five studies; e.g., Barsch & Barte, 2019; Fenn & Urban, 2021; Meis & Zuckowski, 2017; Must, 2020; Nitsche & Waldis, 2022; Waldis et al., 2015), or various aspects (more than five studies). These include teachers’ textbook use (e.g., Kipman & Kühberger, 2020), prospective teachers’ self-efficacy expectations (Seibert, 2020), their language sensitivity (Sieberkrob, 2023), or the perceived quality of teachers’ instruction by students (Wagner et al., 2025).¹ While this research has been recognised in several German-language overviews with regard to theoretical approaches and empirical studies on history teachers’ professionalisation (Resch, 2022; Schreiber, 2022; Waldis, 2020), it has received little attention from international authors as most studies have been published in German (see van Hover & Hicks, 2018; Tuithof et al., 2019). Furthermore, a review that focuses on history teachers’ PCK in German-speaking countries is still missing. Therefore, this review will provide an overview on the concepts and studies of PCK among history teachers in German-speaking countries, making them visible for an international audience. This is used in the discussion to argue for an integrated approach because, as I will demonstrate, inductive perspectives and qualitative methods tend to dominate research on history teachers’ PCK in international history education,² whereas deductive views and quantitative methods are more prevalent in German-language research.

My review is informed by a research-based perspective rooted in the competence-based approach to teachers’ professionalisation, which assumes that teaching (history) can be learnt from experts or within learning communities during teacher training (Cramer, 2019). This approach tends to draw on quantitative methods, or combinations of methods (Nitsche, 2021). Rather than analysing individual findings, therefore, I focus more on the underlying concepts’ abstract logics, the broader similarities and differences in the methods and results of the presented studies, and the overarching conclusions for future research.

The concept of PCK was originally proposed by Shulman (1986, 1987) as a generic component of teachers’ professional knowledge, alongside content, pedagogical and curriculum knowledge. Since then, it has been expanded in numerous ways and domains (e.g., orientations toward science teaching). However, “two key elements of PCK” are most used across various contexts: “comprehensible representations of subject matter and understanding of subject-related learning difficulties.” Over time, two different approaches to PCK have emerged: one *for* teachers and one *of* teachers. The first approach views PCK as a set of norms established by experts that prospective teachers should master. The second approach assumes that PCK is acquired individually through

¹ Because a systematic approach was not chosen, the numbers mentioned are only indicative of trends.

² Due to language constraints, my focus is limited to the English-language discourse.

personal experience and cannot be standardised (van Driel & Berry, 2022, pp. 1214–1215). Given my competence-oriented perspective mentioned, I lean towards the first view, while acknowledging the subjective and situational nature of PCK. Consequently, and to provide a comprehensive overview of the discourse, a broad understanding of PCK is taken as a basis here. It can be defined as “the knowledge of, reasoning behind, and planning for teaching a particular topic in a particular way for a particular purpose to particular students for enhanced student outcomes” (Gess-Newsome, 2015, p. 36).

In the field of international history education, reviews of PCK are rare. Following Shulman (1986), Monte-Sano and Budano (2013, p. 174) were probably the first to systematise the domain-specific components of PCK based on prior research: “Representing history” as a form of communication, such as using it to present content, formulate tasks, and build on students’ ideas. “Transforming history” as a way of selecting and organising historical sources and accounts for the course of the lesson. “Attending to students’ ideas about history” as the teacher’s consideration of students’ historical thinking and, finally, “framing history” as the ability to develop a coherent narrative with students. To date, Tuithof et al. (2019), who employed a slightly different system of categorisation, are the only researchers to have conducted a systematic review of PCK research in the field of history education. They identified 34 studies (1987–2015). Most of these studies (31) focused on “knowledge of instructional strategies”, which refers to the ways in which teachers convey subject matter knowledge. A smaller number of studies (22) focused on “teaching orientation”, addressing teachers’ understanding of history teaching. This was followed by 18 studies on “knowledge of students’ understanding”, which addresses learners’ historical thinking, and 16 studies on “knowledge about the curriculum and corresponding goals”, which teachers need to implement the curriculum. The least frequently analysed area (3 studies) was “knowledge of assessment”, defined as the knowledge teachers use to understand students’ learning (pp. 80–81). However, the authors also point out that most studies fail to explicitly define PCK and rarely operationalise its components in a domain-specific manner. Furthermore, they demonstrate that most studies are qualitative in nature. This makes it difficult to draw general conclusions about the state of prospective history teachers’ PCK or how it develops during training and practice. Finally, the authors identified only one study from a German-speaking context (Wäschle et al., 2015). Consequently, making German-language studies available to an international audience seems beneficial, particularly as they have tended to use quantitative approaches in recent years (Nitsche, 2021).

Therefore, this review raises four questions:

(Q1) What theories and concepts have been used in the German-speaking history didactics to describe the PCK of history teachers against the backdrop of the associated international discourse?

(Q2) Which elements of PCK have been examined in previous studies? What methods have been used and what methodological difficulties have been encountered?

(Q3) How do elements of the PCK change during teacher education?

(Q4) What are the similarities and differences regarding the English-language research and what conclusions can be drawn for future directions?

To address these questions the review is based on a narrative literature review (Baumeister & Leary, 1997). This was carried out in three stages: (1) a literature search; (2) the selection of studies; and (3) categorisation according to PCK approaches, facets, and research methods. (1) For the literature search, two databases were consulted: <https://www.pedocs.de/> and <https://scholar.google.com/>. (2) For the selection, studies that aimed to directly assess PCK or its facets in terms of constructs mentioned above or their interpretation from the perspective of German-speaking history didactics (see section 2) were included (up to August 2025). Self-reports from participants (e.g., Kanert, 2014) and inferences from related areas (e.g., beliefs) were excluded (e.g., Wolf & Mierwald, 2022). If the same study was reported multiple times, the first publication was chosen. If the results were also available in English, however, this version was cited. Full-text searches were conducted using the term “history teacher” or its synonyms.³ Initially, only peer-reviewed studies (i.e. journals, book chapters, and monographs) were included. However, reviewing the titles and abstracts yielded only eight relevant studies (8 of 351 in Google Scholar; 0 of 125 in Pedocs). Consequently, a snowball strategy was employed to search the references of the existing German-language reviews (Nitsche, 2021; Resch, 2022; Schreiber, 2022; Waldis, 2020) and identified studies for research that met the specified criteria. One non-peer-reviewed study (Wolf et al., 2017) was also included, as it formed the basis for subsequent related peer-reviewed studies. This procedure identified a further 10 studies. (3) For the categorisation, the *PCK approach* was first categorised based on the aforementioned concepts (e.g., Shulman, 1986) or those from the German-language discourse (see section 2). The *PCK facets* of the studies were then categorised deductively adapting the aforementioned categories from Tuithof et al. (2019): “instructional strategies”, “students’ understanding”, and “assessment”. “Teaching orientation” was not included because there is a debate about whether this construct is more closely related to beliefs than to PCK (Tuithof et al., 2019), and because beliefs were excluded as previously mentioned. “Knowledge about the curriculum” was also excluded because there is no consensus in German-speaking history didactics on whether this is part of PCK or content knowledge (see section 2). The PCK facets were differentiated applying an inductive approach by translating the authors’ sub-facets into English. Where PCK facets could not be assigned based on theory, they were expanded using the latter procedure. The *research methods* were also categorised in the same way.

The review first provides a theoretical overview of PCK approaches and facets of German-speaking history didactics, relating them to the aforementioned international discourse in history education on the construct (Q1). The studies are then described according to their PCK approach, PCK facets and methods employed (Q2). Subsequently, study findings focusing on the promotion of PCK in teacher training are presented (Q3). The article concludes with a discussion (Q4).

³ The German terms used were: Geschichtslehrperson, “Lehrer Geschichte”, Geschichtslehrer, Geschichtslehrerinnen, Geschichtslehrer*innen, Geschichtslehramtsstudierende, Geschichtslehramtsstudenten, “Lehramtsstudierende Geschichte”, “Lehramtsstudenten Geschichte”.

2. PCK in German-speaking history didactics

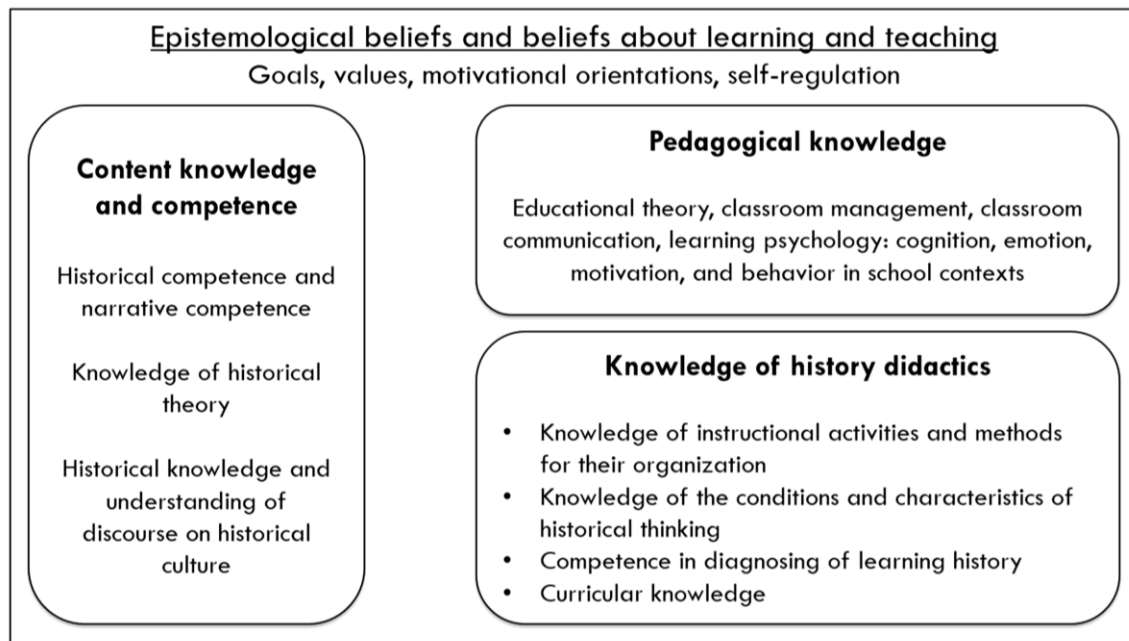


Figure 1. The VisuHist model as an example of an adaptation of the COACTIV concept. Own translation from Waldis (2019, p. 225).

The poor performance of German students in the 2001 PISA study caused a shift in education policy toward a stronger focus on educational outcomes in terms of competencies. This inspired the first considerations of history teacher competencies in German-speaking history didactics. Initially, these discussions were sporadic and often separate from the discourse in educational sciences (e.g., Jung & Thünemann, 2007). However, this has since changed fundamentally. Currently, the literature of history didactics consistently mentions four concepts of professional competence – EkoL (Heuer et al., 2017), VisuHist (Waldis, 2019), eFWsK (Fenn & Urban, 2021), and GeDiKo (Heuer et al., 2019) –,⁴ indicating central trends in theory formation (Resch, 2022; Schreiber, 2022; Waldis, 2020). These concepts are based on competence theory and often draw on Weinert's (2001) understanding of competence. Consequently, the success of history teachers is expected to be predicted by their capacity to solve complex problems in school settings. This capacity consists of individual dispositions, such as skills ("Fähigkeiten"), abilities ("Fertigkeiten"), knowledge ("Wissen") and beliefs ("Überzeugungen"), and it is assumed that it can be learned. Three of the models (EkoL, VisuHist, and eFWsK; see Figure 1 for an example) are based on the COACTIV model for mathematics. This model is rooted in Shulman's (1986, 1987) understanding of professional knowledge for teaching (Baumert & Kunter, 2013), as expanded in terms of subjective constructs by Bromme (1997). Teachers' professional competence is, therefore, regarded as an appropriate disposition to act in each school situation based on pedagogical knowledge (PK), content knowledge (CK), PCK, and subjective constructs, such as motivational orientations, epistemological beliefs, and beliefs about learning and teaching. One model (eFWsK) focuses exclusively on CK. Some specific purposes, such as language education in history classes, have led to the development of similar concepts (e.g., Handro & Kilimann, 2020). However, these have

⁴ See the list of abbreviations at the end of the article for the full forms of the acronyms.

not resulted in any expansion of what is presented here. Therefore, both kind of approaches will not be discussed in detail.

Table 1

Comparison of PCK in the models of VisuHist and Ekol against the backdrop of PCK facets of international history education

VisuHist (Waldis, 2019, p. 225)	Ekol (Heuer et al., 2017, p. 29)	PCK facets (Tuithof et al., 2019)
Knowledge of instructional activities and methods for their organisation	<p>Knowledge of the methods of historical learning</p> <p>Knowledge on how to make historical content understandable and the related skills & abilities to explain and represent content</p> <p>Knowledge about the nature of sources and accounts and the related skills & abilities to select and compose these media for teaching as well as to formulate tasks</p>	Instructional strategies
Knowledge of the conditions and characteristics of historical thinking and the related competence in diagnosing of learning history	<p>Knowledge about student pre-concepts, their ways of creating meaning and the related skills & abilities to diagnose and provide feedback on student learning</p> <p>Knowledge of the nature of history</p> <p>Knowledge about historical culture</p>	<p>Students' understanding</p> <p>Assessment</p> <p>Teaching orientation</p>
Curricular knowledge		Curriculum and goals

Note: Own translation and elaboration.

A comparison of the Ekol and VisuHist models – the most common ones in German-language discourse – against the backdrop of PCK facets of international history education shows that both models operationalise *knowledge of instructional strategies* (see Table 1). This includes the selection of materials and construction of tasks. They also address *knowledge of students' understanding* and *assessment* in terms of the skills and abilities required for diagnosis of students' learning and providing feedback. Both models refer to PCK as “knowledge of history didactics”,⁵ implying that the knowledge and skills necessary for teaching history are based on teacher training courses shaped by history didactics. However, the models differ in their detailed operationalisation and allocation of certain aspects of professional competence to beliefs or knowledge in general, as well as to CK or PCK in particular. For example, the VisuHist model addresses teachers' epistemological understanding in the form of two distinct constructs: “epistemological beliefs” and “knowledge of historical theory” (see Figure 1). The latter is part of CK. In

⁵ This term is used here as a translation of the German term “geschichtsdidaktisches Wissen”, which Heuer et al. (2017, pp. 29–35) translated as “knowledge of history didactics” and “historical didactic knowledge”. The first term is used here because it emphasises the claim of history didactics' authority in this knowledge domain (Heuer et al., 2017, p. 31; Waldis, 2019, p. 225).

contrast, the EkoL model conceptualises aspects of historical epistemology as PCK in terms of “knowledge of the nature of history” and “knowledge of the nature of sources and accounts”, both of which may inform *teaching orientation* (see Table 1). Additionally, the EkoL model relates knowledge of historical culture to PCK, while the VisuHist model relates it to CK. Finally, the VisuHist model relates curricular knowledge to PCK, while the EkoL model relates it to CK but labels it “deeper textbook knowledge”. The different operationalisations are likely due to the dual function of PCK, which is the transformation of content into pedagogical practice (Shulman, 1986). This dual nature of PCK complicates the precise alignment of facets of teachers’ dispositions for teaching (e.g., knowledge) with a specific component of professional competence.

The authors of the GeDiKo model criticise references to Shulman (1986) or the COACTIV model because they believe that these models do not have a “domain-specific” understanding of the teaching profession (Schreiber, 2022, p. 145). They argue that a domain-specific framework must first capture the construct’s broad range of contexts within the field of history education (Heuer et al., 2019). Subsequently, a connection to the school setting can be established by assuming that the support of historical orientation is the primary objective of history education and that “reflectiveness” and “reflexivity” are indicators of the professional competence of history educators. Based on this, the authors claim to fully describe PCK as “history didactic competencies” through four sub-competencies: questioning competence (“Fragekompetenz”), methodological competence (“Methodenkompetenz”), orientation competence (“Orientierungskompetenz”), and categorisation competence (“Strukturierungskompetenz”⁶). However, a detailed theoretical differentiation is not yet available (Schreiber, 2022, p. 146).

In summary, German-language concepts of PCK tend to follow the discourse on teachers’ professional competence inspired by science education rather than the discourse on PCK in international history education. However, the operationalisation of the construct often addresses facets of PCK also discussed in the international discourse, as illustrated using the VisuHist and EkoL models as examples. Despite this, the theoretical foundation of the approaches used and the assignment of PCK facets to areas of history teachers’ professional competence remain controversial (e.g., GeDiKo model).

3. PCK approaches, PCK facets and research methods

Table 2 displays the German-language studies on PCK that have been published to date. Nearly the half of the studies refer to the *PCK approach* of the EkoL (Nos. 8, 9, 10, 13, 15, 17) or the VisuHist model (Nos. 3, 11) as these models were developed to serve as the basis for the corresponding studies within larger projects. One study follows Shulman’s understanding of PCK (No. 4). Three studies conceptualise lesson planning as a combination of PCK, CK, PK, and subjective constructs (Nos. 6, 7, 14). The remaining studies superficially relate to prior literature on teacher professionalisation (Nos. 1, 2, 5, 16, 18) or PCK (No. 12) but do so more abstractly and without clearly defining PCK.

The studies predominantly cover *facets of PCK* that have already been mentioned in the EkoL and VisuHist models’ PCK approaches, or in international research (Tuithof et al.,

⁶ The literal translation would be “structuring competence.” However, it seems to be about the use of concepts and categories of history didactics, i.e., essentially categorisation (Schreiber, 2022, pp. 147, 150).

2019). *Instructional strategies* are addressed in 15 studies. They are often conceptualised as knowledge of instructional activities, methods, and media (Nos. 1, 3, 11, 17), with a main focus on task formulation (Nos. 2, 4, 8–10, 12, 15). Four studies address lesson planning directly, including goal setting, lesson structuring, and media selection. One of these studies focuses on procedures (No. 5), while three focus on related knowledge (Nos. 6, 7, 14). Five studies address teachers' knowledge and skills relating to *students' understanding* (Tuithof et al., 2019). These studies are also linked to the *assessment* of students' understanding (Nos. 3, 11–13, 17).

Two studies cannot be categorised in this way. One study based on the GeDiKo model focus on 'methodological competence', operationalised through reflection on lesson planning and teaching, as well as 'categorisation competence', operationalised in terms of knowledge of key concepts in history didactics, such as history, narrative, source, or reconstruction (No. 16). Another study considered PCK to be a combination of knowledge and skills, examining the professional vision of prospective history teachers and distinguishing between 'selected attention' and 'knowledge-based reasoning'. However, these aspects were not related to the facets of PCK (No. 18).

In contrast to English-speaking contexts, where qualitative methods predominate (Tuithof et al., 2019; van Hover & Hicks, 2018), the presented German-language research employed methods commonly found in the "social science" and "psychology" (Resch, 2022, p. 273). Regarding qualitative methods, open-ended tasks dominated the investigations (Nos. 1–6, 11, 12, 14, 18), and categorisation methods such as qualitative content analysis (Nos. 1, 3, 11, 12, 17, 18) were applied for interpretation. Interviews were only used twice (Nos. 5, 17), while video recordings of classroom activities were only used once (No. 17). Regarding quantitative methods, questionnaires were primarily used in surveys (Nos. 3, 4, 6–16) which, since the mid-2010s, have often been evaluated not only descriptively (No. 3) but also using classical (Nos. 4, 6, 7, 10–15) and probabilistic test theory methods (Nos. 7–14, 16). Additionally, combinations of qualitative and quantitative methods appear to be increasing (Nos. 2–4, 6, 11, 12, 14). To account for the situational nature of PCK, many studies use text or video vignettes that present teaching scenarios and ask respondents to complete related tasks (Nos. 3, 5–16, 18). Finally, longitudinal studies (Nos. 9, 11, 18), quasi-experiments (Nos. 4, 15), and cross-sectional group comparisons (Nos. 7, 10, 12–14) have been conducted to examine the impact of history teacher training on facets of PCK. However, studies that have successfully validated underlying theories and methods through pilot studies and more complex statistical procedures are still the exception (Nos. 6, 7, 14; 8–10, 13, 15; 12).⁷ Consequently, the extent to which research on the effects of professionalisation on history teachers' PCK is based on sound evidence is controversial (Schreiber, 2022; Wolf, 2021).

⁷ Studies separated by commas belong together and form a series consisting of pilot and main studies.

Table 2
Overview of research on history teachers' PCK of German-speaking history didactics

Study	Approach to PCK	Research methods	Facets of PCK & sub-facets
(1) Eisele-Brauch & Deschner (2010)	Unclear	Qualitative analysis of learning diaries of prospective history teachers ($N = 22$)	<i>Instructional strategies:</i> selection and composition of sources and accounts
(2) Mägdefrau & Michler (2012)	Unclear	Quantitative content analysis of history teachers' learning tasks ($N = 371$)	<i>Instructional strategies:</i> formulating tasks
(3) Waldis et al. (2014)	VisuHist	Qualitative content analysis of open comments from prospective history teachers and quantitative descriptive analysis of their ratings of teaching scenarios based on video vignettes ($N = 54$)	<i>Instructional strategies:</i> knowledge of instructional activities and methods for their organisation <i>Students' understanding:</i> knowledge of the conditions and characteristics of historical thinking <i>Assessment:</i> competence in diagnosing of learning history
(4) Wäschle et al. (2015)	Shulman (1986)	Quasi-experiment using quantitative analysis (multivariate analysis of variance) based on the evaluation of prospective history teachers' learning journals ($N = 52$)	<i>Instructional strategies:</i> formulating tasks
(5) Litten (2017)	Based on discourse of professional competence, but not clearly defined	Qualitative analysis of thinking aloud interviews based on a fictional planning scenario with history teachers ($N = 24$)	<i>Instructional strategies:</i> lesson planning
(6) Wolf et al. (2017)	Lesson planning as a combination of PK, CK, PCK, and subjective constructs	Quantitative analysis (text rating, scaling, principal component analysis, and correlations) of prospective history teachers' responses to closed-ended items and an open-ended task on lesson planning ($N = 272$)	<i>Instructional strategies:</i> knowledge on lesson planning in terms of goals and teaching principles, lesson phases and structures, media and methods, tasks and assignments, adaptivity of teaching strategies
(7) Wolf et al. (2018)	See (6)	Quantitative analysis (Rasch scaling, analysis of variance, and correlations) of prospective	See (6)

		history teachers' responses to closed-ended items on lesson planning (N = 365)	
(8) Resch et al. (2017)	EkoL	Quantitative analysis using confirmatory factor analysis and item response theory of prospective history teachers' ratings of tasks related to teaching scenarios based on text vignettes (N = 501)	<i>Instructional strategies:</i> formulating tasks
(9) Resch et al. (2019)	EkoL	Quantitative analysis of teacher trainees' PCK changes over one year, via latent change score modeling, based on their ratings of tasks related to teaching scenarios presented as text vignettes (N = 178)	<i>Instructional strategies:</i> formulating tasks
(10) Resch & Heuer (2019)	EkoL	Quantitative analysis (exploratory & confirmatory factor analysis, correlations, and t-tests) of prospective teachers' ratings of tasks related to teaching scenarios based on text vignettes (N = 144)	<i>Instructional strategies:</i> formulating tasks
(11) Waldis et al. (2019)	VisuHist	Qualitative content analysis of open comments from prospective history teachers and quantitative analysis (descriptive statistics, Rasch scaling, and exploratory factor analysis) of their ratings of teaching scenarios based on video vignettes (N = 138)	See (3)
(12) Hartmann (2019)	Based on discourse of professional competence, but not clearly defined	Quantitative analysis (scaling, confirmatory factor analysis, variance analysis, and regressions) based on prospective and experienced teachers' ratings or comments related to text vignettes of teaching scenarios (N = 713)	<i>Assessment:</i> diagnosing students' pre-concepts <i>Instructional strategies:</i> knowledge on learning tasks <i>Students' understanding:</i> support in case of learning difficulties
(13) Eckert (2020)	EkoL	Quantitative analysis using confirmatory factor analysis and t-tests based on prospective history teachers' ratings of teaching scenarios presented as text vignettes (N = 372)	<i>Assessment & students' understanding:</i> skills & abilities of diagnosing and providing feedback on student learning

(14) Wolf et al. (2022)	See (6)	Quantitative analysis (scaling, principal component analysis, analysis of variance, and correlations) of prospective history teachers' responses to closed-ended items and an open-ended task on lesson planning (N = 282)	See (6)
(15) Resch et al. (2023)	Ekol	Quasi-experiment using quantitative analysis (t-tests, analysis of variance) based on prospective history teachers' ratings of tasks related to teaching scenarios based on text vignettes (N = 37)	<i>Instructional strategies:</i> formulating tasks
(16) Zabold (2023)	GeDiKo	Quantitative analysis (exploratory factor analysis, item response theory) of history teachers' responses to rating items related to teaching scenarios based on text vignettes (N = 186)	Methodological competence Categorisation competence
17 Argast et al. (2023)	Ekol	Qualitative content analysis of interviews with teachers (N = 12), their lesson plannings (e.g. sources) and teaching (one per person) based on video tapes	<i>Instructional strategies</i> (e.g.): supporting metacognition and tasks for historical thinking, supporting classroom discourse on historical content <i>Assessment & students' understanding:</i> skills & abilities of diagnosing and providing feedback for historical thinking
(18) Schlutow et al. (2023)	Based on discourse of professional competence, but not clearly defined	Qualitative content analysis of open comments from prospective history teachers based on video vignettes (N = 78)	Professional vision with a focus on selective attention, and knowledge-based reasoning

Note: Own elaboration. The studies are ordered by the year they were published.

4. The promotion of PCK in teacher training

Conclusions regarding the promotion of PCK among prospective teachers during teacher training were indicated by all but two of the studies, as these were conducted to develop research instruments (Nos. 6, 16). However, the interpretation of the available evidence is controversial, as studies have produced conflicting results. Descriptive studies questioned the extent to which teacher training can promote this construct. Most of these studies focus on *instructional activities*, while three of them also relate to teachers' knowledge of *student*

understanding (Nos. 3, 5, 17). For example, Eisele-Brauch and Deschner's (2010) research suggested that prospective German history teachers in the middle semesters of their programs rarely select and compile sources and accounts purposefully for teaching (No. 1). Waldis et al. (2014) found that Swiss German prospective history teachers in the middle of their studies rarely diagnosed students' learning issues when asked to reflect on teaching clips (No. 3). Litten (2017) reinforced this finding regarding the planning processes of experienced German history teachers, suggesting that, while they consider their students' learning prerequisites, they do not use specific activities to diagnose historical thinking. Instead, they rely solely on their experience (No. 5). Similarly, Argast et al. (2023) found that only around half of the Swiss German prospective and experienced teachers they studied were able to promote historical thinking skills among students (No. 17). Resch et al. (2017) indicated that prospective German history teachers considered tasks involving the reproduction of facts to be more suitable than the experts in history didactics who created the standard for the test (No. 8). Resch and Heuer (2019) reported a similar result for prospective German history teachers at the beginning of their practical training phase (No. 10). Mägdefrau and Michler (2012) found that even experienced German history teachers who had completed their teacher training rarely used tasks requiring complex historical thinking skills, such as reasoning (No. 2).

Longitudinal studies also cast doubt on the effectiveness of history teacher training in German-speaking contexts. In terms of *knowledge of students' understanding*, Waldis et al. (2019) reported that Swiss German prospective history teachers' concepts of history didactics, for example, regarding students' historical thinking hardly change when they reflect on teaching clips (No. 11). Similarly, but regarding *instructional strategies*, Resch et al. (2019) were unable to detect changes in task formulation skills in a sample of German trainee teachers between the beginning and end of their practical training (No. 9). More broadly, Schlutow et al. (2023) observed that German prospective history teachers increasingly used concepts of history didactics to analyse teaching clips during a teaching practice seminar. However, these were rarely substantiated in detail (No. 18).

In contrast, cross-sectional comparisons between groups of prospective history teachers at different stages of training suggest that facets of PCK can change positively during teacher training. Focussing on *knowledge and assessment of student understanding*, Hartmann (2019) indicated differences in PCK in terms of knowledge on diagnosing, learning tasks, and students' support among prospective German primary school teachers of general studies with a focus on history between the beginning and end of their studies. These differences can be attributed to the number of courses students attended in history didactics or the amount of their own teaching experience (No. 12). Eckert (2020) also pointed to this finding regarding the importance of internships for diagnosis and feedback during the course of study for prospective German history teachers (No. 13). Regarding *instructional strategies*, Resch et al. (2017) demonstrated that higher agreement on reflective tasks is predicted by the number of history didactics courses prospective German history teachers attended (No. 8). In addition, Wolf et al. (2018, 2022) indicated in two studies with different populations (B.A., M.Ed., teacher trainees) that German prospective history teachers in advanced training stages possess greater planning knowledge than students at the beginning of their studies (Nos. 7, 14). However, the second study of these authors, which included not only student teachers but also trainee teachers, revealed that sole the latter group could justify their lesson planning. Once

again, courses in history didactics, teaching experience, and, additionally, epistemological beliefs were predictive factors (No. 14). These cohort comparisons suggest that learning opportunities are crucial for developing different aspects of PCK.

This finding is stressed by preliminary small quasi-experiments on *instructional strategies*. Wäschle et al. (2015) found that prospective history teachers who received supporting scaffolds performed better than the control group (no scaffolds) at evaluating tasks for school students (No. 4). Similarly, Resch et al. (2023) recently demonstrated that prospective history teachers in a course focusing on task construction performed better on a task formulation test at the end of the semester than students in a seminar on diverse topics in history didactics (No. 15).

Overall, descriptive and longitudinal studies cast doubt on the effectiveness of history teacher training, while cross-sectional comparisons and initial quasi-experiments suggest that learning opportunities are important. These conflicting results are likely due not only to the training programs themselves, but also to the research approaches chosen (see below).

5. Discussion and conclusion

Although research on the professionalisation of history teachers in German-speaking countries has been increased in the last decade, studies on PCK are still less common than those on CK or subjective constructs. As in English-language discourse (e.g., Smets & Tuithof, 2024), German-language studies on history teachers' PCK are therefore still rare.

The *PCK approaches* in German-speaking history didactics can be characterised by plurality. PCK is clearly conceptualised within two models, EkoL and VisuHist, as knowledge of history didactics, to which nearly half of the studies refer (Nos. 3, 8, 9, 10, 11, 13, 15, 17; see Table 2). In addition, one study is associated with Shulman's (1986) understanding of PCK (No. 4). Three studies operationalised lesson planning by combining PCK, CK, PK, and subjective constructs (Nos. 6, 7, 14), while the PCK definition of six studies is unclear (Nos. 1, 2, 5, 12, 16, 18). Despite this variety of approaches, the competency paradigm, which posits that history teaching can be learned, dominates the discussion (Nitsche, 2021). Most of studies' approaches represent a history-specific relation to the COACTIV model from mathematics (Baumert & Kunter, 2013), which is fundamentally based on Shulman's (1986, 1987) work (Nos. 3–15, 17). One investigation is based on the GeDiKo model (No. 16), which aims to holistically conceptualise teachers' history didactic competencies. However, since the related studies failed to statistically validate the model or its components transparently (Wagner et al., 2025; Zabold, 2023), it remains unclear whether this approach can successfully investigate history teachers' dispositions to teach history in the future. Finally, one study adopted a professional vision approach to evaluate the practical application of PCK but failed to provide a clear operationalisation of PCK (No. 18).

Most studies (15) focus on *PCK facets* relating to *instructional activities* (Nos. 1–12, 14, 15, 17). Five studies also examine knowledge of *student understanding* and its *assessment* (Nos. 3, 11, 12, 17), with one study examining this exclusively (No. 13). Compared to English-language studies (Tuithof et al., 2019; van Hover & Hicks, 2018), the operationalisation of instructional activities through *task formulation* and *lesson planning* stands out. This is likely

because tasks are considered essential communication tools in German-speaking history didactics for promoting historical thinking in class (e.g., Heuer & Resch, 2018), and successful lesson planning is seen as a prerequisite for fostering historical thinking (Wolf, 2021). Additionally, the integration of PCK into complex models of professional competence is emphasised (Resch, 2022; Schreiber, 2022; Waldis, 2020), whereas English-language studies tend to examine individual aspects of PCK (Tuithof et al., 2019). This difference is likely due to discursive traditions. Although empirical studies have been incorporated into theory development for the past 15 years (Waldis & Ziegler, 2018), German-speaking history didactics tends to be more grounded in the theory of history, using a deductive approach. In contrast, the English-language discourse is more closely linked to empirical research and learning psychology perspectives (Lévesque & Clark, 2018). However, coherent integration of PCK into broader understandings of teachers' professionalisation is needed in both contexts to develop research instruments that can provide valid information about the success of teacher training programmes. This should address the core of PCK, which is the connection between historical content and pedagogical practice (Tuithof et al., 2019).

Unlike English-language studies that primarily rely on qualitative approaches, German-language PCK research is dominated by quantitative methods (Nos. 8–10, 15, 16) and combinations of qualitative and quantitative procedures (Nos. 2–4, 6, 11, 12, 14). Contrary to the English-language discourse, where the idea that PCK can only be assessed in relation to teaching situations is often associated with qualitative methods (Tuithof et al., 2019), most quantitative German-language research is based on the assumption that a situated understanding of the construct can also be addressed with quantitative methods. To this end, many studies have used text or video vignettes combined with open- or closed-ended tasks related to specific teaching scenarios (Nos. 3, 5–16). However, not all of these studies have yet validated their instruments (Resch, 2022, p. 277). This methodological challenge also affects how research on the promotion of PCK in history teacher training can be interpreted.

Although there are initial German-language studies on the relationship between teacher training, PCK, CK (Nos. 8–10) or beliefs (Nos. 12, 14), analyses of more holistic training effects have been difficult to achieve (Nos. 9, 11, 18). The same is true for English-speaking history education. This is either because qualitative methods dominate English-language discourse (Tuithof et al., 2019; see Martell et al., 2024 as a recent example), making claims about effects complicated, or because few German-language studies are based on sound validation (Nos. 6, 7, 14; 8–10, 13, 14; 12). For instance, generating reliable expert norms for test instruments related to teaching situations was often challenging (Resch, 2022; Waldis, 2019). Additionally, findings on training effects are contradictory and may depend on whether declarative knowledge or competencies are the focus (e.g., No. 9 vs. No. 14), or on which design was used: longitudinal (Nos. 9, 11, 18), cross-sectional (Nos. 6, 7, 12, 14) or quasi-experimental (Nos. 4, 15). For example, one cross-sectional comparison revealed growth in planning knowledge between beginning (B.A.) or advanced (M.Ed.) students, and teacher trainees (No. 14), while no changes were found in longitudinal studies for task formulation (No. 9) or reflection on teaching history (No. 11). In contrast, initial quasi-experimental studies suggest that learning opportunities can be created to support facets of PCK on instructional activities with a focus on formulating tasks (Nos. 4, 15).

Given these difficulties, there is now a debate about whether the problems of analysing training effects and statistical validation are purely methodological or theoretically based as well. For example, Resch (2022, p. 278) questions whether dichotomous answering formats (e.g., “true” or “false”) in quantitative surveys have met the theoretical assumption of the situated nature of PCK. More generally, Schreiber (2022, p. 146) asks to what extent professional competence in history can be meaningfully defined based on Shulman’s (1986) generic understanding of teachers’ professional knowledge or the mathematics-based COACTIV model (Baumert & Kunter, 2013). Schreiber (2022) also argues that the conceptual relationship between knowledge and competence is unclear.

Indeed, tests with vague definitions of target constructs can be more difficult to validate (Jonkisz et al., 2012). Moreover, one could question whether the current German-language, deductive approach to forming theories on PCK and beyond fully addresses teaching situations. Although experts in history teacher education participated in previous model and test construction, the conceptual framework was theoretically determined (e.g., *Ekol*: Nos. 8–10, 13, 15; *VisuHist*: Nos. 3, 11). Therefore, future concept constructions or revisions in the German-language discourse could benefit from referencing PCK facets generated in qualitative studies, which are common in the English-language discourse (e.g., Smets & Tuithof, 2024; Tuithof et al., 2019). Conversely, the latter could benefit from German-language approaches that take a more holistic view of professional competence. These approaches are often related to standardised methods, or combinations of qualitative and quantitative procedures to identify characteristics of successful teacher training. While most literature on PCK and the associated criticisms mentioned here suggest that the objectives of successful history teacher training programs are still debated, and methodological research challenges remain, a holistic approach integrating both deductive and inductive views has the potential to address methodological challenges and link PCK and other areas of professional knowledge. Once validated on this basis, tests could be used to investigate how PCK and other aspects of professional competence are linked to teaching characteristics and student learning outcomes (e.g., Fogo, 2014; Gestsdóttir et al., 2024). Based on this, it may potentially be possible in the future to determine which facets of PCK, and components of professional competence are relevant to enable teachers to promote historical thinking in schools. While these connections are often considered theoretically (e.g., Heuer et al., 2017; van Hover & Hicks, 2018), they have rarely been investigated using large samples (Fitchett & Heafner, 2018 being an exception in history; see Fukaya et al., 2025 for a generic overview). Therefore, it is difficult to draw conclusions that can be generalised for revising previous theories on PCK and beyond in the fields of international history education and German-speaking history didactics.

Completing this task is even more urgent because other pressing issues affecting teacher training have received little attention in discourses on history teachers’ PCK to date, such as digitalisation and AI (e.g., Carretero & Gartner, 2024), inclusivity for diverse individuals (Barsch et al., 2025), and climate issues (Atembone, 2023). To this end, history educators at all levels of teacher training should engage in continuous dialogue about PCK approaches and research methods, and consider ways to promote PCK across language discourses, while recognising their respective perspectives.

My review is limited by the fact that I was unable to take a systematic approach, since there are currently no reliable search tools available to identify studies in German-

speaking history didactics. In addition, I had to conduct an extensive snowball search based on the references of previous work. Furthermore, the categorisation of the studies may be limited by the fact that I undertook this task alone and that the assignment of PCK facets was not always evident, given that most studies on knowledge of student understanding also addressed its assessment. Nevertheless, I believe my interpretation of the presented research is plausible as it aligns with previous general German-language overviews of the professionalisation of history teachers (e.g., Resch, 2022; Waldis, 2020).

6. Final reflection

This review was conducted with three objectives in mind. Firstly, I wanted to share the growing body of research on prospective history teachers' PCK, published in the context of German-speaking history didactics, with the field of international history education. Secondly, I aimed to highlight the conceptual and methodological similarities and differences in the literature on PCK in both fields. This is intended to demonstrate that a combined approach, incorporating the deductive perspectives of the German-language literature and the more inductive views of the English-language research and vice versa, is likely to fruitfully inform valid PCK research and its promotion in teacher education. Thirdly, given the difficulty in identifying successful history teacher training programs in both contexts, the review aimed to promote exchange among history educators interested in the professionalisation of history teachers. This issue is becoming increasingly urgent as additional challenges remain to be addressed, including AI and digitalisation, inclusivity for diverse individuals or climate issues, which have not yet received much attention in the PCK discourse in both fields.

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Specific contribution of the authors

The author is solely responsible for the article.

Abbreviations

COACTIV. Cognitive Activation in the Classroom: The Orchestration of Learning Opportunities for the Enhancement of Insightful Learning in Mathematics (Baumert & Kunter, 2013).

eFWsK. Potsdamer Modell des erweiterten Fachwissens für den schulischen Kontext [Potsdam Model of Expanded Content Knowledge for the School Context] (Fenn & Urban, 2021).

ekoL. Effektive Kompetenzdiagnose in der Lehrerbildung [Effective Competence Assessment in Teacher Training] (Resch, 2022).

GeDiKo. Modell geschichtsdidaktischer Kompetenzen [Model of Historical Didactic Competencies] (Heuer et al., 2019).

VisuHist. Ausprägung und Genese professioneller Kompetenz bei Geschichtslehrpersonen: Eine empirische Untersuchung auf der Grundlage eines Videosurveys [The Development and Genesis of Professional Competence Among History Teachers: An Empirical Study Based on a Video Survey] (Waldis et al., 2019).

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