



## **UWL REPOSITORY**

**repository.uwl.ac.uk**

Variation in education doctoral students' conceptions of university teaching

Mimirinis, Mike ORCID: <https://orcid.org/0000-0003-1835-9348> and Ahlberg, Kristina (2020)  
Variation in education doctoral students' conceptions of university teaching. *British Educational Research Journal*. ISSN 0141-1926

<http://dx.doi.org/10.1002/berj.3669>

**This is the Published Version of the final output.**

**UWL repository link:** <https://repository.uwl.ac.uk/id/eprint/7230/>

**Alternative formats:** If you require this document in an alternative format, please contact:  
[open.research@uwl.ac.uk](mailto:open.research@uwl.ac.uk)

**Copyright:** Creative Commons: Attribution 4.0

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

**Take down policy:** If you believe that this document breaches copyright, please contact us at [open.research@uwl.ac.uk](mailto:open.research@uwl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

# Variation in education doctoral students' conceptions of university teaching

Mike Mimirinis<sup>a★</sup>  and Kristina Ahlberg<sup>b</sup>

<sup>a</sup>University of West London, London, UK; <sup>b</sup>University of Gothenburg, Gothenburg, Sweden

The development of doctoral students as university teachers has received substantially less attention compared with their development as researchers, with a similar deficit extending to research on how they experience and understand university teaching. This article reports the results of a phenomenographic study of education doctoral students' conceptions of teaching in higher education. Using samples from two education departments in England and Sweden, we conducted interviews to identify variation in doctoral students' experiences of university teaching. Analysis of the transcripts produced six qualitatively different conceptions of teaching: doctoral students conceptualised university teaching as a means of (A) transmitting knowledge, (B) presenting contrasting concepts of education, (C) communicating and engaging with students, (D) enabling students to apply knowledge and skills, (E) enabling students to interpret and compare concepts of education, and (F) promoting personal, professional and societal development and change. While in broad agreement with previous studies on university teachers' conceptions of teaching, the study offers a unique insight into how the subject of education is understood by doctoral students who teach. The findings also underline the need to introduce common frameworks of academic development for academics and doctoral students alike that prioritise ways of representing and engaging with the structure of the subject, rather than the acquisition of teaching skills.

**Keywords:** conceptions of teaching; teaching development; phenomenography; doctorate in education

## Introduction

Over the last three decades, the provision of doctoral degrees has increased in a number of countries (Pearson *et al.*, 2008; Altbach *et al.*, 2017). As a result, there have been renewed calls for attention to the purposes of doctoral education (Åkerlind & McAlpine, 2015), particularly with regard to a developing perception that the doctorate is too narrow in its learning outcomes (Clark, 1993). Studies have considered supervisory practices (Bastalich, 2015) and the formation of doctoral students' identities (Baker & Lattuca, 2010). Concurrently, a wealth of studies has explored students' development as researchers (Wisker *et al.*, 2003; Sinclair *et al.*, 2014), argued that they should become prepared for epistemological diversity (Pallas, 2001), and identified how they conceive of research (Stubb *et al.*, 2014). However, with a few exceptions

---

Corresponding author. School of Human and Social Sciences, University of West London, Boston Manor Road, Brentford, Middlesex, TW8 9GA, UK. Email: Mike.Mimirinis@uwl.ac.uk

(e.g. Hopwood & Stocks, 2008), the development of doctoral students as teachers is rarely prioritised. Moreover, very little is known about how doctoral students teach, and how they conceive of teaching after experiencing it as university teachers themselves. It is indicative that in an analysis of 995 papers on issues related to doctoral studies over 40 years, a mere 3% of the papers were on teaching, as opposed to 29% on doctoral programme design and 26% on doctoral experiences (Jones, 2013). In light of earlier assertions that teaching is often enhanced by changes in how teachers think about their own teaching (Dall'Alba, 1991), it is important to examine the relationship between doctoral students' conceptions of teaching and their teaching practice. Such an examination is necessary if we wish to understand and enhance doctoral students' teaching development, and consequently student learning.

Work on disciplinary differences has informed reconceptualisations of and improvements to higher-education teaching. There is an equal need for research on education as a field of higher-education provision that encompasses teacher training and broader knowledge about education domains. Little research exists on how academic education teachers think about their own teaching (Hau-Fai Law *et al.*, 2007), with no literature on those who aspire to become academic teachers *and* are enrolled on education doctoral programmes. In the UK, the results of a large-scale survey have underlined the importance of further work in this area: responses from 2,594 Ph.D. students in education indicated that 34% had 'taught or demonstrated' during their studies, 54% had received guidance and support on how to teach, and 61% had received formal training (Slight, 2017). It is unclear from the data at what stage of their doctoral studies these students received guidance and support, or the extent to which those who taught had received any support or formal training. While demands for the enhancement of support structures remain strong, there is little reflection on the quality and impact of existing structures for the teaching development of doctoral students in education.

If we accept that it is important to support the teaching development of education doctoral students, we first need to understand what they believe about university teaching and how this relates to their academic field. The next two sections address these issues: university teachers' conceptions of university teaching, and the relationship between content and pedagogy in the field of education.

### **Conceptions of university teaching**

Åkerlind (2004) argues that change in teaching is not likely without changes in the teacher's conception of teaching. Conceptions of teaching reflect personal theories derived from experience (Ramsden, 2003). Exposure to alternative conceptions of teaching is necessary to foster the development of more sophisticated conceptions (Norton *et al.*, 2005; Leger & Fostaty Young, 2014). Prosser *et al.* (1994) conducted a seminal phenomenographic study with academic chemistry and physics teachers, which proposed six conceptions. Teaching was understood as (i) transmitting the concepts of the syllabus, (ii) transmitting the teachers' knowledge, (iii) helping students to acquire the concepts of the syllabus, (iv) helping students to acquire teacher knowledge, (v) helping students to develop conceptions, and (vi) helping students to change conceptions. Subsequent studies investigated university teaching from the

teachers' perspective; core assumptions centred on the importance of understanding the meaning of teaching, and the intentional meanings through which teachers approach their teaching (Dall'Alba, 1991; Kember, 1997; Samuelowicz & Bain, 2001; Åkerlind, 2003). These studies identified a nexus of relationships between how teachers conceive of their teaching, their approach to teaching, and the quality of students' learning outcomes (Martin & Balla, 1991; Trigwell *et al.*, 1999). Some of the studies also directly explored the relationship between teachers' conceptions of teaching and the quality of student learning (e.g. Gow & Kember, 1993). Parallel to this stream of work, others sought to synthesise emerging studies on conceptions of teaching. In the first synthesis, Kember (1997) proposed two broad orientations to teaching: 'teacher-centred/content-oriented' and 'student-centred/learning-oriented' (p. 255). This synthesis was important in that, despite its limitations (Saroyan *et al.*, 2009), it provided an initial appraisal of studies from seven countries on conceptions of university teaching. It foregrounded the significance of teachers' ingrained beliefs and how these cannot be regulated by university quality control mechanisms. Additionally, Kember introduced the transitional conception of 'student-teacher' interaction, which is founded on the 'realisation that interaction between teacher and student is important' (p. 266). Building on Kember's synthesis, Åkerlind (2003) showed commonalities across studies on conceptions of teaching, but highlighted contrasting ontological perspectives on the nature of those conceptions: the conceptions can be seen as independent *or* related in a hierarchy, and by extension can be considered as stable characteristics *or* relational responses to the contextual parameters of the learning and teaching setting. González (2011) integrated the findings from a more recent cluster of phenomenographic and non-phenomenographic studies, and produced a further refinement of the distinction between stable and relational constructs by examining more closely the methodological approaches and disciplinary foci of the studies. See Table 1 for a summary.

None of the studies in these syntheses, however, addressed how doctoral students understand teaching, even though such students have substantial involvement in teaching assignments, particularly at undergraduate level. The first study to attempt to address this issue focused on engineering doctoral students. Ayala (2012) identified five categories of conceptions of teaching engineering. Teaching engineering was seen as a means of (i) delivering knowledge, (ii) helping students to understand and apply concepts, (iii) motivating students, (iv) helping students to learn how to approach problems, and (v) preparing students to make socially conscious decisions.

While these syntheses incrementally expanded our knowledge about how teachers understand teaching, a related strand of research looked at variation in understandings of the subject matter. Martin and Ramsden (1998) and Martin *et al.* (2000) asserted that how teachers approach their teaching is intimately related to what the teachers want their students to know (the 'object of study'). Teachers do not just present subject matter; they 'constitut[e] the subject matter as they teach it' (p. 409). Trigwell *et al.* (2005) identified qualitative differences in the ways academic teachers experienced changes in their own understanding of their subject. This ranged from experiencing change as increasing 'unproblematic knowledge' (p. 262) to altering or questioning the subject's theoretical framework. This line of work was refined by Prosser *et al.* (2005), who argued that a higher level of understanding of the subject

Table 1. Syntheses of literature on conceptions of university teaching

	Kember (1997) <sup>1</sup>	Åkerlind (2003) <sup>2</sup>	González (2011) <sup>3</sup>
<i>Content of synthesis</i>	Synthesis of 13, mostly phenomenographic, empirical studies.	Extends Kember (1997) by adding more recent work (e.g. Van Driel <i>et al.</i> , 1997).	Synthesis of post-Åkerlind (2003) work including non-phenomenographic studies.
<i>Contribution of synthesis</i>	Proposes range of teacher-centred/ content-oriented and student-centred/ learning-oriented conceptions. Identifies intermediate conception of teacher–student interaction.	Categorised studies on conceptions depending on whether these are seen as relational or stable characteristics.	Reports on dimensions of variation. Explores commonalities between phenomenographic and non-phenomenographic studies and places emphasis on teaching in the disciplines.

<sup>1</sup>Including Dall’Alba (1991), Pratt (1992), Prosser *et al.* (1994), Trigwell *et al.* (1994)—for a critique of the synthesis, see Saroyan *et al.* (2009).

<sup>2</sup>Including Pratt (1992).

<sup>3</sup>Including Åkerlind (2004) and Ashwin (2006).

matter is a necessary but not sufficient condition for a student-focused understanding of teaching.

### The relationship between content and pedagogy in the field of education

Until recently, it was widely accepted in advanced knowledge-based economies that the purpose of teacher education was to develop a solid foundation for the *trivium*: professional knowledge of the psychology, sociology and philosophy of education (Bernstein, 1990, 2000). For Bernstein, the *trivium* is the defining component of a regional mode of knowledge formed when vertical scientific discourses, concepts and methods encounter practical activities and their more horizontal forms of communication (Beach, 2005). Educators require support as they move from classrooms to higher-education settings: one Swedish collaborative study identified the need for the ‘development of a collaborative mindset’, ‘a teacher educator–researcher perspective’ and ‘critical self-awareness’ (Butler *et al.*, 2014). In a study exploring career paths among education doctoral students and early-career researchers in Sweden (Angervall & Gustafsson, 2016), the categorisations of students as ‘the invited’, ‘the useful’ and ‘the uninvited’ were used to describe the results of the vertical and horizontal structuring of education, and strategies to deal with institutional mission creep and performance culture within the field.

The relationship between content and pedagogy had been central to education research for centuries. However, Shulman (1986, quoting Ong, 1958) questions whether there has always been a division between the two, arguing that no such distinction existed in the medieval university. More recently, a number of research studies adopting the relational approach (Ramsden, 2003) have noted that how teachers

teach, and what theories they adopt, is closely associated with their conceptions of teaching as well as their conceptions of their subject (Hau-Fai Law *et al.*, 2007). Drawing on the experience of training compulsory education teachers, Shulman (1986) bridged the dichotomy between content and pedagogy by offering the notion of 'pedagogical content knowledge' (PCK). This notion is useful, as it examines how knowledge about one's subject and knowledge about pedagogical skills relate to each other rather than existing in isolation. In sharp contrast to the policy priorities of the day, Shulman noted that 'the teacher is not only a master of procedure but also of content and rationale and capable of explaining why something is done' (p. 13). PCK integrates disciplinary content knowledge in education with pedagogical knowledge, and involves teachers' understandings of how best to help students learn about their subject by using a range of instructional strategies. The theoretical framework of our study draws primarily on phenomenography, yet we see PCK's focus on the construction of subject matter, and its integration of content with pedagogical knowledge, as supplementary rather than antithetical to the core premises of phenomenography, particularly in its relational perspective on teaching and learning and its non-dualist epistemological stance.

While PCK advocates the importance of engaging with pedagogical knowledge, a different line of enquiry has emphasised the importance of teacher–student interaction and explored its benefits. Although authors from Hawkins (1974) to Noddings (2013) have pointed to the importance of relationships in teaching, research has paid less attention to how teachers establish pedagogical relationships with students, and how they use those relationships to engage students in learning (Grossman & McDonald, 2008). Hagenauer and Volet (2014) note that the teacher–student relationship has not been systematically researched; they propose that the relationship is context-dependent, and comprises an affective dimension and a support dimension (p. 374). Such interactions have reported benefits in non-conventional academic environments such as flipped classrooms (Sun & Wu, 2016); links have also been identified between teachers' instructional styles and the level and quality of students' academic engagement (Shaari *et al.*, 2014).

## Aims

The previous two sections have provided an overview of the literature on conceptions of teaching and connections between one's understanding of one's subject and one's experience of teaching in higher education (e.g. Prosser *et al.*, 2005). Our study aims to explore how doctoral students in the field of education experience and understand university teaching. In doing so, it makes a twofold contribution:

- It extends existing work on conceptions of teaching to include the experiences of doctoral students who teach.
- It addresses the lack of work on conceptions of teaching in the field of education.

No less importantly, our study is concerned with *variation* in the way education doctoral students experience and understand university teaching as practising teachers themselves. This is relevant because (i) an awareness of variation is important if we wish to improve how teaching is understood and can be enhanced, and (ii) how



education is constituted as a subject is intimately linked to how teachers teach the topics of the field.

## **The present study**

### *Context*

Students in England typically complete a Ph.D. before proceeding to a full-time position that encompasses research and teaching duties. Unlike in the vast majority of other subject areas, there has been a steady decline in the number of academic staff employed by higher-education institutions to teach education, mainly due to the reduction of government funding for teacher training (Locke, 2014; HESA, 2017). The proportion of teaching-only and research-only contracts combined now exceeds that of the traditional academic contracts that encompass both; this reflects a more general trend towards differentiation in the academic profession (HESA, 2017). There is a similar trend in Swedish higher education. The work of education academic staff can be divided into two overlapping strands and three activity fields. Academics work with either research and teaching or course management; they do so either within the field of education or its subdomains (pedagogical theory, psychology of education, special education, sociology of education), or within teacher education (Angervall & Beach, 2017). In the Swedish system, doctoral students must secure funding for the whole 4-year programme prior to admission. This enables improved working conditions for Ph.D. students, more stringent selection criteria, and a greater degree of integration with departmental structures and functions. In the context of our research, the English department served primarily as a regional provider of teacher training, while the Swedish department combined this mission with an aspiration to compete at national and international levels in terms of research productivity.

### *Methodology*

This study extends the phenomenographic approach to education doctoral students' experiences of university teaching. It describes the phenomenon from a second-order perspective (Marton & Booth, 1997)—that is, from the perspective of education doctoral students who teach. The approach can illuminate qualitative differences in how phenomena are experienced in higher education. It focuses on variation in understandings of these experiences, and it reveals how this variation is structured and how the understandings are hierarchised. We chose not to deploy predetermined, theory-based constructs. We made this choice because the role of doctoral students with teaching responsibilities combines elements of both student identity *and* teacher identity. More importantly, while it was important to maintain an overview of the phenomenon as a whole, it was equally important to break down the parts of the phenomenon (i.e. the variation in how different individuals experienced the same phenomenon in two different contexts). We therefore focused on education doctoral students' specific teaching experiences in higher education, to elicit accounts of those experiences. The research question was formulated as follows: What are the qualitatively different ways in which education doctoral students conceptualise teaching in

higher education? To answer this question, we adopted the research approach of phenomenography, which encompasses both an epistemological framework and a set of techniques to generate and analyse data (Marton, 1986; Marton & Booth, 1997).

Since it was our methodological intention to maximise variation within the experiences of our participants, we invited doctoral students who taught diverse topics within education, often encompassing interdisciplinary perspectives. Our selection of Swedish and English contexts was informed by the same methodological rationale. The sampling therefore was not intended to support comparative research or report on cultural, national or organisational differentials. We recruited doctoral students in the two different countries so that the interviews would capture a wider range of experiences of teaching education at university level. This logic also informed our choice of one research-intensive and one teaching-focused institution, along with the range of students' teaching experiences, their doctoral modes (Ph.D. or Ed.D.), their length of experience of teaching in higher education, and their diverse fields of expertise within the wider education domain.

We then decontextualised the results, and established a reasonable claim to knowledge not on the basis of generalisability or comparability, but in terms of the findings themselves. Since a phenomenographic study typically requires a sample of 15–20 participants, we decided that focusing on doctoral students from one discipline, rather than from several, would strengthen our claim to discipline-specific knowledge. The data were therefore collected by interviewing doctoral students in a research-intensive education department in Sweden and a teaching-focused education department in England.

### *Study participants*

Our sample comprised 18 doctoral students (P01 to P18). Eleven doctoral students were recruited from the Swedish university, and seven from the English university. The Swedish students were enrolled on Ph.D. programmes, and the English students on Ph.D. and Ed.D. programmes. Only participants with teaching experience in a higher-education context were considered eligible for interview. Our participants at the Swedish university were all registered as full-time students with a commitment to undertake limited university teaching. Seven of the 11 interviewees had prior teaching experience of between 1 and 10 years in compulsory education settings. Five of the participants at the English institution were enrolled as part-time students, and two as full-time. Two were employed full-time, two part-time, and three as sessional lecturers. In terms of their experience of working in compulsory education, three had worked for up to 11 years, one had worked for several years but not as a teacher, and three had no experience of teaching in a compulsory education setting (early years, primary or secondary). Fifteen interviews were conducted in English (by the first author); three were conducted in Swedish (by the second author) and subsequently translated into English. Neither of the authors supervised the research or teaching of any of the study participants. Table 2 provides an overview of the study participants' characteristics. Data about gender—there were 12 female and 6 male students—have been disaggregated from the other characteristics to preserve the participants' anonymity.



Table 2. Characteristics of study participants

Doctoral student	Institution	Teaching area	Length of teaching experience in higher education (years)
P01	Sw	Teacher training	0.4
P02	Sw	Teacher training & education for sustainable development	2
P03	Sw	Teacher training	0.5
P04	Sw	Teacher training & pre-school training	6
P05	Sw	Teacher training & adult and working life	0.2
P06	Sw	Teacher training & adult and working life	2
P07	Sw	Teacher training, adult and working life & international education	2
P08	Sw	Teacher training & pre-school training	5
P09	Sw	Teacher training	13
P10	Sw	Teacher training & adult and working life	6
P11	Sw	Teacher training	2
P12	En	Primary education	1
P13	En	Early years & primary education	0.5
P14	En	Early years education	6
P15	En	Science education	2
P16	En	Computing in education	4
P17	En	Business education	27
P18	En	Primary education	2

### *The interviews*

The students who accepted the authors' invitation participated in semi-structured interviews. The interview protocol featured questions that aimed to reveal the structure of their conceptions of teaching, that is, their referential and structural aspects: what they were experiencing *and* the meaning they attached to that experience (Harris, 2011). The focal point of each interview was the interviewer asking the student to recall a typical teaching session. Additional questions included: What does teaching mean to you? What can be achieved with teaching? We also used probing questions, such as: What were you hoping to achieve there? What makes you say that? Why is that important? The interviews lasted between 30 and 65 min. They were audio-taped, and then transcribed by a third party. The three interviews in Swedish were simultaneously translated and transcribed by a bilingual individual who was familiar with the research approach. Two pilot interviews were conducted with Swedish doctoral students and were ultimately included in the analysis.

### *Analysis*

The purpose of phenomenographic analysis is to discern *variation* in the ways individuals in one group experience a given phenomenon. Demographic differences among participants are useful insofar as they help to maximise the variation of these experiences. The analysis aims to assign *collective meaning* (Harris, 2008) to the experiences of the group as a whole, rather than to attribute specific meanings or understandings

of the phenomenon to individuals with specific characteristics (which in this study might include gender, years of teaching experience, enrolment in an English or Swedish programme, full-time or part-time mode, etc.). On a practical level, this meant that all 18 transcripts were collated after being transcribed and checked for accuracy. Both authors independently read the collated transcripts several times, and marked meaningful utterances that revealed elements of the structure of conceptions of teaching. The 'meaningful units' we had marked out constituted the 'pool of meanings' (Marton & Booth, 1997; Booth & Ingerman, 2002). The pool of excerpts was read by each author, and through numerous iterations, similar excerpts were grouped and regrouped until they presented solid, hierarchically arranged and logically related categories of description (Mimirinis, 2019). In the last round of analysis, the focus shifted from consolidating the categories of description to ascertaining the structure of the outcome space of education doctoral students' conceptions of teaching.

## Results

The analysis of the transcripts produced six categories of description. Teaching could be viewed by education doctoral students as a means of:

- A Transmitting knowledge;
- B Presenting contrasting concepts of education;
- C Communicating and engaging with students;
- D Enabling students to apply knowledge and skills;
- E Enabling students to interpret and compare concepts of education;
- F Promoting personal, professional and societal development and change.

Each category of description is explained in more detail in the following sections, and interview excerpts illustrate key aspects of the conceptions. Each excerpt in Table 3 is attributed to a study participant (P01, P02, etc.).

### *Category A: Teaching as a means of transmitting knowledge*

Category A represents the education doctoral students' view of teaching as a means of transmitting content, knowledge or the syllabus. The latter is determined by formal requirements imposed by the university. In this category, the teacher is the only party that transmits knowledge. It is essential that the teacher is seen as a content expert and projects this to students; the teacher must also stay abreast of developments in the field so that they can examine whether there is a need to modify the existing body of knowledge. Teaching is about a topic or theme that '*shall be taught*' (Sw-P04). The teacher decides what counts as appropriate knowledge, and what counts as appropriate pedagogies for the transmission of this knowledge. They set educational goals and direct students to appropriate resources and literature. In this process, students gain or '*acquire*' (Sw-P06) what is offered as content, and assimilate it. Notions of knowledge consistent with this category of description point to a static, fixed, non-dynamic understanding of the nature of the knowledge offered.

Table 3. Categories of description

Category	Description	Indicative excerpts
A	Transmitting knowledge	<p><i>There is someone who transfers knowledge. [This] doesn't have to be in a social situation—but maybe [it's] good if it is. [I'm a] little uncertain. There are schools with one-to-one teaching, but most often in larger groups. There must be something to teach about. There must be something in the person who shall be taught as well—[they] must become something. [It's important] that the person who shall teach has the correct knowledge for their task. The person who shall be taught [must be] prepared, at the right level. (Sw-P04)</i></p> <p><i>Yes, well. I think that it is an opportunity for students to help to gain knowledge. That is why we have teaching. It's about helping them to process literature, assimilate knowledge. (Sw-P04)</i></p> <p><i>For myself, teaching can give... greater possibility to really acquire the content in course literature, as I suppose it is intended to acquire the course content. (Sw-P06)</i></p> <p><i>You have to be knowledgeable about what is happening, not just keeping myself in a box. I try to be very current with everything that is going on. So that helps me to be able to teach the course: knowledge. (En-P13)</i></p>
B	Presenting contrasting concepts of education	<p><i>Because as a teacher I chose the content and I chose the form, so because it was open: I just had a topic, a theme and I'm choosing, I'm facilitating and guiding... basically I'm giving the lens and the perspective to look at or sometimes I'm talking about several perspectives—you can look [at something] from this angle, or this theory offers this perspective and another theory this perspective, so I think I talk a lot about perspectives and I also say... when I bring my content to the day's lecture, this is my way of seeing based on somebody's research or based on my perspective... so yeah, the teacher brings some perspective. (Sw-P07)</i></p> <p><i>Well, I have to refer to my own subject then and my courses because, I mean, at the university [teaching is] many things, it's different professions and being a researcher. But in my courses, well, it's both concepts and theories about different phenomena but it's also two ways of understanding the world, I think. Well, the lecturing has this important function of displaying or presenting some central concepts of a subject or a phenomenon. So if we can do that in a good way, when [the students] then... engage physically or in doing something or [in] doing their own analysis. I think that they can deepen their understanding by saying, while they're doing their analysis, 'oh, well this must be what she talked about yesterday' or 'now I understand what she talked about this afternoon' so I think it reinforces the increase of knowledge or insights or understanding. (Sw-P10)</i></p>

Table 3. (Continued)

Category	Description	Indicative excerpts
C	Communicating and engaging with students	<p>Teaching basically means to me, I would say, engaging with the students, working around... what I would call the wicked problems, or hard to define problems, complex problems. Relating to education, I don't see myself as coming [up] with final solutions, because the complex problems are also problems I deal with within research and my everyday life. It's more that I present ideas or conceptual tools or theories, and then we work together: how can we together begin to make sense of these questions, especially around sustainability, climate change, but also democracy, so for justice and so on, in relation to education? I think it's crucial; it's working with the students—that's what I'm aiming for—because [I feel] like I get more out of it myself, also, when we're together and trying to handle this question in relation to education. (Sw-P02)</p> <p>Also, [teaching is] a possibility to communicate with a larger group of people, and test which techniques actually work and in which context. That possibility I don't have except during teaching practice. It is read about purely theoretically, but it is first in meeting with the students that one has [the] possibility actually to see what it means... in practice... One has a big help understanding the bigger meaning with the different courses that [the students] learn, and [also the] possibility to communicate with more experienced researchers and teachers, with help of the teaching forum. (Sw-P06)</p> <p>[Teaching is] like a flow and exchange of ideas because people... I think sometimes I come and lecture about something. I know a lot of students know this but just to discuss this in this particular context with these particular people in the group... stimulates other discussions. So basically, it's first [about] the flow of ideas, I would say, [about] communication and then [the] meeting of people in general. So I don't like thinking about these roles of teacher/students... it's maybe more [a] flat understanding... not [a] hierarchical understanding [of] teaching these roles. I am trying to avoid... that's what I'm understanding now, I'm trying to avoid... being a teacher. That's why maybe... it's a discussion [between] equal people... on [an] equal level. (Sw-P07)</p> <p>Teaching is being able to share your experiences. The students are not just blank slates. They come in with their own ideas as well. So it's not for me to go in there and [teach the subject] to them, it's also to solicit... their ideas. It's a discussion. (En-P13)</p>

Table 3. (Continued)

Category	Description	Indicative excerpts
D	Enabling students to apply knowledge and skills	<p>[To teach is] to be a facilitator; to enable the students to acquire the knowledge, skills and abilities that are given in the steering documents. [It is] also [to awaken] their motivation and interest so they can go further with this. It depends on where they are in the education, obviously. [Teaching is to awaken their] curiosity and interest; [to] encourage them to [have their] own learning and initiative, so carry their own learning forward. (Sw-P06)</p> <p>I think it's both [to] accumulate your knowledge about something and it's also to increase your ability to act, to do something. I mean, if you study to be a teacher, for example, or to be a doctor or to be some kind of... profession[al]... then it's to acquire skills or to develop your skills in doing something, but it's also to accumulate your understanding of something, [your] knowledge about something, so it's about knowing more about some things and it's also about the ability to do something. (Sw-P10)</p> <p>Well, for example, in the courses on assessment and grading that I have taught, well, there are, well, a few central concepts that I want them to understand, relating to... the theories in research on these issues. But it's also important that the students understand how to apply these concepts in relation to their own practice. So I want them also to practice some aspects of assessment and grading, in relation to student work. (Sw-P11)</p> <p>[I try] to give the students a better understanding of the context, the topic of their lesson or whatever I'm teaching, it depends [on] the aim and purpose of the lesson... together [we] try to find a deeper understanding of the issue.</p> <p>To maximise the benefit, to solve their... either their question or to widen their understanding of... the topic, the context of their issue. It's different because the lessons I've been [teaching], the courses I've been teaching [are] so different: [some are] about nutrition, [some are] about... pedagogy... it is totally different, [it requires] different epistemological [approaches], mixed disciplinary [approaches]—[it requires] two different ways of teaching, actually. Where you are supposed to have the right answer in some courses and when you're just supposed to be a mentor in other[s]... [these are] two ways of looking at knowledge, I think. (Sw-P08)</p>
E	Enable students to interpret and compare concepts of education	

Table 3. (Continued)

Category	Description	Indicative excerpts
F	Promote personal, professional, societal development and change	<p>[One of the reasons I am teaching is] to learn, to develop yourself. . . I hate to not learn. That's why I'm teaching because when you learn stuff together with others you learn even more. You learn about your pupils as individuals or how to teach a group or about the subject itself, because some students ask you difficult questions. And I hope that my students also feel that they really want to learn because they want to understand, because they want to develop. . . Maybe not every student wants to develop in my field but I want them to have an experience of my field so they can choose it or not choose it. It's their own free [choice]. But [at the] secondary level you have access to everything, so then after that you can say, 'I'm interested in that and I'm not so interested in that, and this is what I would choose because that's what I'm most interested in'. But it's not only about development and interest, it's also [that] teaching can give you access to that kind of world, so it does not feel like a strange place for you. Because if you feel that science is only for Einsteins then you will not feel that you have access. (Sw-P03)</p> <p>I think a good teacher has the potential to change somebody's life. . . But I think a lot of the students here, well, on my course anyway, are very young, [and] don't have [the sort] of commitment [that is necessary], so they have an opportunity to really kind of grow and develop in the three years that they are here personally and academically. (En-P12)</p> <p>The purpose of teaching is to bring about a desirable change in knowledge or in behaviour. It depends on the perspective/context. There must be a change in understanding. (En-P14)</p>



*Category B: Teaching as a means of presenting concepts of education*

In this category of description, the teacher remains at the centre of the teaching process, but knowledge and content are ‘presented’ rather than ‘transmitted’ to students. Content is perceived more fluidly and comprises ideas and concepts of education, rather than facts, skills or practices. The teacher sets the goals of teaching; however, it is important for them to understand students’ intentions and prior learning experiences. Feedback and reflection are recognised as peripheral parts of the teaching process. While the teacher is still the knowledge expert, there is an incremental shift of emphasis from transmission to facilitation and student guidance. The teacher is perceived as *‘talking about several perspectives’* (Sw-P07). Pedagogical approaches that the teacher employs are a way to reinforce *‘the increase of knowledge or insights or understanding’* (Sw-P10). Accounts consistent with this category describe knowledge in education as more relative and negotiable, acknowledging that contrasting ideas can coexist within the same body of knowledge.

*Category C: Teaching as a means of communicating and engaging with students*

Category C represents a view of teaching as *‘engaging with the students’* (Sw-P02). The relationship between teacher and student is bidirectional rather than monodirectional; more importantly, it is more of a relationship between equals. There is an ‘interwovenness’ in every teaching situation, where the teacher’s conceptual ideas and *‘experiences become interwoven with the students’ experiences around a shared concern or a shared question’* (Sw-P02). Open, spontaneous communication is essential. Communication channels exist between teacher(s) and student(s), as well as among students themselves. This is a key element of what is essential in teaching: the sharing of knowledge, experiences and meaning, and *‘gather[ing] around different interests’* (Sw-P06). The shift from the transmission model to a more interactive conception of teaching is captured in a quotation from Sw-P06: *‘[teaching] becomes a dialogue and not just a lecture in the traditional sense where one talks and others take notes’*. Teaching is seen in terms of *‘being able to share your experience’* and students as *‘not just blank slates’* (En-P13). The teacher therefore aims to solicit students’ ideas and to promote discussion.

*Category D: Teaching as enabling students to apply knowledge and skills*

In Category D, teaching is a means of enabling students to apply educational knowledge and skills. This is the first category of description where the meaning of teaching is clearly understood in terms of student learning. It is the students who benefit from the teaching process, and this conception emphasises enabling students to apply the relevant educational knowledge and skills. Teaching aims to enable them to *‘learn the profession for real; they don’t just read about it, they can perform in the end’* (Sw-P01). This category of description also contains the first traces of a developmental conception. Students are expected to express their own opinions or perspectives on education topics. Motivating students is a crucial component of teaching strategies, as is arousing *‘curiosity and interest’* (Sw-P06). Links to professional practice in schools become

important in this conception. Teaching is successful if education students understand how to '*apply... concepts in relation to their own practice*' (Sw-P11).

*Category E: Teaching as enabling students to interpret and compare concepts of education*

In this category, teaching is a means of enabling students to interpret and compare concepts of education. University teaching should focus on trying '*to find a deeper understanding of an issue*' (Sw-P08). The focus shifts from enabling students to acquire skills to interpreting and comparing concepts. These concepts of the field are positioned within the context where they emerged, and students are encouraged to examine them from different angles. Teaching is also a way to '*learn actually about learning*' and '*to work with feedback from the students*' (Sw-P10). The prime concern is to '*help students to learn... things that are meaningful and challenging*' (Sw-P11), the emphasis therefore transcends the application of skills evident in Category D. In that respect, it is essential that teaching involves the effective and fruitful management of '*the many different challenges... that exist during teaching in such a way that students are engaged in things that help them learn as much as possible*' (Sw-P11).

*Category F: Teaching as promoting personal, professional and societal development and change*

The sixth category of description represents the most advanced conception of university teaching. A prerequisite of this conception is an understanding of skills (Category D) and concepts (Category E) of education, but there is a shift in this conception to encompass change in the understandings of phenomena. The shift is captured in the account of one Swedish doctoral student:

*So maybe the topic for one lecture is the question of some part of ESD [Education for Sustainable Development] or democracy or social justice in relation to education, so you have that as a larger, 'Okay, we're going to try to understand this in relation to education', so that's the larger framing. I can have a topic for it, for the lecture, of course, and as the teacher, I set like [the] initial frame, but that framing will also be somewhat renegotiated throughout. It will still be within the topic, but exactly how we understand social justice in relation to education can very well change somewhat or shift a little bit. (Sw-P02)*

The focus is on development and change. The purpose of teaching is '*to bring about a desirable change in knowledge or in behaviour. There must be a change in understanding*' (En-P14). A change in understanding is associated with a change in the individual, and in the social reality of which they are a part. As one interviewee eloquently affirmed: '*teaching can give you access to that kind of world, so it does not feel like a strange place for you*' (Sw-P03). The development and change of personalities as a result of teaching appears in areas such as students' '*self-esteem*' (Sw-P08), their ability to '*fulfil their own potential*', and their '*empowerment*' and '*confidence*' (En-P12). In this conception of teaching, students' academic and personal development are intrinsically interconnected.

The results of the analysis produced six conceptions of university teaching held by education doctoral students. Table 4 depicts the referential and structural aspects of

Table 4. Outcome space: referential and structural aspects of education doctoral students' conceptions of teaching

Referential aspect (' <i>what</i> ' of the conception)	Structural aspect (' <i>how</i> ' of the conception)		
	Knowledge <i>static</i>	Learning <i>dynamic</i>	Change <i>extended</i>
A: Transmitting knowledge	A		
B: Present contrasting concepts of education	B		
C: Communicating and engaging with students		C	
D: Enabling students to apply knowledge and skills		D	
E: Enabling students to interpret and compare concepts of education		E	
F: Promoting personal, professional, societal development and change			F

these conceptions, and represents the hierarchical, logically related and inclusive relationship between them. The first two conceptions (A, B) are less sophisticated, since the doctoral students' awareness centres on knowledge. On the contrary, the following three conceptions (C, D, E) represent a shift of focus, from knowledge to students' learning (communication and engagement, enabling the application of skills/knowledge, or enabling the creation of meaning). Finally, the last conception (F) is the most complete: the focus of doctoral students' awareness shifts from student learning to development and change, in the concepts taught, in the individual, in the profession and in society. This most advanced conception subsumes the previous five, and demonstrates the expansion of the focus of awareness from knowledge to student learning, and from there to development and change. Doctoral students whose accounts demonstrated an awareness of university teaching as a process of change also demonstrated an awareness of university teaching as a means of knowledge transmission (category A), as well as the other four less advanced conceptions. Conversely, doctoral students whose accounts understood university teaching as a means of knowledge transmission lacked awareness of more advanced conceptions (e.g. teaching as a means of communication and exchange). It was not unusual to encounter fragments of two or three conceptions within the same interview.

## Discussion

The results demonstrate a continuum of conceptions, ranging from content-oriented and teacher-focused conceptions of teaching, to learning-oriented and student-focused conceptions. While this continuum is in broad agreement with previous studies of conceptions of teaching (Prosser *et al.*, 1994; Kember, 1997; Kember & Kwan, 2000; Åkerlind, 2003; Ashwin, 2006; González, 2011), our study makes a contribution on two fronts. First, it provides a detailed account of conceptions in the field of education; second, it extends the limited literature on how doctoral students experience and understand university teaching.

In particular, doctoral students described teaching as an interactive process, which supports Grossman and McDonald's (2008) perspective on teaching as an interactive practice that requires not just knowledge, but craft and skill. There are also broad similarities with Ayala's (2012) study of engineering doctoral students' conceptions of teaching. Both of these studies identified a social/collective dimension in the most advanced conceptions, and this dimension is even more strongly evident among education doctoral students. Moreover, our findings enrich existing work on teachers' conceptions of teaching, as summarised in the syntheses presented in Table 1. Previous studies have not highlighted potential benefits to teachers, nor have they uncovered the variation in academics' perceptions of teaching's potential impact on the broader field, community or society. An exception is Pratt's (1992) focus on social reform as the defining feature of one of five perspectives on teaching. The most complex category in our study presents an element of 'changing society' and resonates with similar conceptions among undergraduates (Ashwin *et al.*, 2016). More importantly, this conception echoes Warren *et al.*'s (2016) argument that it is possible and feasible to foster collaborative learning, and to create a community that embraces project members' whole selves, where students learn to develop identities as community-engaged scholars committed to transforming both their school and their society.

In our data, it was rare to find conceptions that included both content *and* pedagogy (Shulman, 1986). Rather, the descriptions were mainly of content *or* pedagogy as the meaning of teaching. It can be argued that the reported conceptions reflect both how the subject (education) is understood *and* the meaning attached to teaching as a craft. Student–teacher interaction was also identified as a key focus of teaching (Category C). Our study therefore corroborates those empirical studies that have reported an interactive conception as intermediate between teacher-focused and student-focused conceptions. Several studies have reported variation in this interactive, dialogic conception (e.g. Trigwell & Prosser, 1996; Kember, 1997), while others have not included such a conception (Prosser *et al.*, 2005; González, 2011). In light of this, and our use of samples from two different countries, we argue that this conception is salient in the field of education, and potentially also in other disciplines.

Our results are also in line with Dahlgren and Chirac's (2009) contention that an 'academic view of teaching' integrates practical experience with theoretical reflection, and that this view of teaching contributes to professional identity formation among doctoral students. In light of the conceptions reported above, it is worth revisiting Yuan's (2015) recommendation that close links be established between teacher education programmes and higher-degree programmes, in order for teacher educators to receive effective guidance and preparation. Several of the dimensions found in qualitatively different categories of description corroborate Dinkelman *et al.*'s (2012) argument that 'shared learning, systematic and intentional reflection, shared deliberation, critique, and community... should be at the heart of high-quality teacher education similar to ways in which emerging scholars and teacher educators develop their identities and pedagogies' (p. 186). Additionally, the wide range of conceptions of teaching we have found in this study—as well as those reported in similar studies with academic teachers—underlines the need to integrate doctoral students' development programmes with those offered to academic staff. This need was identified in earlier studies, and has been evaluated in fully integrated study programmes for doctoral

students (Harland, 2010). We argue that the current provision of support for doctoral students often serves university policies, internal procedures and organisational efficiencies, rather than promoting a teaching and learning culture that offers scholarly support for students' development as academic teachers. Examples of current provision are often reactive to sectoral and university initiatives, and result in tokenistic, compartmentalised approaches to doctoral students' academic development. Such approaches abound in the provision of 'short' workshops or one-off events facilitated by faculty teaching champions and academic development units.

It is equally important to reconsider *what* is taught on these teaching support and development programmes. McLean and Ashwin (2016) argue that knowing about and understanding the generic aspects of student learning and teaching ('pedagogical knowing', p. 87) are necessary but not sufficient, because they do not encompass substantive content knowledge. Consequently, they argue that PCK is neither student- nor teacher-centred; rather, it is about bringing particular groups of students into relationship with particular bodies of knowledge. We extend this argument to assert that achieving PCK is crucial if we are to understand the structure of content knowledge in education. This will enable suitable representations of these skills and concepts that can be understood by undergraduate and postgraduate education students. In that respect, the current study offers an insight into the structure of what is perceived to be taught on education programmes—predominantly, a range of relevant *skills* and *concepts*. It also offers a basis from which to review academic development initiatives for education doctoral students, and opens up dialogue around questions such as: What is taught on education programmes? How do the elements of the taught content relate to each other, and how/why are these elements chosen? To what extent do such initiatives allow doctoral students to critically explore the theoretical perspectives in the taught curriculum, including pedagogical knowing, and to question the knowledge perspectives embedded in them?

## Conclusions

While our study provides further evidence of a continuum of approaches from the teacher-focused to the student-focused, it makes distinctive contributions and enriches our understanding in the following areas:

- It supports the salience of an intermediate conception of teaching as an exchange and interaction between teacher and student.
- It delineates the subject matter of the field of education, and identifies two key constituents: education as a set of skills, and education as a set of (often interrelated) concepts.
- It provides a detailed, subject-specific account of conceptions of teaching in the field of education.
- It extends the sparse literature on how doctoral students experience and understand university teaching—an area that is often overlooked, or is approached in organisational terms rather than in terms of academic development.

To conclude, meaningful teaching experiences for education doctoral students appear to involve engagement with the structure and nuances of the subject, an

awareness of the various pedagogies that can facilitate engagement with the subject, and an understanding of teaching as an interactive craft that can transform knowledge in the field. Such a transformation might also extend to doctoral students themselves, as active agents in the university and beyond.

## Ethical guidelines

The study was conducted in line with BERA's Ethical Guidelines for Educational Research.

## Conflict of interest

The authors report no conflict of interest.

## Data availability statement

Research data are not shared.

## References

- Åkerlind, G. S. (2003) Growing and developing as a university teacher—variation in meaning, *Studies in Higher Education*, 28(4), 375–390.
- Åkerlind, G. S. (2004) A new dimension to understanding university teaching, *Teaching in Higher Education*, 9(3), 363–375.
- Åkerlind, G. & McAlpine, L. (2015) Supervising doctoral students: Variation in purpose and pedagogy, *Studies in Higher Education*, 42(9), 1686–1698.
- Altbach, P. G., Reisberg, L. & de Wit, H. (Eds) (2017) *Responding to massification: Differentiation in postsecondary education worldwide* (Rotterdam, Sense Publishers).
- Angervall, P. & Beach, D. (2017) Dividing academic work: Gender and academic career at Swedish universities, *Gender and Education*, 32(3), 347–362.
- Angervall, P. & Gustafsson, J. (2016) Invited to academia. Recruited for science or teaching in education sciences, *Scandinavian Journal of Educational Research*, 60(6), 663–678.
- Ashwin, P. (2006) Variation in academics' accounts of tutorials, *Studies in Higher Education*, 31(6), 651–665.
- Ashwin, P., Abbas, A. & McLean, M. (2016) Conceptualising transformative undergraduate experiences: A phenomenographic exploration of students' personal projects, *British Educational Research Journal*, 42(6), 962–977.
- Ayala, A. T. T. (2012) *Future engineering professors' conceptions of learning and teaching engineering*. Unpublished thesis, University of South Florida.
- Baker, V. L. & Lattuca, L. R. (2010) Developmental networks and learning: Toward an interdisciplinary perspective on identity development during doctoral study. *Studies in Higher Education*, 35(7), 807–827.
- Bastalich, W. (2015) Content and context in knowledge production: A critical review of doctoral supervision literature, *Studies in Higher Education*, 42(7), 1145–1157.
- Beach, D. (2005) The problem of how learning should be socially organized: Relations between reflection and transformative action, *Reflective Practice*, 6(4), 473–489.
- Bernstein, B. (1990) *The structuring of pedagogic discourse* (London, Routledge).
- Bernstein, B. (2000) *Pedagogy, symbolic control and identity: Theory, research and critique* (Lanham, MD, Rowman & Littlefield).
- Booth, S. & Ingeman, Å. (2002) Making sense of physics in the first year of study, *Learning and Instruction*, 12(5), 493–507.



- Butler, B. M., Burns, E., Frierman, C., Hawthorne, K., Innes, A. & Parrott, J. A. (2014) The impact of a pedagogy of teacher education seminar on educator and future teacher educator identities, *Studying Teacher Education*, 10(3), 255–274.
- Clark, B. R. (1993) *The research foundations of graduate education: Germany, Britain, France, United States, Japan* (Berkeley, CA, University of California Press).
- Dahlgren, M. A. & Chiriack, E. H. (2009) Learning for professional life: Student teachers' and graduated teachers' views of learning, responsibility and collaboration, *Teaching and Teacher Education*, 25(8), 991–999.
- Dall'Alba, G. (1991) Foreshadowing conceptions of teaching, *Research and Development in Higher Education*, 13, 293–297.
- Dinkelman, T., Cuenca, A., Butler, B., Elfer, C., Ritter, J., Powell, D. *et al.* (2012) The influence of a collaborative doctoral seminar on emerging teacher educator-researchers, *Action in Teacher Education*, 34(2), 172–190.
- González, C. (2011) Extending research on “conceptions of teaching”: Commonalities and differences in recent investigations, *Teaching in Higher Education*, 16(1), 65–80.
- Gow, L. & Kember, D. (1993) Conceptions of teaching and their relationship to student learning, *British Journal of Educational Psychology*, 63(1), 20–33.
- Grossman, P. & McDonald, M. (2008) Back to the future: Directions for research in teaching and teacher education, *American Educational Research Journal*, 45(1), 184–205.
- Hagenauer, G. & Volet, S. E. (2014) Teacher–student relationship at university: An important yet under-researched field, *Oxford Review of Education*, 40(3), 370–388.
- Harland, T. (2010) Educating the doctoral student: Don't forget the teaching, in: M. Walker & P. Thomson (Eds) *The Routledge doctoral supervisor's companion: Supporting effective research in education and the social sciences* (London, Routledge), 292–299.
- Harris, L. R. (2008) A phenomenographic investigation of teacher conceptions of student engagement in learning, *The Australian Educational Researcher*, 35(1), 57–79.
- Harris, L. R. (2011) Phenomenographic perspectives on the structure of conceptions: The origins, purposes, strengths, and limitations of the what/how and referential/structural frameworks, *Educational Research Review*, 6(2), 109–124.
- Hau-Fai Law, E., Joughin, G., Kennedy, K. J., Tse, H. & Ming Yu, W. (2007) Teacher educators' pedagogical principles and practices: Hong Kong perspectives, *Teaching in Higher Education*, 12(2), 247–261.
- Hawkins, D. (1974) *The informed vision and other essays* (New York, Agathon Press).
- HESA (2017) *Staff in higher education 2016/17* (Cheltenham: Higher Education Statistics Agency).
- Hopwood, N. & Stocks, C. (2008) Teaching development for doctoral students: What can we learn from activity theory?, *International Journal for Academic Development*, 13(3), 187–198.
- Jones, M. (2013) Issues in doctoral studies—forty years of journal discussion: Where have we been and where are we going?, *International Journal of Doctoral Studies*, 8(6), 83–104.
- Kember, D. (1997) A reconceptualisation of the research into university academics' conceptions of teaching, *Learning and Instruction*, 7(3), 255–275.
- Kember, D. & Kwan, K.-P. (2000) Lecturers' approaches to teaching and their relationship to conceptions of good teaching, *Instructional Science*, 28(5), 469–490.
- Leger, A. B. & Fostaty Young, S. (2014) A graduate course on teaching and learning in higher education: Influences on conceptions of teaching and learning, *The Canadian Journal for the Scholarship of Teaching and Learning*, 5(1), 1–13.
- Locke, W. (2014) *Shifting academic careers: Implications for enhancing professionalism in teaching and supporting learning* (York, Higher Education Academy).
- Martin, E. & Balla, M. (1991) Conceptions of teaching and implications for learning, *Research and Development in Higher Education*, 13, 298–304.
- Martin, E., Prosser, M., Trigwell, K., Ramsden, P. & Benjamin, J. (2000) What university teachers teach and how they teach it, *Instructional Science*, 28(5/6), 387–412.
- Martin, E. & Ramsden, P. (1998) Approaches to teaching creative writing, in: B. Dart & G. Boulton-Lewis (Eds) *Teaching and Learning in Higher Education* (Melbourne, Australian Council for Educational Research), 26–41.

- Marton, F. (1986) Phenomenography—a research approach to investigating different understandings of reality, *Journal of thought*, 21(3), 28–49.
- Marton, F. & Booth, S. A. (1997) *Learning and awareness* (Mahwah, NJ, Lawrence Erlbaum Associates).
- McLean, M. & Ashwin, P. W. H. (2016) The quality of learning, teaching, and curriculum, in: P. Scott, J. Gallacher & G. Parry (Eds) *New languages and landscapes of higher education* (Oxford, Oxford University Press), 84–102.
- Mimirinis, M. (2019) Qualitative differences in academics' conceptions of e-assessment. *Assessment & Evaluation in Higher Education*, 44(2), 233–248.
- Noddings, N. (2013) *Caring: A relational approach to ethics and moral education* (Berkeley, CA, University of California Press).
- Norton, L., Richardson, T. E., Hartley, J., Newstead, S. & Mayes, J. (2005) Teachers' beliefs and intentions concerning teaching in higher education, *Higher Education*, 50(4), 537–571.
- Ong, W. (1958) *Ramus, method, and the decay of dialogue: From the art of discourse to the art of reason* (Cambridge, MA, Harvard University Press).
- Pallas, A. M. (2001) Preparing education doctoral students for epistemological diversity, *Educational Researcher*, 30(5), 1–6.
- Pearson, M., Evans, T. & Macauley, P. (2008) Growth and diversity in doctoral education: Assessing the Australian experience, *Higher Education*, 55(3), 357–372.
- Pratt, D. D. (1992) Conceptions of teaching, *Adult Education Quarterly*, 42(4), 203–220.
- Prosser, M., Trigwell, K. & Taylor, P. (1994) A phenomenographic study of academics' conceptions of science learning and teaching, *Learning and Instruction*, 4(3), 217–231.
- Prosser, M., Martin, E., Trigwell, K., Ramsden, P. & Lueckenhausen, G. (2005) Academics' experiences of understanding of their subject matter and the relationship of this to their experiences of teaching and learning, *Instructional Science*, 33(2), 137–157.
- Ramsden, P. (2003) *Learning to teach in higher education* (London, Routledge).
- Samuelowicz, K. & Bain, J. D. (2001) Revisiting academics' beliefs about teaching and learning, *Higher Education*, 41(3), 299–325.
- Saroyan, A., Dagenais, J. & Zhou, Y. (2009) Graduate students' conceptions of university teaching and learning: Formation for change, *Instructional Science*, 37(6), 579–600.
- Shaari, A. S., Yusoff, N. M., Ghazali, I. M., Osman, R. H. & Dzahir, N. F. M. (2014) The relationship between lecturers' teaching style and students' academic engagement, *Procedia-Social and Behavioral Sciences*, 118, 10–20.
- Shulman, L. S. (1986) Those who understand: Knowledge growth in teaching, *Educational Researcher*, 15(2), 4–14.
- Sinclair, J., Barnacle, R. & Cuthbert, D. (2014) How the doctorate contributes to the formation of active researchers: What the research tells us, *Studies in Higher Education*, 39(10), 1972–1986.
- Slight, C. (2017) *Postgraduate research experience survey* (York, Higher Education Academy).
- Stubb, J., Pyhältö, K. & Lonka, K. (2014) Conceptions of research: The doctoral student experience in three domains, *Studies in Higher Education*, 39(2), 251–264.
- Sun, J.-C.-Y. & Wu, Y.-T. (2016) Analysis of learning achievement and teacher–student interactions in flipped and conventional classrooms, *The International Review of Research in Open and Distributed Learning*, 17(1), 79–99.
- Trigwell, K., Prosser, M. & Taylor, P. (1994) Qualitative differences in approaches to teaching first year university science, *Higher Education*, 27(1), 75–84.
- Trigwell, K., Prosser, M. & Waterhouse, F. (1999) Relations between teachers' approaches to teaching and students' approaches to learning, *Higher Education*, 37(1), 57–70.
- Trigwell, K. & Prosser, M. (1996) Changing approaches to teaching: A relational perspective, *Studies in Higher Education*, 21(3), 275–284.
- Trigwell, K., Prosser, M., Martin, E. & Ramsden, P. (2005) University teachers' experiences of change in their understanding of the subject matter they have taught, *Teaching in Higher Education*, 10(2), 251–264.
- Van Driel, J. H., Verloop, N., Van Werven, H. I. & Dekkers, H. (1997) Teachers' craft knowledge and curriculum innovation in higher engineering education, *Higher Education*, 34(1), 105–122.

- Warren, M. R., Park, S. O. & Ticken, M. C. (2016) The formation of community-engaged scholars: A collaborative approach to doctoral training in education research, *Harvard Educational Review*, 86(2), 233–260.
- Wisker, G., Robinson, G., Trafford, V., Creighton, E. & Warnes, M. (2003) Recognising and overcoming dissonance in postgraduate student research, *Studies in Higher Education*, 28(1), 91–105.
- Yuan, R. (2015) Preparing future teacher educators in higher degree programmes: A Chinese perspective, *Journal of Education for Teaching*, 41(1), 97–101.