



JSSE

[Journal of  
Social  
Science  
Education](#)

2021, Vol. 20(3) 29-54

Edited by:  
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Article

## Meta-reflexivity and epistemic cognition in social science teacher education

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**Keywords:** meta-reflexivity, epistemic reflexivity, epistemic cognition, reflective practice, social science teacher education

- Social science requires a meta-reflexive approach to teacher education
- Social science teachers manage subject-specific reflective demands
- Meta-reflexivity can be conceptualized using epistemic cognition frameworks
- Epistemic cognition frameworks expand on social science education competence models
- Epistemic cognition gives a new perspective on reflective practice in social science education

**Purpose:** This article argues that in social science teacher education general demands for teacher reflection overlap with subject-specific reflective demands. This calls for conceptual frameworks that account for an extended reflectivity, encompassing both teacher reflection and the subject-specific approach to representing controversial issues.

**Approach:** Concepts of reflective practice and meta-reflexivity in teacher education are presented, and a discussion is provided regarding the challenges inherent in teaching social sciences as a multidisciplinary subject. Furthermore, aspects of meta-reflectivity are identified in a German teacher competence framework (PKP). To enable a broader analysis, frameworks from the field of epistemic cognition are introduced.

**Findings:** Utilizing frameworks of epistemic cognition enables a detailed investigation of how social science teachers manage subject-specific challenges. Epistemic reflexivity offers a concept of teacher reflection that enables a new perspective on connecting theoretical reflection in pre-service teacher education programs with later reflective practice.

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**Suggested citation:**

Kindlinger, M. (2021): Meta-Reflexivity and epistemic cognition in social science teacher education. *Journal of Social Science Education* 20 (3). <https://doi.org/10.11576/jsse-4087>

**Declaration of conflicts of interests:** none

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## 1 INTRODUCTION

The term *reflection* is used a lot in both German school curricula and teacher education regulations. Pre-service teachers at German universities must reflect on “educational and pedagogical objectives and standards derived from these objectives” (Kultusministerkonferenz, 2019, p. 7), “foundations and results of school and teaching research“ (p. 8), “democratic values and norms and the way they are conveyed” (p. 10), “processes of societal, cultural and technological change” as well as “their personal occupational values and attitudes” (p. 13). Furthermore, aspiring teachers of social science education must “reflect on objectives, concepts, conditions, processes, and results of teaching and learning in social science education” (Kultusministerkonferenz, 2017, p. 58)

*Reflection* does not necessarily refer to a sharply delineated construct, but to a way of thinking about issues that are not expected to yield clear and simple answers. In teacher education, this becomes explicit in the guiding figure of the “reflective practitioner” (Schön, 1987), who, instead of tackling problems by applying a set of well-studied techniques, discerns, analyzes, evaluates and reacts to the uncertainties of constantly changing situations. In teaching social sciences, however, there is an overlap between two distinct areas of reflective demands: On the one hand, social science teachers – just like teachers of other subjects – are required to reflect on their teaching methods, their students’ attitudes and abilities, their subject, its subfields, the social conditions thereof, and much more. On the other hand, there is a subject-specific demand to support students’ reflectivity, especially in their competence to produce justified political judgments, both descriptive and normative (Detjen et al., 2012). Reflectivity in social science education is deeply connected to the transdisciplinary approach of the subject and the challenge of discussing and working through controversial issues. Teachers of other subjects face complex reflective demands as well; however, I will argue that social science education is especially reliant on a specific form of reflectivity as a normative dimension of its subject didactics. In this article, *social science education* refers an integrative school subject of the domains politics, economy, and society, with the respective reference disciplines political science, economics, and sociology, as it is anchored in German school regulations (Kultusministerkonferenz, 2005). In many cases, arguments analogous to the ones made here can be applied in settings in which social science education refers to a more extensive subject.

This article proposes a new conceptual perspective on reflection and reflexivity in social science teacher education. I do not attempt to provide a general concept of reflexivity in social science education; I focus on meta-reflexivity (Cramer et al., 2019) and its relation to epistemic questions in subject-specific teacher education. To this end, I first provide an overview of reflection and the meta-reflexive approach in general teacher education. In social science teacher education, many cases of reflection relate to matters of knowledge, explanation and understanding, and are thus epistemic in the wider sense of the term (Chinn et al., 2011). Elements of epistemic cognition are already incorporated in an established framework of social science teacher professionalization in Germany –

the PKP (*Professionelle Kompetenz von Politiklehrer/-innen*; professional competence of civic education teachers) teacher competence framework (Weißeno et al., 2013a, 2015). However, an extension of these concepts allows richer descriptions of how teachers connect their epistemic commitments, their beliefs about the subject, their processes of knowledge generation, and their actions toward their students. Teacher educators can use these frameworks to work on advancing reflective thinking in pre-service teachers.

## 2 REFLECTION AND META-REFLEXIVITY IN GENERAL TEACHER EDUCATION

Reflective thinking can be defined as a process of “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and further conclusions to which it leads” (Dewey, 1933, p. 118). Reflection, in this procedural sense, involves a series of steps, leading from the immediate experience to a purely cognitive deliberation before returning to practical action. Expanding on this idea, Schön (1987) distinguishes anticipatory and retrospective forms of reflection – *reflection-for-action* and *reflection-on-action* – from a form of reflection that occurs simultaneously with acting: *reflection-in-action*. There have been various elaborations on Dewey and Schön’s concepts of reflection in teaching and teacher education (e.g., Aeppli & Lötscher, 2017; Korthagen & Kessels, 1999), and interest in the topic has been accompanied by attempts to make reflection measurable and assessable. In pre-service teacher education, this has often been achieved in hierarchical models that group reflective texts or other products into categories that range from purely descriptive to wide-scale critical reflection (Hatton & Smith, 1995; van Manen, 1977).

The enthusiasm for reflection has not been without criticism. In its usage across curricula and different strands of teacher education literature, the term *reflection* is not usually tied to clearly delineated concepts; instead, it often becomes vague (Collin et al., 2013). In her study on reflection in teaching, Beauchamp (2005) points at a long list of sometimes contradictory usages of the term to refer to different cognitive processes, goals, and contexts. *Reflection* can stand for the discovery, analysis, solving, development, transformation, evaluation, or critique of ideas, circumstances, problems, possible solutions, theories, meanings, beliefs, the self, and more. This vagueness is neither a recent phenomenon nor a consequence of misuses of the term, but part of the long philosophical, psychological and pedagogical discussion on reflection and its promises (Häcker, 2017).

Even in Schön’s concept, problems remain. Schön’s reflective practitioner constitutes an ideal that does not provide any instruction on how novice teachers arrive at this point, or on how reflection-in-action can be trained in university settings (Leonhard & Abels, 2017). In focusing on a form of reflection that is cognitive and removed from real-life situations, teacher education instead risks cultivating something more akin to overthinking and rumination (Neuweg, 2017). Why, then, does reflection remain so prominent in teacher education? Across different theoretical approaches to teacher professionalization, reflection and reflexivity is seen as a way of managing the unavoidable uncertainties inherent in the teaching profession (Cramer et al., 2019).

However, to avoid a rigid form of reflection that sees theory as seamlessly applicable to real-life situations, the meta-reflexive approach established by Cramer et al. emphasizes higher-order reflective abilities and dispositions that acknowledge the limits of reflection itself. Teachers should not only be able to explain, analyze and organize teaching based on prior experiences and theoretical knowledge, they should also be able to consider and contrast the similarities and differences of possible theoretical approaches, as well as their linkage to practice (Cramer et al., 2019). Meta-reflexivity, in this understanding, includes reflection, but also a set of cognitive abilities, stances and commitments that influence different reflective processes. For teachers to acquire these meta-reflexive qualities, the approach has certain implications for pre-service teacher education in universities: Cramer et al. propose a non-definitive list of guiding principles for teacher education, such as (Cramer et al., 2019, pp. 415–416):

- Multi-perspectivity: Emphasizing different theoretical perspectives on the issues at hand
- Meta-Communication: Communicating the reasons for choosing particular perspectives and using them in different domains
- Distancing: Discussing the value of a critically-distanced investigation of and reflection on school and teaching
- Transparency: Disclosure of the teacher education curriculum and its motivations
- Contextualization: Discussing the origin and foundational ideas of different theoretical approaches
- Obligation to state reasons: Stating the reasons for curricular decisions, such as the choice of theoretical approaches
- Alternativity: Conveying a fallible understanding of knowing, which acknowledges both the non-universality of a chosen perspective's validity and the existence of alternatives
- Dynamism: Enabling meta-reflexivity gently in an iterative, dynamic process of interactions between complex theoretical knowledge, casework, and practical experience

The uncertainties of the teaching profession are reflected in this non-definitive list of partially overlapping aspects, as will be discussed over the course of this article.

### **3 META-REFLEXIVITY AND MULTIPERSPECTIVITY IN SOCIAL SCIENCE TEACHER EDUCATION**

Meta-reflexivity, as an approach to teacher reflection, seems especially useful in social science teacher education. Reflective ability and reflexivity are widely seen as a central

tenets the field (Petrik, 2009; Reinhardt, 2009; Schwier, 2019). From a structural theory perspective, the dilemmas and conflicts of objectives inherent in the teaching profession (Helsper, 2016) are enhanced in teaching social sciences. Social science education actively addresses the conflicts and dilemmas of living and participating in pluralistic, democratic societies, and of deciding on rules for living in them. For social science teachers, this necessitates a reflexive awareness of how teaching discussions both address and enact these issues (May, 2014). Students approach these topics not only with different motivations and interest, but also with different socioeconomic and political positions. These are reflected both in the general school settings, which reproduce societal power relations through evaluation and selection processes, and also in specific classroom situations, where different groups of students hold different stakes in discussions on topics like immigration or poverty. How social science teaching should and can manage– the social embeddedness of education – remains open to debate (Eis et al., 2016). However, even apart from this question, social science education covers representations of the world that are often more contentious than in other subjects.

One reason for the inherent multiperspectivity of social science education is the interdisciplinary nature of the subject. By integrating at least three disciplines – economics, political science and sociology – social science education both connects and differentiates these systems of knowledge while introducing students to their differing and sometimes contradictory perspectives. This challenge has in recent years been discussed in relation to the debate on the proposed – and partially implemented – establishment of economics education as a school subject separate from the interdisciplinary subject of social science education (Fischer & Zurstrassen, 2014). However, a multiparadigmatic didactic of economic issues does not necessarily accompany a systematic introduction of students to the inner logics of economics, sociology, political science, and their differences. This would hardly be feasible in the limited amount of time school sets aside for the subject. Instead, a multi- or transperspectivist treatment of social issues may be preferable for student learning (Hedtke, 2015a). If the disciplinary perspectives are not to be worked thought collectively, then it is the teachers' task to present social, political, and economic issues in a way that integrates these perspectives. Classroom reflection on a complex topic such as universal basic income needs students to be able to understand causes and consequences of different policies for the economy, the political system and society in general, without one disciplinary perspective dominating the others. Causes and effects in the three domains must be differentiated but still eventually connected and weighed up. This requires students to develop a working model of social systems that combines different disciplinary approaches without confusing the differences between these approaches. To guide students in constructing this model, teachers must have a firm and sophisticated understanding of the disciplinary approaches *and* their differences and limitations. This complex, transperspectivist discussion of social systems cannot remain abstract, but needs to be related to high or middle school students' familiar everyday experiences, which in

turn requires an understanding of the cultural, social, political and economic conditions that specific groups of students experience in their everyday lives (Schwier, 2019).

Social science education integrates disciplinary views that are not homogenous in themselves, and can lead to different, even opposing, perspectives on social issues. This tension already arises with inter- and intradisciplinary differences in definitions of basic terms – for example, what is a *market* and what kinds of policy decisions are either legitimized or disqualified by different definitions (Hedtke, 2015b)? In concrete policy decisions such as labor market interventions, the diverging interests of different social groups or stakeholders may relate to a focus on different aspects of politics, the law, or economics – such as labor laws, marginalization, distributive justice, or effects on unemployment rates and on the GDP – as well as the utilization of incongruent theoretical frameworks in discussing these aspects. These interests can also lead to different interpretations of the legal basis of this issue, and of the rigidity of regulations: Viewing the law as part of the given circumstances as opposed to viewing it as the product of political processes that represent interests of societal groups, and which can be influenced by political action. Teachers do not have the task of harmonizing or reducing these perspectives to a *unified* trans- or multiperspectivist model. On the contrary, central to social science education is the discussion of controversial issues and the reasons for their contentiousness (Hess, 2009). In social science education, controversiality can be seen as intertwined with multiperspectivity as a form of scientific openness (Hedtke, 2015b) or even as a special case of multiperspectivity (Sander, 2009). Moreover, in German social science education, the importance of *controversial thinking* (Reinhardt, 2018) is directly derived from the Beutelsbach Consensus (Wehling, 1977). Its three principles, which have been established as guiding principles for the German combination of civic and social science education (*politische Bildung*): 1. prohibiting the indoctrination of students, 2. teaching controversial issues as controversial and 3. enabling students to find ways and means to analyze their political positions and influence the given political situation. The consensus does not aim at affirmation, but at a complex ideal of political maturity (*Mündigkeit*), enabling informed and reflective political decisions. Although a consensus of just three principles may seem charmingly simple, its implications have been the topic of intense discussion (Schiele & Schneider, 1996; Widmaier & Zorn, 2016).

The discussion of controversial issues holds particular challenges for social science teachers, and with the coronavirus crisis and the proliferation of conspiracy theories, controversial issues remain in abundant supply. Teachers have different reservations regarding controversial issue discussions, ranging from strong convictions that only one side of a controversy is correct and therefore worthy of representation to fear of negative repercussions or general desires for neutrality and harmony (Hess, 2004). For social science teachers, Hess favors an approach that attempts to achieve balance, meaning a “best case, fair hearing of competing points of view” (Kelly, 1986, p. 132). However, balancing is problematic in issues in which discussion abandons the rationalist safeguards of academic disciplines: “false balancing” or “both-sidesism” have been criticized in

journalism in relation to the scientific and non-scientific controversy regarding climate change (Brüggemann & Engesser, 2017). In choosing to present two structurally unequal positions with equal weight – a tiny minority of scientists against a broad consensus – one reproduces and thus actively participates in upholding the perception of a controversy that has no basis in the scientific community.

This problem is connected to Hess' (2009) remark that controversy starts with the question of what constitutes a controversy in the first place: teachers decide which issues they are willing to discuss in the classroom and how they are to be discussed. Regarding this complex question, different criteria have been proposed (Yacek, 2018):

- I. The behavioral criterion, according to which, in principle, every question which is controversially negotiated in public can be controversially discussed in the classroom,
- II. the political criterion, which restricts debatable controversies to those that are within the range of a minimum democratic consensus. If this condition is fulfilled, teaching should be open and non-directive;
- III. the epistemic criterion, which further restricts this to cases in which only “rationally defensible” (Hand, 2008, p. 228) positions are opposed,
- IV. the psychological criterion proposed by Yacek himself, which is based on the specific learner group's ability to understand the controversial issue as such.

With the political criterion, legal aspects become relevant insofar as they limit the realm in which different positions can be seen as equally valid. Within this realm, legal aspect of controversies can be made a part of the controversy and regarded as changeable (Hess, 2009). However, in the German conception of controversy there is another hard limit to its scope, which partially reflects the epistemic criterion. The phrasing of the controversy principle implies that both systems of knowledge must be “successively worked through, contrasted, and alternately related to each other” (Grammes, 2016, p. 162). Teachers must be able to both separate *and* connect politics and the sciences, to allow a controversy in one area to be informed by considerations in the other. Whereas climate change is not controversial in science, the question of how to react to its threat is, and remains, controversial in politics. When teachers let students discuss these issues, it should not be their task to simply present different positions and treat them as diverging opinions or worldviews. Unlike simply balancing both sides, this implies an approach to controversial issues that reveals how different positions have different assumptions, justifications and aims. Even in topics that are not controversial in science or democratic politics, students' positions can fall outside this discourse. Teachers must be able to react to such positions in situationally appropriate ways that ideally *do not* turn the issue into controversial classroom discussions. This requires teachers' self-reflection so as to avoid delving into

indoctrination. This challenge has been extensively discussed with regard to political extremism among students (Besand, 2020; Heinrich, 2016; May, 2016).

In combination with the Beutelsbach Consensus principle of non-indoctrination, an emphasis on balance in controversial issues risks leading to a naïve relativism, which sees every position as equal, and a mistaken idea of teachers' absolute neutrality, both of which would stand in stark contrast to the intentions of the Consensus' principles (Grammes, 2016; Hoffmann, 2016). Social science teachers ideally encourage controversial debates that are not perceived as mere clashes of differing opinions. To this end, it is crucial for them to understand and to be able to convey how positions can be structurally different and informed by different contexts, experiences, and evidence – even if these differences do not lead to a definite, clear-cut solution of the issue at hand and still allow for different or even opposing judgments. Understanding these differences becomes increasingly important for students in a political environment in which populist movements and conspiracy theories promise superficially simple and intelligible solutions to complex problems (Vobruba, 2019). Investigation of this complex reflectivity in forming evaluative judgments is related to the analysis the qualitative aspects of arguments in classroom discussions (Gronostay, 2017) but also encompasses questions of different criteria for reliability, certainty and truth.

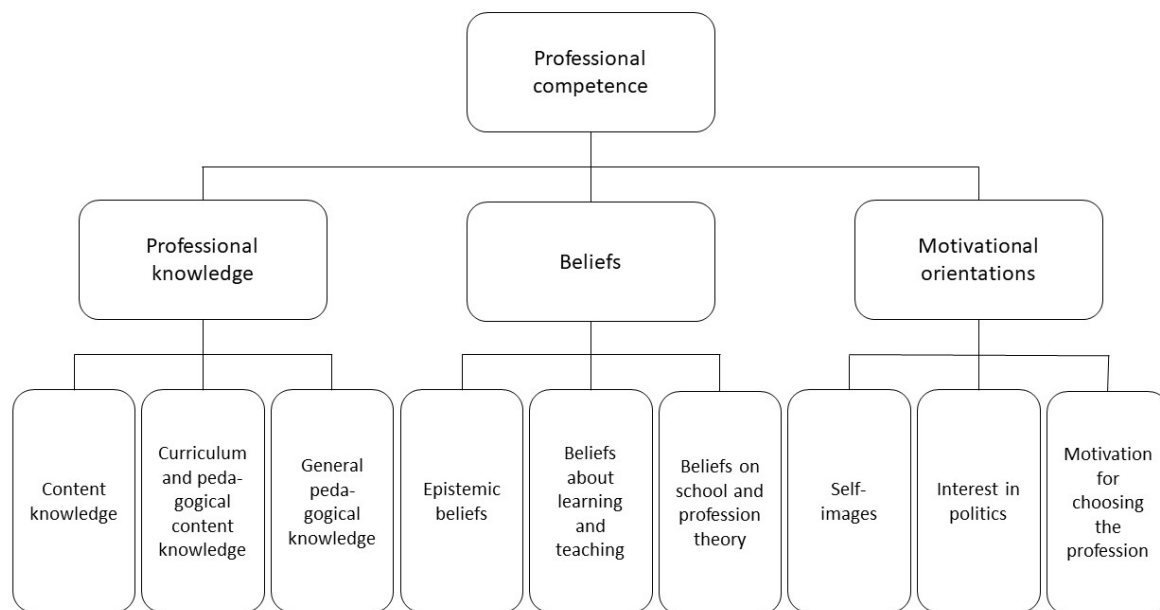
As these examples indicate, social science educators are asked to connect, compare, contrast, and eventually convey different systems of knowledge. In social science education, reflectivity as an ability for mental deliberation and self-reflection in a single domain or theoretical background is of limited use. Instead, social science teachers have to be able to navigate the structurally uncertain areas not only within, but also between different systems or perspectives. Like meta-reflexivity, the reflectivity required in teaching social science is largely *epistemic* in nature. This does not mean that it is exclusively related to representations of the world – social science education encompasses the ability to make qualified value judgments, which cannot be reduced to issues of epistemology. However, what counts as *qualified* value judgments depends mostly on the understanding, analysis and comparison of beliefs and different systems of thought.

#### **4 EPISTEMIC BELIEFS IN SOCIAL SCIENCE EDUCATION TEACHER COMPETENCE**

In the following section, I intend to demonstrate that aspects of meta-reflexivity are already included in the one of the most researched models of social science education teacher competences in Germany. The PKP research program attempts to investigate the structure, characteristics and relations of teacher competences, while focusing on political aspects of social science education (Weißeno et al., 2013a, 2015). It differentiates teaching competences in professional knowledge, professional beliefs, and motivational orientations. In the PKP framework, *beliefs* encompass a wide, less justified category of understandings, premises, and propositions (Weschenfelder, 2014) that are enduring, though not necessarily consistent (Weißeno et al., 2013b). This residual category covers dispositions that people have regarding their knowledge and judgments.



**Figure 1: The PKP framework of teacher competencies (adapted from Weschenfelder, 2014, p. 102)**



The framework presents a static view of competences: It attempts to cover the *prerequisites* for professional action competence, which requires the conjunction of the components of knowledge, beliefs, orientations, and actual – not conceptually representable – teaching experiences (Weschenfelder, 2014). Reflection, understood as an active process that acts on and alters these static dimensions, is thus precluded from coverage in this model. However, as we have previously seen, meta-reflexivity can be conceptualized as a set of abilities and dispositions, including sophisticated manifestations of *epistemic beliefs* (Cramer et al., 2019, p. 414), which are also part of the PKP framework.

Within the category of beliefs, the PKP framework differentiates between epistemic beliefs, beliefs about learning and teaching, and beliefs about school and profession theory. The model of epistemic beliefs that is incorporated in the PKP framework is based on the framework presented in Hofer and Pintrich (1997) that distinguishes between two domain-independent dimensions: *nature of knowledge* and *nature of knowing* (Weschenfelder, 2014). Hofer and Pintrich further differentiate the subdimensions *certainty/structure* and *source/justification* in the dimensions *knowledge* and *knowing*, respectively. In the PKP model, these dimensions of epistemic beliefs are modified to focus explicitly on political knowledge. The nature of political knowledge is differentiated in four additional scales on politics and its education. Within the source of political knowledge, four scales that partially overlap with beliefs on learning and teaching are introduced.

In the subdimension *justification for knowing*, the PKP framework is operationalized by the developmental model utilized by Krettenauer (2005). This model, based on Perry (1970), differentiates several stages of development in personal epistemologies, which are

usually represented as *absolutist*, *relativist/multiplistic* and *postrelativist/evaluativist* beliefs. Attitudes toward knowledge are modeled as progressing from absolutist positions, in which knowledge is either true or false, to relativist positions, in which knowledge is seen as purely subjective, and eventually to postrelativist positions, in which different positions are not held to be either true or false but can be justified to different degrees (Krettenauer, 2005; Kuhn & Weinstock, 2009). In the PKP model, a normative differentiation between different stages of maturity in epistemic beliefs is justified by studies that indicate that more complex and dynamic epistemic beliefs can be linked to better learning outcomes and motivations (Cano, 2005; Mason et al., 2013). However, sophisticated or mature epistemic beliefs can be seen as static representations of reflective judgment capabilities, and are sometimes modeled as such, as in the reflective judgment model by King and Kitchener (1994). These static representations are enacted in the process of making judgments in situated contexts. The framework of meta-reflexive teacher professionalization assumes a related perspective and sees full-fledged *epistemological* beliefs – that is, beliefs that extend toward *theories* of knowledge and are thus at least postrelativist/evaluativist in nature – as part of meta-reflexivity (Cramer et al., 2019). The approach described in Cramer et al. (2019) can be seen as functioning on the one hand as a static objective of an educational process – as the ability and willingness of teachers to make multi-perspective, evaluativist interpretations in classroom situations – and on the other hand as a procedural description of continuous professionalization in meta-reflexive reflection. The principles of a procedural meta-reflexive professionalization are reflected in the static dimension: To enable a meta-reflexive professionalization, teacher educators need to be transparent about their curricular choices, and apply the obligation to state reasons to their students as well as themselves. This entails an engagement in meta-communication: How can we choose viable and contextually appropriate perspectives among different alternatives? What criteria do we apply for these choices? Ideally, this process fosters evaluativist thinking – which itself implies transparency as well as the obligation to state one’s reasons, as these are prerequisites to any qualitative comparison between different positions.

As an open approach to teacher professionalization that seeks to integrate other concepts with their intrinsic assumptions and limitations, the meta-reflexive approach allows a new perspective on evaluativism as it is included as an objective of teacher professionalization in the PKP framework.

## 5 EPISTEMIC COGNITION IN SOCIAL SCIENCE EDUCATION

It should be noted that evaluativist beliefs do not imply that different perspectives can be ranked or otherwise hierarchized. Evaluativist beliefs can be seen as a form of understanding knowledge that recognizes both objective and subjective dimensions of knowing and integrates these dimensions in a meaningful way (Kuhn et al., 2000). In some cases, relativist restraint from making distinctions and evaluations may seem appropriate for pluralistic classroom discussions. Yet relativism can imply that there are no differences

in the validity of different positions, that every position is equally biased, which raises the question of how one can learn from another. In contrast, evaluativist commitments recognize that different positions – for instance, different accounts of the same historical issue – can be informed by different experiences and resources, and allow differently informed judgments, depending on the context of these judgments (Weinstock, 2010). Evaluativism can therefore be seen as the foundation for increasingly reasoning, argumentation skills and thus, the capability for effective democratic engagement (Weinstock, 2010). In relation to the principles of meta-reflexive professionalization, this conception of evaluativism enables meta-communication about the qualification of reasons for interpretative choices and reasons for and against their alternatives. This implies the acknowledgement of different and even incongruent theoretical and normative approaches.

However, the construct does not provide a clear idea of how evaluativist beliefs influence judgments and decisions in complex real-life situations, or the ways in which different positions are eventually evaluated. One debate in the field of epistemic belief research concerns the domain generality or specificity of epistemic beliefs, with many researchers assuming both domain-general and domain-specific beliefs (Hofer, 2006). Acting in real-life classroom scenarios requires teachers to integrate knowledge and beliefs across several disciplines and domains, as we have seen in the previous chapters. Due to their static perspective, epistemic beliefs are limited as a tool for the investigation in how teachers and students construct, assume, evaluate, and handle knowledge in multifaceted situations. Furthermore, the ways in which teachers' epistemic beliefs influence those of their students via their teaching decisions remain unclear (Buehl & Beck, 2015). While on the whole, research in the PKP program points to correlations between more sophisticated epistemic beliefs and constructivist attitudes toward teaching and learning (Weschenfelder, 2014), the exact nature of this relation is underexplored (Lunn et al., 2016).

Because of their lack of context specificity, the hierarchization of epistemic beliefs in its four subdimensions can be problematic. For example, in the subdimension *nature of knowing*, the source of knowledge is differentiated between knowledge that is handed down from authority and knowledge that is actively constructed by the subject, with the latter belief being seen as more sophisticated (Hofer & Pintrich, 1997). This hierarchy is perfectly valid with regard to an abstract idea about the source of knowledge and knowing itself. Yet, as Hofer (2016) writes in relation to scientific theories, a focus on moving away from authority could lead to the conclusion “that those who question the certainty of what is known about gravity or doubt the authority of experts on the topic of evolution would be seen as exhibiting advanced epistemic beliefs” (p. 27). This example does not apply directly to the social sciences; in the majority of matters, questioning the certainty of expert judgments in social, political, and economic issues would indeed be a sign of advanced epistemic beliefs. However, epistemic trust in some forms of authority and expertise also has its place in social studies; otherwise, a discussion of what constitutes

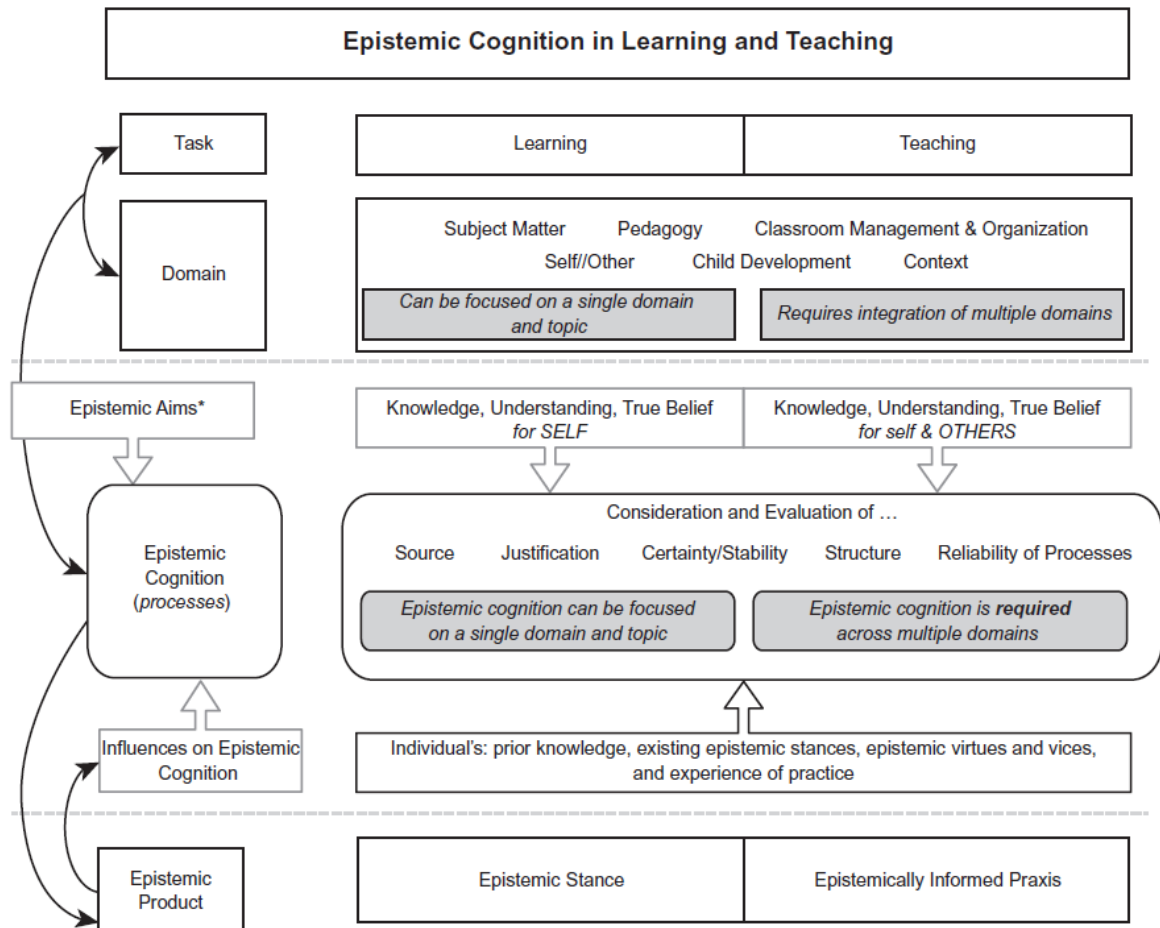
fake news or fake experts would be impossible. This makes a clear dichotomy between transmissive and constructivist beliefs equally problematic, as discussed with regard to the PKP framework by Weschenfelder (2014) and Weißeno et al. (2013b).

A meta-reflexive approach would offer the possibility of moving beyond dichotomization – such as assuming internal versus external sources of one’s knowledge – by considering the contexts of the relevant knowledge in each case and acknowledging the limits of both forms of justification. In contrasting different approaches to teacher education, Cramer et al. (2019) propose meta-reflection as a higher-order *reflection on reflection* within these different approaches. Initial teachers are to reflect on their own professionalization, contrasting different models’ applications and limitations in various contexts. However, in subject-specific teacher education, meta-reflexivity requires a somewhat different focus: Instead of reflecting on the differences between teacher education concepts, meta-reflexivity here needs to turn to the different perspectives and sources of knowledge that inform the subject, as well as their implications in variable contexts. To this end, we need a deeper look at how evaluativism, as an objective of both meta-reflexive and competence-oriented teacher education, is enacted in situational contexts that represent subject-specific challenges. In the past few years, various models for a fine-grained and context-specific analysis of epistemic cognition have been proposed. In the AIR (Aims, Ideals, Reliable processes) model, epistemic beliefs are reframed as different aims, values, justificatory ideals, and processes for achieving these aims and ideals (Chinn et al., 2014). *Epistemic aims* are defined as the goals or intended objectives of cognition and action to achieve epistemic ends including knowledge, true beliefs, justified beliefs, understanding, wisdom, explanation, models, evidence, or the avoidance of false beliefs (Chinn et al., 2014, p. 429). These aims allow for nuance in the kinds of epistemic products to which people aspire: Unlike classic ideals of knowledge, models or explanations cannot be evaluated in binary terms. The AIR model connects these aims to a subjective value component, which reveals itself when epistemic aims are weighed against non-epistemic aims such as compliance with peer group beliefs, or the aim to finish an assignment as quickly as possible. By examining different epistemic ideals – subjective standards for the evaluation of epistemic ends – and reliable processes for achieving epistemic ends, the AIR model allows a close and contextualized look at how people form knowledge and other epistemic products in real-world situations.

Whereas the AIR model reconceptualizes epistemic beliefs, the teacher-specific framework by Buehl and Fives (2016) offers an integrative perspective (Figure 2). It expands on the four dimensions of epistemic beliefs utilized in the PKP framework by combining them with additional constructs of epistemic cognition. The framework allows a view on teachers in two interrelated roles: Teachers are not only seen as agents responsible for others’ learning processes, but also as learners in constantly changing school situations. As learners, they construct epistemic stances that reflect their epistemic aim as well as a perspective on the nature of knowledge. For example, pre-service social science teachers who seek to acquire true belief about the consequences of a proposed

welfare policy could conclude with a stance of belief that they hold as certain. Alternatively, they could aspire to an understanding of how the consequences of welfare policies are modeled in a disciplinary perspective, and hold their eventual understanding to be a perspective-bound approximation of truth.

**Figure 2: Buehl and Fives' (2016) framework of epistemic cognition in teachers (p. 249)**



\*Individuals may combine task and domain and develop non-epistemic aims which would lead them to different kinds of thinking processes.

In teaching practice, teachers set epistemic aims for themselves and their students while integrating multiple domains. Epistemic aims now include assisting, scaffolding or guiding others in acquiring knowledge, true belief, understanding, models, and similar epistemic aims of learning. These aims can, but do not necessarily overlap with learning objectives. Similarly, the epistemic aims that teachers hold for their students can, but need not reflect their own understanding of their subjects. Justifiable epistemic and non-epistemic aims, combined with contextual conditions, can also lead to teaching decisions that diverge from teachers' knowledge about their subjects (Buehl & Fives, 2016, p. 261). With regard to the challenges of teaching social sciences, teachers who have acquired reflected understandings of the disciplinary positions on a controversial issue may choose

to present this issue with varying levels of complexity, depending on the aims they determine for their students and the conditions under which they teach. Teaching decisions that are informed by the reflective process of assisting others in attaining specific epistemic aims constitute an *epistemically informed praxis*.

In the context of social science teacher education, pre-service teachers may first learn about different disciplinary perspectives as well as general and subject-specific teaching principles, which could be described with the left-hand side of Figure 2. Confrontation with case scenarios in which different situational interpretations and action strategies are possible shifts the process to the right-hand side, to the task of teaching. Pre-service teachers learn to consider different kinds of epistemic aims and reliable processes for their students, which differ from their own. This includes, for instance, reflection on reducing the complexity of issues that are considered from multiple disciplinary perspectives, thus creating a transperspectivist model appropriate for student learning. When they allow students to discuss controversial issues, teachers must balance epistemic aims of understanding, thereby creating sufficiently developed models with non-epistemic aims of promoting democratic values.

In order to examine how this framework can be applied to teacher education, let us assume that Paul and Sarah are pre-service teaching students in the last semesters of their bachelor's program. They have each completed introductory courses in sociology, political science and economics. Now they enroll in a course on the didactics of the social sciences, in which they have already learned about the Beutelsbach Consensus principles. In this course, they are confronted with a classroom scenario in which a group of students debate the issue of universal basic income. The debate is soon stalled by a group of students who strongly advocate against a proposed basic income policy. The teacher does not intervene and eventually declares the dominant students the winners of the debate, as they have supposedly proven that universal basic income would be a disastrous idea.

After describing what happens in this scenario, Paul and Sarah are asked to reflect on how the principle of controversiality is compromised in this situation. Both Paul and Sarah adopt the epistemic aim of finding an understanding that connects the knowledge they have gained from their observations with their knowledge on the Beutelsbach Consensus principles. In both cases, their epistemic aims are combined with non-epistemic aims, such as completing their task in the given amount of time and arriving at a result that meets the expectations of the professor. However, Paul and Sarah may vary in the value they place on these aims. From the background of different epistemic beliefs, they also utilize divergent processes and justificatory standards in pursuing their epistemic aims: both know that in different theoretical frameworks, a basic income policy such as the one discussed in the classroom scenario would lead to different results in the domains of society, politics and economics. However, in line with his absolutist beliefs and formalized understanding of political knowledge, Paul considers the lack of controversiality as a problem only insofar as the teacher does not provide the students with an opportunity to develop better arguments in favor of the correct position. He

believes that as a social science teacher, his epistemic aim for his students should be to find true beliefs and therefore assumes that certain and stable representations of future effects of policy interventions are possible. Since he agrees with the dominant students' position, he has no problem with the teacher's declaration of some students as the winners of the debate. He seeks out literature that confirms his belief in utilizing controversial issues as a means to improve debating skills. He is able to express his understanding of the principle of controversiality and its application to the case at hand in a structured essay that reaches the required word count. Having arrived at his epistemic product, he is convinced of the certainty of his newly acquired understanding.

Sarah, in contrast, has relativist beliefs regarding the social sciences. She strongly objects to the teacher's declaration of a winner and has the initial understanding that, according to the principle of controversiality, issues must be constantly balanced between opposing positions. She believes that the teacher should have the epistemic aim of allowing students to understand perspectives that are radically different from their own. Additionally, her processes for attaining an epistemic product are more elaborate than Paul's, and she engages with literature on controversiality that contradicts her initial view regarding how teachers should react in the situation. As a further process, she attempts to discern the differences between these sources. She meets her own justificatory standard by first listing different possible approaches to controversiality side by side and finding a position that synthesizes the different approaches. The majority of literature confirms her initial view that the teacher in the scenario should have insisted on presenting the opposing position on universal basic income, but concurrently raises the problem of non-indoctrination. She eventually arrives at an epistemic stance of a reflexive and uncertain understanding of the situation and its relation to the principle of controversiality.

Assume that, in a second assignment, Paul and Sarah are asked to develop alternative courses of action that the teacher could have taken. Here, Paul and Sarah would likely adopt different non-epistemic aims that nevertheless employ processes of epistemic cognition: Whereas Sarah may aim at a justified proposal that attempts to address the differences and dilemmas that have informed her epistemic stance, Paul may aim at a course of action that is "correct" in relation to the principles. Through a combination of different epistemic aims and processes, they arrive at results that illustrate different degrees of reflectivity. In the examples, Paul and Sarah enact their respective epistemic beliefs. However, situations and contexts may lead to aims, values, processes and standards that seem to diverge from general beliefs. In real-life classroom situations, teachers constantly decide on reductions in the scope and complexity of aims and processes due to restrictions in time, resources, and the balancing of subject-specific epistemic aims with the pragmatic aims of classroom management. By examining aims and processes, the outlined framework offers a perspective on how these modes of thinking can be made visible and thus open for change in teacher education.

## 6 EPISTEMIC COGNITION AS A DESCRIPTIVE BASIS FOR META-REFLEXIVITY

Epistemic cognition models such as the framework by Buehl and Fives (2016) offer a descriptive view of teachers' processes of knowledge acquisition and how these processes translate into their teaching. They allow us to investigate how mature or sophisticated epistemic beliefs translate into casework and eventually into classroom practice. Reflective epistemic ends can be seen as the product of more sophisticated epistemic aims and cognitive processes, whereas meta-reflexivity itself is dissolved in the different processes of epistemic cognition. As a normative objective of teacher education, meta-reflexivity emerges in establishing situationally appropriate aims, employing a wide set of reliable processes that involve self-questioning and weighing different possible interpretations and their theoretical assumptions against their alternatives, all the while maintaining sophisticated epistemic ideals by which to judge one's interpretations and the attainment of one's aims.

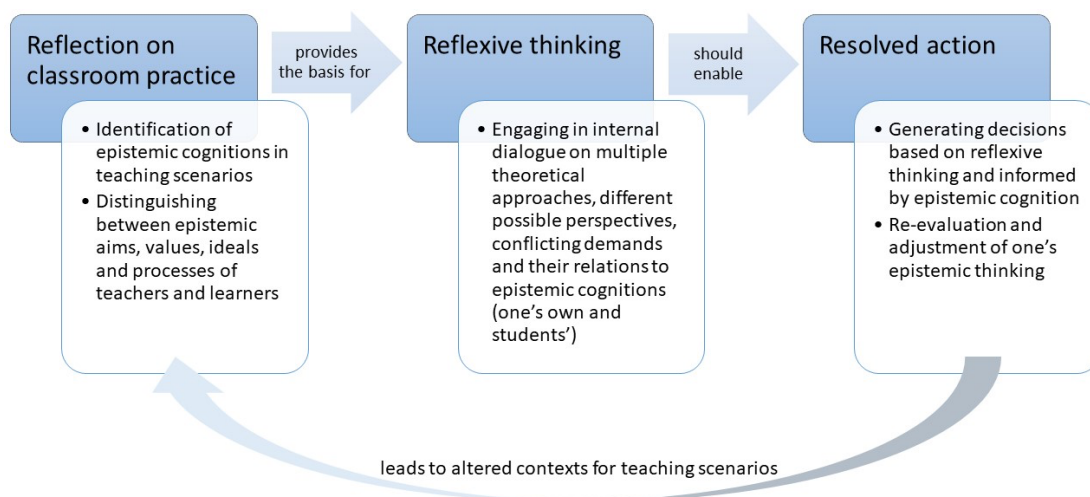
Meta-reflexivity, thus seen as the ability of mediating between different reflective processes, encompasses both the cognitive aspects described in the previous chapter and a perspective on the active reflection in teacher education. One of the initial problems in this article is the lack of clarity in teacher reflection concepts, and by extension, the problem of turning reflection-for-action and reflection-on-action – which are possible in university pre-service teacher education – into an open and flexible foundation for reflection-in-action. Aiming at more than merely an amalgamation of different sophisticated epistemic cognitions, the initiation of meta-reflexive practice in teacher education should include a willingness to reflect on one's epistemic aims and processes, as well as an idea of how epistemic cognitions develop and change. To this end, the 3R-EC framework of epistemic reflexivity (Lunn Brownlee et al., 2017) can be seen as a further expansion of the framework discussed previously, as it requires teachers to explicitly reflect on the epistemic and non-epistemic aims and processes of their teaching. Building on work by Archer (2012) as well as Ryan and Bourke (2013), Lunn Brownlee et al. conceptualize reflexivity as a “bending back” of thought upon itself, during which people question and refine their epistemic cognition.

Returning to the example of Paul and Sarah, epistemic reflexivity would start from the proposals they developed regarding how social science teachers should manage a classroom debate that becomes one-sided. As we have seen, they assume different epistemic aims for students: Paul believes social science teachers should guide students in finding true belief, whereas Sarah believes that social science education predominantly aims to understand radically different points of view. Neither of those aims is necessarily problematic or wrong in social science teaching. However, regarding the complexities involved in promoting controversial thinking in the scenario described above, aims like true beliefs or understanding of radical difference can be seen as lacking differentiation. By identifying and reflecting on these aims, Paul and Sarah engage in a meta-reflexive deliberation on their proposals and how, from different theoretical perspectives, they may be appropriate for arriving at their aims. This involves scrutinizing the processes used as



well as the conditions under which they are reliable. By conceptualizing reflexivity as an internal dialogue (Archer, 2012), the concept points to qualitative research designs that capture parts of these thinking processes (e.g., Barnes et al., 2020; Hartmann et al., 2021).

**Figure 3: The 3R-EC framework applied to social science education (adapted from Lunn Brownlee et al., 2017, p. 248)**



In teaching practice, this deliberation would enable what Lunn Brownlee et al. (2017) call *resolved action*, which could lead to changes in teachers' epistemic aims. In teacher education, this last step can be simulated in discussion or in weighing possible actions and results together with others. In order to enable transformations that are not just circumstantial changes in beliefs, but preliminary steps in the process of meta-reflexive professionalization, Paul and Sarah would need the opportunity to distance themselves from their experiences and previously held ideas, to thus recognize the contexts, theoretical foundations and limitations of the validity of their interpretations. In the example of universal basic income, this could lead to change: Paul may see the problems with arriving at an aim of true beliefs in issues that rely on prognoses. Sarah may acquire new processes of examining and contrasting different positions, which could shift her aims and beliefs from a paradigm of relativism/multiplism toward contextualized evaluativism. We may even notice a shift from either transmissive or subjectivist beliefs about learning toward a nuanced form of constructivism (Weißeno et al., 2013b; Weschenfelder, 2014). This kind of reflection, by pointing out the limits of one's previously held beliefs and the contradictions between approaches, can start a "dynamizing process" to trigger epistemic change (Keller-Schneider, 2021). The principles of meta-reflexivity – stating reasons, being transparent about alternatives, maintaining distance – can be seen as scaffolds in this dynamic process: Finding reasons implies checking one's assumptions, thereby opening up the possibility of change. What is necessary is that from the beginning,

teachers develop a reflexive disposition that incorporates the explicit reflection on epistemic cognition and utilizes it as the basis for new courses of action (Fives et al., 2017). In their normative perspective on this framework, Weinstock, Kienhues, Feucht and Ryan (2017) describe the disposition *and* ability to engage in this process as the epistemic virtue of *informed reflexivity*. In this sense, reflexivity is both a process and an “intellectual attitude” (p. 285), both intentional and as a second nature; being reflexive in the “reflex” sense (p. 294).

The descriptive model by Buehl and Fives (2016), in combination with other extended models of epistemic cognition (Chinn et al., 2011; Chinn et al., 2014), allows us a clearer idea of what constitutes processes of knowledge generation that lead to more or less reflected epistemic products. Whereas the procedural part of epistemic meta-reflexivity is dissolved in this model, the 3R-EC framework illustrates that by reflecting on their own epistemic cognition and on the epistemic cognition of their students, pre-service teachers potentially acquire more sophisticated, evaluativist commitments that meet the challenges involved in social science education. As a concept of reflexivity that is both a process and the development of a disposition, this conception of reflexivity is auspicious in providing the lasting effects – the extension from teacher-preparation dry runs into real-life teaching practice – that have been missing from other conceptions.

## 7 CONCLUSION AND OUTLOOK

The concept of meta-reflexivity integrates procedural and static aspects in a framework that emphasizes uncertainty as an essential part of every perspective. In its reference to epistemic beliefs, the meta-reflexive approach introduced by Cramer et al. (2019) allows a conceptual connection to the PKP framework. Applying the normative dimension of epistemic beliefs to social science education questions, it becomes clear that evaluativism can be translated into practice in various ways, which necessitates a turn to more fine-grained, context-specific views on the generation of epistemic products. Teacher educators can utilize the frameworks to examine pre-service teachers’ epistemic thinking in simulated casework and, through the procedural part of epistemic reflexivity, support them in developing elaborate aims, ideals, and processes, which may enable meta-reflexivity in later practice. In the discussion of classroom scenarios, highlighting the various possible epistemic aims, values and justificatory standards of teachers and students may lead to more in-depth analyses of the cases at hand. Depending on the sophistication of epistemic aims and ideals, different reading material and discussion prompts may be appropriate. In courses, pre-service teachers may profit from directly discussing aspects of epistemic cognition: What epistemic aims do they, as aspiring teachers, set for themselves in trying to understand the situation? How do their thinking processes inform their interpretations, their view of the teacher, students, and subject matter? How does this analysis relate to the subject matters and the specific forms of knowledge social science education intends to convey? Question such as these express the complexities involved in applying theoretical knowledge to real-life situations. Open

reflection on these questions would support pre-service teachers in developing theoretically grounded *and* situation-specific alternative courses of action. This way, social science teacher education would both provide case-based teaching knowledge and at the same time foster a form of meta-reflexivity that contextualizes this knowledge. The project LArS.nrw (*Lernen mit Animationsfilmen realer Szenen sozialwissenschaftlicher Unterrichtsfächer*; learning with animated vignettes of real social studies lessons) aims at the development and evaluation of digital learning environments to promote meta-reflexive teacher education in the social sciences (Hahn-Laudenberg & Kindlinger, 2021). In preliminary tests, a variation of the ideas outlined in this article has been simulated in think-aloud interviews in which students first analyzed a classroom situation involving right-wing populist statements during a discussion. In these interviews, the students stated very different evaluations of the teacher's reactions, which would sometimes transform through confrontation with texts that offered new perspectives – e.g. reminders of how of different groups of students could be affected by the populist statements. However, to better examine the use of meta-reflective teaching in teacher education, further and deeper research is needed.

Qualitative research frameworks in epistemic cognition allow for deeper investigations into contextualized processes of generating and evaluating epistemic products like knowledge or understandings, as well as into epistemic change. I have tried to present a way of conceptualizing the process toward the objectives of a meta-reflexive teacher education in social science through descriptive models of epistemic cognition that eschew dichotomizations of “naïve” and “sophisticated” cognitions beyond situational contexts. However, if such frameworks are used to expand on some of the process-oriented aspects of meta-reflexivity and its different components and to connect them to its static dimensions, new possibilities of quantitatively measuring this context-derived epistemic reflexivity in comparable ways need to be conceptualized as well: First, as a revised and more contextualized perspective on the static objective of evaluativism in social science education, and second, as a way of capturing informed reflexivity as a disposition. I have argued that the principles of meta-reflexive professionalization are represented in its static dimension – the principles could thus inform a more fine-grained quantitative investigation. Existing instruments such as the scenario-based approach for measuring epistemic thinking (Barzilai & Weinstock, 2015), which employs a range of different factors of each level of epistemic beliefs, seem promising in this respect. This could further enable a tighter connection between the open concept of meta-reflexivity and highly structured, empirically oriented competence frameworks like the PKP.

However, it should be noted that this connection is not meant to not erase the differences between the theoretical approaches underlying the frameworks discussed in this article. Cramer (2020) differentiates the meta-reflexive approach from conceptions epistemic reflexivity like the 3R-EC model by pointing out that the latter assume more or less direct effects of reflexivity on teacher action, whereas the meta-reflexive approach refers to reflection on knowledge as a preliminary step toward action (p. 211). This

criticism is similar to the one often leveled at quantitatively oriented approaches in teacher education, and thus also pertains to the connection I describe with the PKP model, which conceptualizes teaching competences in terms of underlying factors. However, both theoretical approaches require further conceptualizations of how the forms of reflection they argue for can be described, empirically investigated and put into practice. Therefore, this article holds a complementarist perspective on this question.

The discussion in this article is limited to epistemic aspects of reflexivity in social science teacher education. The frameworks in this article are as yet of limited use in the description of what would constitute reflective practice in, for instance, deciding on action in complex critical classroom incidents that center more on conflicts of values than on systems of knowledge. However, the framework by Buehl and Fives (2016) recognizes that teachers usually have *both* epistemic and non-epistemic aims for their students as well as themselves. As political judgments, students' value judgments combine epistemic and non-epistemic components (Detjen et al., 2012); the delineation may not always clearly defined and can blur – as Hand (2007) demonstrates in applying the epistemic criterion for controversies to moral questions. Like factual judgments, prescriptive, normative judgments can be presented with varying degrees of certainty. Perspective-taking can be seen not only as an empathetic approach, but also as an epistemic process – as acquiring a representation of the world through someone else's eyes. This should not lead anyone to *reduce* value judgments to epistemic processes; judgments on how the world should be are non-representational and thus outside of our already wide definition of *epistemic*. The focus on epistemic cognition can therefore seem technical and detached from the concerns of social science education. However, within the field of epistemology, social and political issues, such as society's management of with the knowledge claims of marginalized groups (Fricker, 2007), have brought epistemology, ethics and political questions closer together. How we represent the world around us, what and who is included and excluded – is one epistemic question that return us to the heart of the subject. In social science teacher education, expanding the scope of investigation by examining pre-service teachers' epistemic cognition would be worth our while.

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