

# Mapping out Teacher Educators' Conceptions of Teaching: Composing Phenomenographic Argument

## Öğretmen Eğitimcilerinin Öğretme Kavramlarının Haritalandırılması: Fenomenografik Argüman Oluşturmak

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### ABSTRACT

This study aims to describe the concepts of teacher educators about teaching. The research design of this study is phenomenography. The participants were 37 teacher educators. The concepts of teacher educators regarding the teaching phenomenon were grouped under five categories. These are “teaching is the transfer of knowledge”, “teaching as the arbitrary elimination of the teacher or learner from the system”, “teaching is to criticize and evaluate the arguments of others”, “teaching as collective research process” and “teaching as creating pedagogical content knowledge”. The most important point in this context is the level of awareness of teacher educators about teaching concepts. In this sense, the most concrete suggestion is that teacher educators should expand their teaching concepts by being included in professional development programs.

**Keywords:** Conceptions of teaching, Teacher educator, Phenomenography

### ÖZ

Bu çalışma öğretmen eğitimcilerinin öğretime yönelik kavramlarını betimlemeyi amaçlamaktadır. Bu çalışmanın araştırma deseni fenomenografidir. Katılımcılar 37 öğretmen eğitimcisidir. Öğretmen eğitimcilerinin öğretim olgusuna yönelik kavramları beş kategori altında toplanmıştır. Bunlar şu şekildedir: “öğretim bilginin transferidir”, “öğretmenin ya da öğrenenin sistemden keyfi olarak elemine edilmesi olarak öğretim”, “öğretim diğerlerinin argümanlarını eleştirmek ve değerlendirmektir”, “öğretim kolektif bir araştırma sürecidir”, “öğretim bir pedagojik alan bilgisi yaratma sürecidir”. Bu bağlamda öne çıkan en önemli nokta öğretmen eğitimcilerinin öğretim kavramlarına yönelik farkındalıklarının ne düzeyde olduğudur. Bu anlamda en somut öneri öğretmen eğitimcilerinin profesyonel mesleki gelişim programlarına dahil olarak öğretim kavramlarını genişletmeleridir.

**Anahtar Sözcükler:** Öğretime yönelik kavramlar, Öğretmen eğitimcisi, Fenomenografi

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## INTRODUCTION

It has been widely acknowledged that if one of the crucial locomotive forces of the educational great-leap-forward is the teachers as the change agents, other is the teachers of teachers (Arslanoglu 2015; Goodwin and Kosnik 2013; Vanassche and Keltermans 2016). However, teacher educators' (TEs) pedagogical awareness about teaching and learning have been an uncharted territory. Murray and Kosnik (2011) and Murray (2005) asserted that becoming a teacher educator has been stayed as an under researched area. This group has not been completely understood as a professional community. This has stayed as the mystery of higher education (Darling-Hammond 2006).

TEs have not anticipated or required to establish a (very) particular type of expertise in teaching. Their personal transitions from a P-12 (pre-kindergarten to 12<sup>th</sup> grade) teacher to becoming a teacher educator have been seen *taken-for-granted* (Goodwin and Kosnik 2013; Vanassche and Keltermans 2014) by excluding a thought-provoking interrogation of the transition in a research-based manner (Murray 2005; Zeichner 2005). This point was criticised by Zeichner (2005): if one is good at teaching of elementary or secondary level, this expertise will be directly transferred for being good at teaching with teacher candidates. On the other hand, it must be accepted that transition is not a simple matter to attain.

Berry (2007) reported that the transition may require sophisticated processes to be accomplished in an intended manner. For instance, an array of studies (e.g. Berry, 2007; Bullock and Christou 2009; Dinkelman et al. 2006; Kosnik and Beck 2008) confirmed that becoming a teacher educator (the transition) includes infra-structural (base) realities such as complex social and institutional interactions and exchanges in which TEs' pedagogical belief systems or conceptions of teaching and accompanied in-class decision-making and actions as the super-structural entities (cognition of TEs) are continuously shaped and revised. Attempts for researching into teacher educators would therefore be pragmatist in illuminating an under researched and newly proliferating line of inquiry.

In this study, it was the imperative to research into the conceptions of the TEs about teaching. This would be generative in shedding light on the TEs' conceptions (or belief systems) and related pedagogical actions. As proposed, knowing prospective teachers' conceptions about teaching and learning would be significantly contributing to attain greater instructional improvements (Pajares 1992; Richardson 1996). This may also be truly valid and prerequisite for TEs' professional development (Loughran 2008) as they have been located at the core of better teacher education (Loughran 2006; Vloet and van Swet 2010).

Earlier studies showed that TEs might not hold a pedagogical awareness for discerning initial conceptions of teacher candidates to design and practice their teaching (e.g. Bullough 1997). Its major reason can be explicated by referring to the point that whether TEs are really interested in their own conceptions of teaching or whether they have attempts to reflect

upon how their conceptions of teaching and related instructional actions impact the future pedagogical orientations of teacher candidates. Indeed, it may be non-transparent to TEs which conceptions and related actions of teaching should be valued and modelled for the sake of improving the teacher education quality (Timmerman 2009). As a common sense, it has been accepted that for delving into both theoretical and practical aspects of the teacher education, a comprehensive (re)analysis of TEs' conceptions of teaching are indispensable. As Donche and Petegem (2011) advocated, neater examination of the conceptions of TEs about teaching may be productive in explicating clever ways of learning to teach students in teacher education.

## Theoretical Framework

TEs' conceptions of teaching can be categorised as either teacher-centred or student-centred (Samuelowicz and Bain 2001). The titles of the categorisations may differ (content-oriented and learning-oriented; subject-centred and skill-centred; traditional and constructivist, etc.), but, instructional intentions stay same. A teacher-centred tendency implies that there is single epistemic and social authority of class and primary knower and evaluator as the teacher. To put it differently, when teachers teach, students (should) learn. A student-centred tendency signifies that teacher and students co-construct knowledge through, for instance, social negotiations of meanings as a learning community in which epistemic and social authority is mostly shared, thus, there is more than one primary knower and evaluator in the classroom (Lemke 1990).

There are numerous studies in which academics' conceptions about teaching are gathered around aforesaid featured categories: teacher-centred vs. student-centred or content-centred vs. skill-centred (Dall'Alba 1991; Fox 1983; Gow and Kember 1993; Kember and Gow 1994; Martin and Balla 1991; Martin and Ramsden 1992; Pratt 1992; Samuelowicz and Bain 1992). Some researchers tried to add a third dimension of teaching conceptions as intermediate categories such as modelling ways of being (Pratt 1992), organising learning environment (Martin and Ramsden 1992), helping students develop concepts (Prosser et al. 1994) or student-teacher interaction (Kember 1997).

In particular, Samuelowicz and Bain (2001) represented an in-depth investigation of teaching conceptions of academics. They extracted nine conceptual dimensions that were multiplied by seven teaching conceptions. In advance, Samuelowicz and Bain (2001) divided teaching conceptions into two sub-categories that were mutually exclusive: teacher-centred (e.g., imparting information, transmitting structured knowledge, providing and facilitating understanding) and learner-centred (e.g., helping students develop expertise, preventing misunderstanding, negotiating understanding, encouraging knowledge creation). Samuelowicz and Bain (2001) rechecked detected categories whether they incorporated intermediate zone(s). But, transitional zones were not clearly detected even though teacher-centred conceptions included some weaker signs of learner-centred conceptions such as "teacher shows how knowledge can be used" (Samuelowicz and Bain, 2001; p. 306).

Åkerlind (2003) reviewed studies exploring teaching conceptions of educators and reached some communalities and differences (see Table 1). Regarding communalities in the studies examining educators' conceptions of teaching, teachers-learners (as the members, sides or camps of instructional sequences) and teaching-learning (instructional processes) were found as isolated from each other in the respondents' conceptions. These communalities are explicitly reflected to the differences (Table 1). Some studies examined teaching conceptions of the participants by collapsing heterogeneous categories through focusing on independent classifications on teaching phenomenon (Samuelowicz and Bain 1992; Kember 1997). Some other studies constructed (a required and plausible) conceptual breadthness regarding clarified conceptions by advocating the fact that teacher-centred and student-centred teaching are the two ends of the same pedagogical scale (Martin and Balla 1991; Dall'Alba 1991; Prosser and Trigwell 1999). Three critical aspects have therefore been emerged regarding teaching conceptions:

- Teacher-centred vs. learner-centred aspect (members),
- Teachers for teaching vs. learners for learning aspect (processes),
- Independent categorisation of the conceptions vs. related categorisation of the conceptions dichotomy/aspect (analysis).

How these salient points could be handled by an instrumental manner? The researchers of the current study tried to propose an alternative thinking and talking to reconsider the above-stated tendencies of research findings. The researchers are of the idea that the aforesaid aspects can be reconsidered by taking the teaching sequences'/episodes' pedagogical orientations into account.

When a teacher educator teaches *how to teach*, there are diverse contents to be considered. If a teacher educator tries

to directly deliver all contents, by acting and guaranteeing primary knower and evaluator role, his or her teaching conceptions can be categorised as fully subject-centred (Krull and Raudsepp 2012; Wildman 2008). Because, there would be no room for the cognitive contributions of prospective teachers (PTs). To explicate, given responses or utterances of the students are evaluated or legitimated in terms of their relevancy by the teacher who holds the epistemic and social authority in the classroom (Berry, 1981; Lemke, 1990). In this instructional setting, even though the students make their voices explicit, they would not be responsible for criticising, evaluating, legitimating or judging others' predicates to make authentic intellectual contributions to the classroom discourse (Lin, 2007). This asymmetrical classroom interaction is also specified by Mameli and Molinari (2013) that when a teacher has a dominant position in the classroom "s/he assigns the turns, selects the children who can intervene and the time when they can do so, chooses the topics, poses the questions and evaluates the pupil's answers referring to what s/he considers as indisputable correctness criteria" (p. 198). In addition, it would not be possible and plausible to ignore the teacher educator's voices as in the form of intellectual contributions that are expected to be nearer to scientific point of view. In other words, it would not be credible to assign PTs to handle all contents by themselves since it is the teacher educator who (should) govern alternative thinking-talking of PTs to get somewhere in the discourse. Both camps' intellectual contributions are expectedly required, but, in a combined, balanced and systematic manner ensuring a conceptual consensus that may be mediated by social negotiations of meanings.

The researchers of the present study are of the idea that during teaching a specific topic regarding how to teach, there may be teaching episodes (cycles, sequences) or temporal moments incorporating dialogic modes of teaching in which more problematic and contradictory points of views are iteratively negotiated. There must also be an array of authoritative temporal

**Table 1:** Differences and Communalities of the Conceptions of the Educators

Communalities*	Descriptions**
"Transmission of information to students "vs." the development of conceptual understanding in students"	Members of class are separated or isolated, or the possible intellectual interactions and exchanges between two camps (the teacher and students) are represented in a mutually exclusive manner
"The teacher and their teaching strategies "vs." the students and their learning and development"	Teachers are more associated to the teaching sides of the educational phenomena, and students are more attached to the learning sides of the educational phenomena
Difference	Description
"Whether the different conceptual categories are seen as <i>independent</i> even if they can be ordered according to sophistication, or as <i>related in a hierarchy of inclusiveness</i> "	Teacher-centred teaching and student-centred teaching are not the two ends of the same pedagogic scale "vs" teacher-centred teaching and student-centred teaching are the two ends of the same pedagogic scale.

\*Reproduced from Åkerlind, G. S. (2003), pp. 375-377.

\*\*Descriptions do not reflect the original author's interpretations.

moments in which knowledge modes of teaching are handled to review and wrap up the attained intellectual consensus. The following example makes the presented assertion clearer.

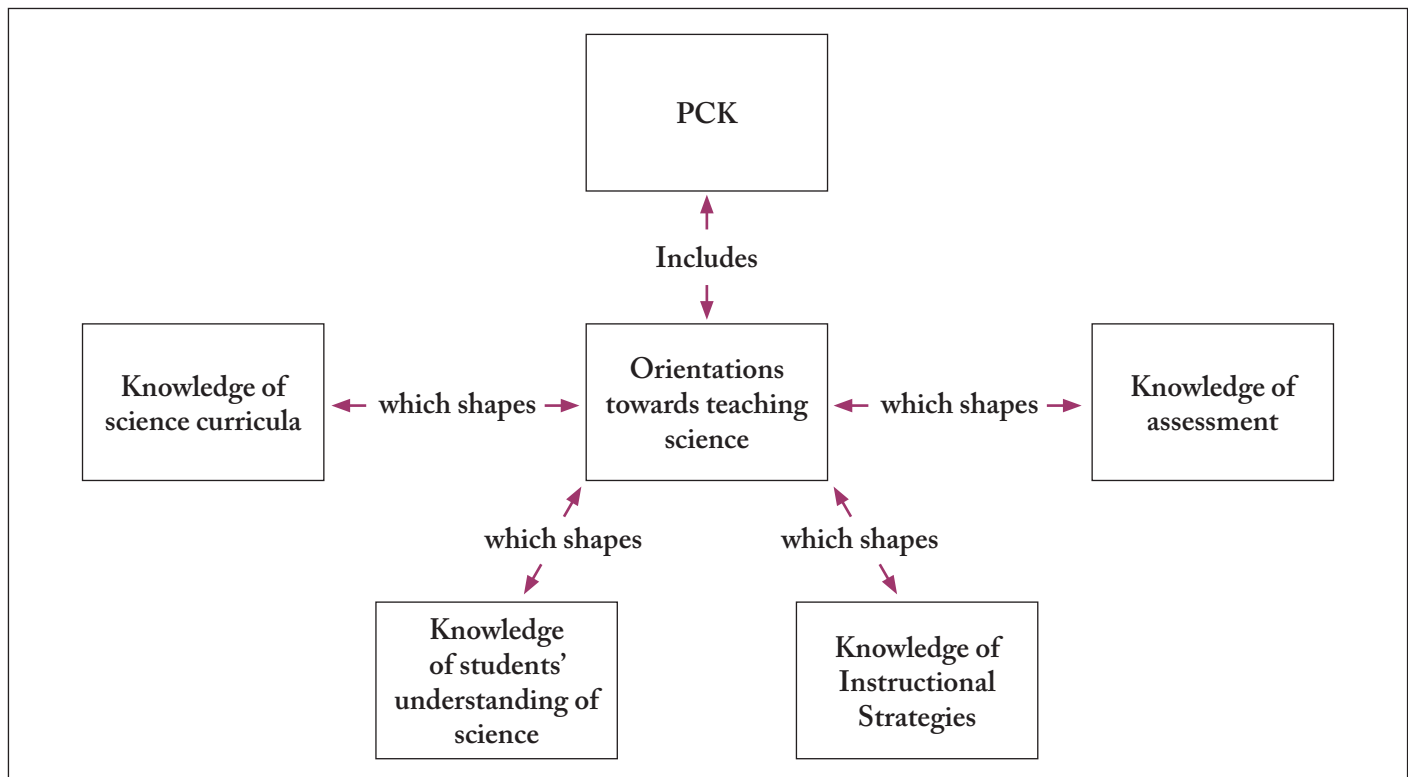
A science teacher educator may teach the term Pedagogical Content Knowledge (PCK) to PTs to expand their reasoning about how to teach, for instance, science. There are different models regarding constituent components of science-related PCK. One of the models generated by Magnusson, Krajcik and Borko (1999) and incorporates five components. The components may be characterised as knowledge domains of PTs to ponder about how s/he designs and conducts a science activity. The components are represented in Figure 1.

If a teacher educator tries to transmit theoretically abstracted components of the PCK model to PTs and expectedly if there is no student-led verbal utterances as in the form of intellectual contributions, it can be said that this content is taught by direct lecturing accompanying a teacher-centred conception. But, a teacher educator may reanalyse *the specific pieces of the contents to be taught* to regularise the streaming of the intellectual interactions and exchanges for the sake of the PTs' in-depth comprehensions.

For instance, the lecture could be started by gathering student-led responses about characterising knowledge domains of teaching profession. For the beginning exchanges and interactions, there may be low-interanimation for the proposed

ideas (Mortimer & Scott, 2003) in which the teacher educator only explores and pools PTs' ideas by not interrogating them (more learner-centred episode of talks). Then, the teacher educator could select some particular responses that are neater and closer to his or her instructional agenda while ignoring others that are irrelevant for the sake of the streaming of the discourse (more teacher-centred episode). However, the teacher educator has to develop and present arguments why s/he selected or ignored some specific ideas over other (more learner-centred episode).

This would be more possible to engage the PTs into social negotiations of meaning. For an instance, all group may discuss which parts of the PCK components should be centralised for more fruitful science teaching. This may be a triggering discussion point and countless student-led arguments can be proliferated. The discursive role of the teacher educator should be to reconsider and negotiate proposed student-led responses to display whether their arguments are instrumental or should be modified or shifted to get somewhere regarding topic (Engle and Conant 2002). Some PTs may centralise the knowledge and beliefs about students' understanding of specific science topics and some others may put the knowledge and beliefs about instructional strategies into centre. Then, the teacher educator may deepen the breadthness of the negotiations through prompting the PTs for evaluating, judging and legitimating their classmates' propositions (more learner-centred episode).



**Figure 1:** Example content to be taught in university-based teaching.\*

\*Adapted from "Magnusson, S., Krajcik, J. & Borko, H. (1999). Nature, sources and development of pedagogical content knowledge. In J. Gess-Newsome and N. G. Lederman (Eds), *Examining pedagogical content knowledge* (pp. 95-132). Dordrecht: Kluwer."



This may ensure that there are more than one primary knower and judge/legitimator in the classroom. Clearly, the teacher educator wants to get somewhere, however, s/he welcomes and acknowledges the student-led ideas to restructure the streaming of the discursive exchanges and interactions to persuade PTs that there may be alternative and more explanatory ideas in illustrating the topic under consideration.

Moreover, the teacher educator holds a prescriptive curricular accountability and agenda to teach the content in an intended (scientific) manner. Thus, the teacher educator may ultimately explain the fact that components of the PCK should be worked together in a combined, pragmatist and systematic manner (more teacher-centred episode). Acceptedly, this overarching proposition (interrelatedness of the constituent components) regarding PCK may also be reached by the PTs. If not, there would be no pedagogical inconvenience in directly lecturing interrelated nature of the science-related PCK. To advocate, the group had already achieved to socially negotiate many parts of the science-related PCK within more learner-centred teaching cycles that were accompanied by complementary and compensatory teacher-centred cycles.

As a whole, the teacher-centred teaching contains only pervasive voices of TEs. However, learner-centred teaching incorporates student-led cognitive contributions in addition to the teacher-led ones. Clear in the above-located example, both teacher-centred and learner-centred teaching episodes may create a generative rhythm or harmony (Mortimer and Scott 2003) of verbal exchanges requiring both camps' contributions for a more pragmatist teaching. In a sequential manner, all university-based contents may incorporate both teacher-oriented and student-oriented overlapped teaching episodes based on the structure and nature of contents to be taught.

Thus, teacher-centred and learner-centred sides of a teaching process may not be necessarily considered as a mutually exclusive or isolated system. Indeed, there may be no need of separating the teaching process from the learning process. However, aforesaid arguments taken in this study would be more viable and less intuitive when TEs' conceptions of teaching are explored by establishing related categorisations (mutually inclusive) instead of collapsing individual classifications (mutually exclusive). It was therefore more attainable through composing phenomenographic arguments for the TEs' conceptions of teaching.

### **Categorising the TEs' Conceptions of Teaching Phenomenographically**

In simplistic sense, once TEs add only their contributions to teaching episodes, they would ensure a less expanded teaching conception. When TEs try to add other voices as PTs, this would signify a more expanded teaching conception. This confirms that, in a phenomenographic sense adopted in this study, TEs' conceptions of teaching can be more or less (in)complete since their experiences regarding teaching have always been partial (Marton 1995). TEs may discern a particular aspect of teaching phenomenon by excluding learners from teaching sequence(s) at a given time and within a specific context (Marton 1995).

The breadth of the awareness of TEs who have experienced teaching processes determines differentiation or discernment of teaching phenomenon.

There may be two aspects of TEs' teaching conceptions: (i) shrinking potentiality (only teacher or only student), (ii) broadening capacity (teacher in addition to students). In this study, a teacher educator might experience diverse ways of teaching. This would confirm a potential for variation regarding teaching phenomenon (Marton and Booth 1997). Other participatory teacher educator might not engage in sufficiently diversified teaching experiences causing potential for uniformity regarding expressions about teaching (Marton and Booth 1997). Potential for uniformity and potential for variation is about fluctuating inclusivity of awareness regarding experienced phenomenon. If a participated teacher educator included students into instructional process in addition to his or her attendance, this permits for documentation of more sophisticated teaching conceptions. On the other hand, when participant educator ignored student-led contributions, lower complexity in teaching conceptions would be anticipated since teaching is considered to be as in the bag form by teacher educator (Marton and Booth 1997) as s/he delivers, and students absorb.

In this study, it was expected that if the TEs executed their teaching by the background impulses of incomplete (fragmental) teaching conceptions, they presumably would try to diffuse information from primary knower (themselves) to less knowledgeable others (PTs). This confirms uniformity in conception (and action). Thus, any deviations from the TEs' (prescriptive) instructional agenda would not be welcomed. Conversely, when a teacher educator counts PTs in teaching episodes, the uniformity of instructional action is respectively destroyed. To explicate, PTs may offer alternating or incomplete (deviating) thinking that may be inappropriate for a teacher educator's teaching agenda that is neater to scientific point of view. In this context, TEs are expected to make a pedagogical decision. On one hand, TEs may ignore differentiating student-led thinking by neglecting their utterances. On the other hand, by means of dialogic teaching, TEs may argue about why offered (alternating) ideas are not so much serviceable in elucidating the phenomenon under negotiation. In the presence of internally persuasive dialogic teaching (Mortimer and Scott 2003), TEs may convince PTs about the feasibility of his or her arguments that are alternative to the PTs'. If this is the case, TEs' teaching conceptions should be considered within a continuum.

As an important note, it was not a purpose in this study to label a teacher educator's teaching conceptions as wrong (included only teacher) or right (included students and teacher) with regards to their pedagogical relevance. As continuum or relatedness mentality requires, a teacher educator who includes only his or her contributions to teaching processes cannot be evaluated so much wrong, instead, his or her conceptions are only incomplete (Åkerlind 2008).

The researchers embraced the idea that a teacher educator holding conceptual uniformity might be suffering from lacking a sufficient awareness of the enlarged aspects of the phenomenon (Åkerlind 2008).

In this study, the TEs' teaching conceptions were investigated by above-elaborated theoretical framework. The reported teaching conceptions were delved into for following purposes:

- Whether the TEs included or excluded PTs' contributions/ voices or whether the TEs isolated themselves (teachers) from others (students) while performing teaching,
- Whether the TEs put an isolation between teaching and learning processes.

For the context of this study, reported documentations of the TEs' teaching conceptions were reviewed by taking their possible relatedness into account to compose phenomenographic arguments. As a whole, while composing (a) phenomenographic argument we focused on a differentiated research programme in which we only tried to describe the qualitative or conceptual ranges within the conceptions of teaching of the educators by avoiding to label them as just teacher-centred or student-centred through an oversimplified manner and by considering them in a continuous spectrum. The outcomes of the study may be informative for the TEs to ponder about their available conceptions of teaching that are essential in defining in-class pedagogical decisions and accompanied actions.

## METHODS

### Research Approach

This study purposed to reveal varying conceptions of the TEs about teaching. A phenomenographic approach was conducted to map out the TEs' conceptions (Marton, 1986). The phenomenon under consideration was teaching as it appeared to the TEs. Hypothetically, the teaching phenomenon might be appeared differently to each of the TEs. Because, the TEs might hold unique teaching experiences although they undertook similar university-based teaching (see also Åkerlind, 2003; 2008). The researchers were in search of reaching a particularly created experiential variation embedded in the TEs' clarifications regarding teaching (Marton, 1986). The basic focus of this phenomenographic research was that the TEs might conceptualise different, communal, beyond, more or less enlarged aspects of teaching conception through their diversifying frames of references (Marton, 1986). Thus, reported clarifications of the TEs could be aggregated to crystallise an outcome space incorporating relatedness or overlapped positions among conceptions. The researchers were less interested in individual documentations about teaching. Collective meaning was in emphasizing (Åkerlind, 2012). To advocate, the qualitative or conceptual ranges were revealed based on the *meaning pool* in which all conceptions of teaching were inherently added. In a sense, while determining that a conception of teaching is broader or groundling than other(s), we had to consider and use all conceptions of teaching by juxtaposing them for comparing and contrasting emerged understandings meaningfully (Åkerlind, 2012), in turn, the process had to deal with collective meaning positions instead of analytical ones. The researchers tried to distinguish patterns of comprehensions in nonnumeric language and depicture diversifications in the way the TEs ascribed meaning as teaching in the world (university-based context) around them.

### Participants

The participants were 37 TEs (Females=21; Males=16). The TEs were affiliated in different universities of Turkey. The TEs were employed in the universities located in different regions of the country (particularly in Marmara Region) incorporating socio-cultural-economic differentiations. The participants' university-based teaching experience levels ranged from 3 to 26 years ( $M = 13.1$ ;  $SD = 4.2$ ) in addition to the out-of-university experiences such as working as a school principal. The participants were enrolled in the following teaching programs: English language teacher education ( $n = 2$ ), preschool teacher education ( $n = 4$ ), elementary education ( $n = 11$ ), elementary science teacher education ( $n = 9$ ); primary mathematics education ( $n = 5$ ); Turkish language teacher education ( $n = 6$ ). The participants included PhD candidates as the (prospective) teacher educators and worked as research assistants ( $n = 19$ ), as well as assistant professors ( $n = 13$ ), associate professors ( $n = 3$ ) and a professor ( $n = 1$ ). Most of the research assistants grasped university-based teaching experiences by either supporting the lecturer or undertaking a complete teaching course's planning, designing and implementing. As the researchers' colleagues, the participants were willing to volunteer and eager to document their university-level teaching experiences as the main source of their conceptions of teaching.

### Data Gathering Procedures

Qualitatively-oriented data was collected by phenomenographic interviewing (PI) (Booth 1997). The PI processes serviced to elicit the TEs ways of experiencing regarding teaching phenomenon. Openness and deepness were the specific purposes of the PI processes. For this study, the openness of the PI signifies that the interviewers were prepared themselves to receive unexpected or distinguished responses about teaching phenomenon. The openness during the PI processes were instrumental to capture the fruitful reflections of the TEs on their experiences; externalising many meanings on teaching. Moreover, the interviewers prepared themselves to capture varied ways of experiencing of the TEs by exhausting the provided meanings until they were saturating and depleting (Booth 1997).

For actualising the PI, an interview protocol was conducted. Specific conversation openers were involved in the protocol. There were six conversation openers to obtain all different teaching conceptions of the TE. Some examples of the conversation openers are displayed in Figure 2. Instead of just addressing the interviewing questions, specific case-based initiators were presented to the TEs for concretising their conceptions.

For instance, by the third conversation opener, it was aimed at prompting the TEs for conceiving a particular pedagogical context in which the teacher educator is not able to scaffold student-led academic attainments (Figure 2). Critical stances in the responses of the TEs were therefore anticipated. In addition, by 6<sup>th</sup> conversation opener, it was intended to identify the personal examples of the TEs about meaningful teaching instances. The conversation openers are mostly open-ended

<b>Conversation opener-3</b>	<p>“Gülse is a friend of mine and she is an experienced teacher educator. In a meeting, she complained that although she shares the content with the students in a perfect way, the students (prospective teachers) are not able to comprehend and conceptualise the facts of the content under consideration.” What would be your interpretations if you hear the complaint of Gülse?</p>
<b>Conversation opener-6</b>	<p>***</p> <p>“Ahmet is a teacher educator. At the end of a video we were watching from YouTube, he said to me that “That’s the sample of an excellent teaching sequence.” There were a group of pupils and a teacher within the video. What could be occurred between the teacher and his or her students in the video that prompted the Ahmet for making an interpretation regarding so-called excellent teaching sequence?</p>

**Figure 2:** Examples of the conversation openers for the PI processes.

presumptively permitting grasping any types of teaching experiences at the university-level.

### Data Analysis

Analysis process led to the identification of conceptions (meanings, categories of description) and outcomes space that was structured as a particular conceptual system by the provided conceptions containing a hierarchical order (Marton, 1986). The documentations of the TEs about teaching were sought to discern emerged patterns of conceptions through continuous comparison of the verbal data to each other to detect any qualitatively-oriented variations. Åkerlind (2012), asserted that open-mindedness is the paramount element of a phenomenographic analysis. During the analysis, the main target was to minimise prescriptive frames of mind to prevent arriving terminal categories regarding the conception too rapidly. The differences and communalities in the meanings of two or more TEs were visible and transparent in the presence of the continuous comparisons of the provided clarifications. The conceptions derived from a teacher educator’s expressions were strictly tested in terms of their inclusivity of awareness by taking the other TEs’ expressions into account. This ensured a focus on the delimitation and grouping of emerged themes based on the specific situation of experiences as teaching in university level.

Three methodological steps were taken during the analysis:

- Discerning the ways of experiencing,
- Composing the categories of description,
- Configuring the outcome space (Sjostrom and Dahlgren 2002).

Partial (*delimited, unfinished*) experiences of the TEs were labelled as the varying ways of conceptions of teaching. It was imperative to think that the partial conceptions derived from the TEs’ own reality had indeed been generated mostly by

engaging in instructional processes at the university-level. The major goal of searching for diversifying ways of experiencing was to differentiate the presented conceptions of the TEs.

Sjostrom and Dahlgren (2002) recommended three tips for a more instrumental differentiation: frequency, pregnancy, position. The TEs were in a tendency in rehearsing particular pieces of thinking about teaching in reacting to the conversation openers. During PI, even though the interviewer tried to deepen proposed responses, the interviewees insisted on their assertions in explicating the proposed cases (frequency).

The TEs held solid core (nuclear; unchanging) expressions and protective belts (bounds; enlargements) that surrounded their core verbalisations about teaching. Protective belts were composed by the TEs in enlarging their core conceptions by ramifying their nuclear clarifications (pregnancy).

The positions of the verbal manifestations were also indicative in differentiating a conception from another and grasping the featured pedagogic intention embedded in a clarification. For instance, a teacher educator reacted a conversation opener. Then, s/he zoomed in a specific point to explicate the underlying reasons of his or her responses. In the last part of verbalising processes, s/he finalised his or her thinking by referring to the very initial point s/he had mentioned. Thus, the specific positions of the verbal clarifications were serviceable in selecting, marking and differentiating the conceptions of the TEs.

In the second step of the analysis, it was aspired to compose qualitatively distinctive or communal categories of description. A pool of meanings was composed by gathering all conceptions of the TEs. The presented verbalisations were then assigned to the categories of description that were qualitatively differentiated abstractions. The strict rule followed during generating the categories of description was to abide by *the within (intra-categories/conceptions)* and *the between (inter-categories/conceptions)*. Within a category, homogenous (qualitatively similar) conceptions were clustered together. Between two

categories, heterogeneous (qualitatively dissimilar) clusters of conceptions were separated. It was an iteratively-oriented comparative process in which communalities within and diversifications between the externalised conceptions were taken into account. Extracted conceptions of the TEs were tested against the data, adjusted, retested, and adjusted again. Thus, there was a descending rate of change regarding the between and the within and ultimately the whole comparative system of conceptions was stabilized (Marton, 1986).

The last complementary stage of the analysis was to compose an outcome space incorporating structural relationships among the extracted conceptions. To put it differently, there might be a conception including a greater inclusivity of awareness of the TEs regarding teaching compare to another one. This was where the hierarchy among the categories of description came in (e.g., Conception-A inherently incorporates Conception-B).

Two types of structural relations were deduced from the conceptions: linear (equal value between two conceptions) and hierarchical (increasing breadth of awareness between two conceptions). The linearity and hierarchy among the conceptions were determined by both taking the abstracted data and theoretical stances defined earlier into account. The outcome space included conceptions of teaching that incorporated a more or less conceptual extensiveness of awareness based on a data-driven and theory-laden perspective. The extracted conceptions of teaching were ample. However, the outcome space was composed in a parsimonious manner.

## FINDINGS

The TEs' teaching conceptions can be seen in Table 2. There were five conceptions (categories of description) abstracted. In Table 2, sample ways of experiencing regarding teaching can be monitored.

### Conception-1: Knowledge transmission modes of teaching

For this category, the TEs depicted teaching as *transmitting the knowledge* from a source to the less knowledgeable ones. The TEs mostly defined themselves as the sources of the knowledge. For the TEs teaching can be best actualised through diffusing and injecting information from more knowledgeable ones (e.g., TEs) to less knowledgeable others (PTs).

"My students do not come to the classroom by equipping sufficient knowledge. First, I therefore complete their lack of knowledge, then teaching becomes easier. Or I am sending them texts to read ahead. Otherwise, when I start to tell directly, they all get out of the process." (Elementary Education, Male; participant-18)

During interviews, for instance, one of the participants referred to the prior knowledge capacities or mental structures of the learners. It seemed that the educator perceived that learners come to the classroom by incomplete (pre)knowledge structure that is an instructional obstacle for initiating and maintaining classroom interactions. For a so-called scaffolding process, the educator offered some preliminary *external sources of knowledge* to the learners to complete themselves to be able

to comprehend what the teacher educator delivers. As seen in this excerpt, the teacher educator evaluates the knowledge as an external entity to the learners, thus, this external thing should be conveyed to the learners who should be prepared to absorb the being transmitted knowledge as a sponge.

The TEs with this conception of teaching uttered several aspects regarding how they delivered factual knowledge. For instance, they referred to attention gatherers to initiate a lecture or mentioned about PTs' attention spans to rearrange the flow of lecturing (Table 2). The TEs also indicated that teaching should be a facilitative tool for permanent learning. Retrieving course contents as a crosscheck of permanent learning is more attainable for learners if they are participated in a drill-and-practice or trial-and-error process (Table 2).

The TEs with this conception remarked an initial requirement on the side of the PTs who should hold an initial understanding or be cognitively prepared to capture, grasp and memorise transmitted content. In addition, the TEs with this conception advocated the idea that the PTs should be able to apply and transfer so-called acquired knowledge to other fields of their everyday life. If the PTs are taught in a way that they are able to transfer the delivered facts to transcendental contexts, it can be considered as an instance of better learning.

To sum up, the TEs with this conception seemed to exclude students from the system by explicating the teaching phenomenon as a plain transmission of knowledge and transfer of the memorised knowledge pieces to extended contexts by PTs. Thus, the direct transfer of the acquired knowledge was not portrayed as a way of transformation or internalisation of knowledge for individualised purposes, instead, teaching was clarified as a transmissive entity by the TEs.

### Conception-2: Arbitrary inclusion or exclusion of the teacher or learner

The TEs with this conception of teaching considerably laid emphasis on the active and participatory liabilities of PTs. The TEs described learning as an individualised or personally-regulated process. At the outset, this type of interpretation could be sorted out as a learner-centred conceptual tendency. However, it was not incorporated any tangible traces of the authentic learner-centred orientations. To support, the TEs with this conception asserted that, teachers are for teaching processes and learners are for learning processes (Table 2). They therefore seemed to not to integrate two sides of the same scale in a combined, systematic and pragmatic way. The TEs were aware that there is a rigorous distinctiveness between two terms as teacher-centred and student-centred. However, they tended to isolate teacher from learning and excluded learner from teaching. A typical teaching sequence should be therefore comprised either only learners' learning or only teachers' teaching. The TEs with this conception held the idea that teaching is about teachers while learning is about PTs.

In this context, undeniable reciprocal determinism between teaching and learning was seemed to be automatically eliminated from instruction in an arbitrary manner by the TEs.



The TEs with this conception recognised a place for PTs in the instruction. However, they did not establish a concrete linkage between teaching and learning by making references to their attendances into PTs' learning processes.

"Now the roles of the learner and the teacher have dramatically changed. Most communities have argued whether there is teaching. Our new role is to guide the learner. So, the respon-

sibility is now in the learners. It should always have been like that. The basic rule is that learning occurs when the organism is active. For example, the orchestra chief simply tells you which instrument will print which note. And the rest is the responsibility of the student. Therefore, the learner is in the centre." (Primary Mathematics Education, Female; participant-14).

**Table 2:** Representation of the Conceptions of the TEs about teaching

Conceptions	Sample Descriptions (ways of experiencing)	Sample Excerpts
<b>1. Knowledge transmission modes of teaching</b>	Teaching requires initiating a lesson with attention gatherers. Teaching is related to the learners' attention spans. Learning incorporates experiencing a trial-and-error procedure. Learning is the transfer of the so-called acquired knowledge to the other fields of everyday life.	"Teaching is something between the teacher and the learner. My students have never learnt when they do not pay attention as proved in this case (conversation opener). I mean, they need something to keep them in the classroom. Otherwise, they cannot listen to me for a long time. We know that learning is something that requires attention and attention span is also important. For example, while I am telling you something, you must pay attention to it to understand. ...The students may be wrong when they try something, I taught them before. S/he will try, try again, be wrong again, and maybe learn later. By virtue of those trying, they will be able to transfer things I teach to the other fields, contexts, so forth. So, I must give knowledge to them in a specific way by which they can transfer the knowledge to other areas of their daily life." (Elementary education, male; participant-6)
<b>2. Arbitrary inclusion or exclusion of the teacher or learner</b>	Learning purports an individualized process. Teaching should be included the teachers' teaching and learners' learning.	"We know there are basically two basic approaches to teaching. These are denominated as teacher-centred and student-centred. In the teacher-centred approach, the student is left out. The teacher is constantly dictating subject matter knowledge to learners. Of course, the student-centred approach tells us the opposite. This time the student comes forward, the teacher leaves herself on the background. Teacher's role in learning is to lead the students. So, the main responsibility belongs learners as we call this approach learner-centred and the teacher's responsibility is also diminishing. Because, now, s/he is not a story-teller, s/he is showing the students the ways of learning." (Pre-school teacher education, female; participant-16)
<b>3. Teaching as evaluating, judging, criticising and legitimating others' arguments</b>	Teaching encloses enquiring others' ideas during the negotiations. Teaching as exhibiting learners' misconceptions to them to initiate a negotiation. Teaching as moderating the conceptual or practical student-led discrepancies. Teaching as facilitating learners in mapping out and discussing their conceptions. Teaching as prioritising and acknowledging learners' everyday social language.	"For my experience, learning is based on classrooms where the discussion is dominant. ...My students come to the class by bringing along several propositions about the subject. It is an effortless way to bypass them. You know that even the current chooses the easy route, it is the law of nature. But when you consider these things (student-led propositions), the situation is different. Because I often see that my students can be in a very different point from where I want to go. It can be directly said that this is wrong for our topic. But it is inadequate. Because even if it is (student-led proposition) wrong, their ideas will not change although I declare the truth. Instead, it is necessary to convince them with certain theses. But this is not a simple thing for someone who has convinced himself well for something. One of the best ways I have found is to play a student off against his or her peers. I mean it in academic terms. When a student tries to falsify another student, then s/he can change his or her wrong ideas more easily. If most of the students believe in the idea A, it is not so easy for someone to defend the idea B by challenging his or her all classmates. In brief, I try to press their buttons to proliferate discussions." (Primary mathematics education, male; participant-23)

Table 2: Cont.

<p><b>4. Teaching as a collective research process</b></p>	<p>Teaching is a collaborative research process between teacher and learners. Teaching as a learning-group (community) activity. Teaching as doing research with the aid of learners. Learning as involving in and experiencing the research processes.</p>	<p>“In my classes, even simple presentations are data-based presentations. They can just go and gather data from somewhere, something or someone or they may make comments on the collected data (secondary data). Because, one of the best ways of getting rid of from emotional and intuitive reasoning is to reconsider data-based systems and finally a consensus can be attainable. For example, we discuss a specific case for hours that “which one hit the ground first when they are dropped free from the same height?.. Two same capacity plastic bottles, one is heavier and the other is lighter, or one is half filled with water, the other is fully filled with water. In the end, everyone understands that one of the best ways to answer this question from these discussions is to collect data. Ultimately someone says: “Instead of discussing, let’s drop the bottles.” Now learning begins. Why? They are now in search of observations, measurements to response to the unresolved questions emerged in the discussions.” (Elementary science teacher education, male; participant-7)</p>
<p><b>5. Teaching as creating a pedagogical toolkit</b></p>	<p>Teaching is transforming knowledge into more teachable parts. Teaching is holding the knowledge of students’ understandings prior to initiate any teaching activity. Teaching as intentionally capturing teachable moments. Teaching as dynamically enhancing topic-specific teaching illustrations.</p>	<p>“So now the situation you presented here seems to vary from subject to subject. My belief is that... Every subject requires a teaching method that is unique to its structure and nature. This is a deep sea you know. While the X theme can be taught better with the Y method, the Z theme can be taught with the T method. I think the important thing is not the method, the technique, the strategy, the representational activities... Beyond that, it is primarily to develop a philosophy for learning and teaching. My philosophy is the specificity of the pedagogical approach to the specificity of the subject. I believe that teaching some subjects is more difficult than some. Why? Of course, it is because of the content of the subject. Here, of course, I do not throw away the mental structures of the learners. Or rather, I try to make the subjects more understandable for them as well as through them. But for some subjects this is not necessary. For example, in the Turkish Education System and School Management course, we can directly talk some contents such as school levels and school-based organizations. Because the subject is clear, the student’s head is clear. But speaking upon the principles of the Turkish Education System was not so simple. There are 14 principles. I had created a scenario for each policy (principle). Then I requested the students to read carefully and match them with the available principles. The discussion had been branching out and become complicated. Enabling reconciliation was very difficult in some moments. Even when consensus was not achieved, all the students had targeted me by saying that I wrote wrong scenarios. We even had talked about the need to change script content for any kind of consensus.” (Elementary education, female; participant-13)</p>

The aforesaid arguments can also be supported and confirmed by an interpretation belongs to a participatory mathematics educator. She was of the idea that the roles of the learners and teachers have been altered radically and dramatically. She also referred to a negotiation point as whether there is a phenomenon like *teaching*. As seen, she acknowledged herself as a *guide person* during tutoring. She also accepted the idea that, as a rule of learning psychology, when the organism is active, then, the acquisition occurs. She also provided a metaphor of instruction as orchestrating learning processes as a maestro to support her ideas. However, she did not attempt

to attach learning and teaching processes. In other words, she seemed to oversimplify or underrepresent the crucial and rather sophisticated role of the teacher while orchestrating considerably different instrumental voices to capture a meaningful composition as an intellectual consensus in the context of teaching how to teach mathematics to the PTs. As a whole, as a phenomenographic interpretation, there is no difference between excluding student-led voices (Conception-1) or teacher-led voices (Conception-2) from instructional processes advocated by some participants in this study.

### Conception-3: Teaching as evaluating, judging, criticising and legitimating others' arguments

The TEs with this conception perceived teaching in a broader sense (e.g., negotiation of meaning through collective meaning-making) compare to above-presented conceptions. According to the TEs with this conception, teaching should be comprised PTs who should be discursively promoted for being responsible for interrogating their classmates' alternating or incomplete thinking. Any aspect of teaching should be covered by arguing about peer-led ideas deliberately and transparently indicated by the TEs with this conception. The TEs with this conception advocated that teaching should be a process in which student-led or teacher-led ideas must be rigorously enquired during purposeful negotiations of meaning, for instance, regarding the educational phenomena. In an in-depth manner, the TEs with this conception provided presentative ways of initiating and maintaining a negotiation for genuine meaning making of the (educational) phenomena (Table 2).

As the TEs described, PTs may hold alternating ways of thinking about an educational phenomenon (e.g., PCK). Student-led thinking (spontaneous concepts) may be substantially different from the TEs' thinking style favouring scientific point of view (formalised concepts). The TEs with this conception do not easily turn down alternative or incomplete student-led thinking although it holds less explanatory power or is respectively fallacious compare to scientific point of view. Instead, for the maintenance of negotiation of alternating meanings, a teacher educator should ponder about underlying reasons why PTs hold an incomplete or relatively inaccurate reasoning about the concept under consideration (Table 2).

As it was understood from the interpretations of the TEs with this conception, when this is the case of instruction, a discursively prepared teacher educator should detect student-led thinking fallacies or incomplete pieces of reasoning and make them public for others' evaluation, judgements and legitimisations for the sake of interthinking. The student-led thinking, at first, should be analysed in terms of its scope and explanatory power in illustrating a phenomenon from the lens of the thinking system of TEs who may want to reach an alternative point of view that is closer to scientific point of view. Then, if there are, conceptual, epistemological or ontological cognitive confusions in the thinking of PTs should be publicised to convince them that their existing assertions may not be instrumental in resolving the confusions revealed. The major goal of broadcasting any conflicting student-led idea is to promote others' intellectual contributions to modify the ill-structured ideas and to attain a consensus for individual-led internalisations.

According to the TEs with this conception, teaching and learning should be overlapped by two processes: (i) contradiction-posing (under the control and regulation of the TEs), (ii) contradiction-solving (under the control and responsibility of PTs). The TEs with this conception externalised that argumentatively-oriented student-led cognitive exercises must be pervasive for the interwoven processes. To sum, the TEs with this conception were in a tendency in involving both teacher and

learners in instructional sequences in a collectivist manner by not ignoring or excluding the contributions of the two camps.

"During my lectures, I saw that students do not tend to response to me much when I evaluate or judge their opinions. But I also observed that they provided deeper and rigorous responses to their friends. So, when talking and thinking with each other, the students defend themselves better. Of course, they perceive me as an authority. But they also acknowledge themselves at the same status with the others. I thus attach importance to the fact that most of the conversations should be among the students thus I have tried to attain that. But I am definitely interfering when the argument is dead." (Elementary Science Education, Female; participant-19).

One of the participants, as her interpretation located above, focused an alternative perspective in externalising an insight of the Conception-3. She, consciously or unconsciously, indicated how *epistemic authority* was allocated in her classroom as she conceived teaching as an epistemic-social authority sharing process. At the outset, the participant accepted the fact that the students were not mostly tend to criticise, evaluate, judge or legitimate her externalisations that were acknowledged unquestionable formalised factual knowledge claims. However, she also observed that the student tended to take an evaluative and critical stance when it comes to legitimate their peers' utterances. Based on her observations, she claimed that the student teachers were able to defence their available meaning positions when the dialogues were actualised among the peer community instead of a teacher-student interaction pattern. Thus, the teacher educator seemed to decide to plan and implement in-class teaching as a collective activity where the student teachers verbally and socially interacted each other when continuously shaping and re-shaping their and others' meaning positions. However, the participant also tried to contribute to classroom dialoguing or philosophising when the peer-based exchanges were saturated and congested.

### Conception-4: Teaching as a collective research process

The TEs with this conception seemed to be able to enlarge the inclusivity of the awareness regarding teaching compare to the TEs externalising Conception-3. The TEs with this conception (Conception-4) elucidated teaching and learning as a way of engaging in a research process. According to the TEs with this conception, teaching should be conceived as a collaborative research process that should be undertaken by teacher and learners (Table 2). To put it differently, teaching may be comprehended as a learning community's activity in which various stakeholders may cognitively and practically contribute to constructed meaning making through researching into meaning. In brief, the TEs with this conception of teaching perceived teaching and learning as *doing research* (Table 2).

The TEs with this conception acknowledged the discursively instrumental place of the social negotiations of meanings through confliction-posing and confliction-solving and by respecting diversifying thinking typologies developed for phenomena. However, the TEs with this conception insisted on a peculiar step further comprising data collection, analysis and

interpretation to resolve detected and accepted conceptual, epistemological and ontological contradictions.

In other words, after the student-led assertions are challenged and discussed, teaching and learning process may not be finalised. According to the TEs with this conception, PTs should also be guided to gather, analyse and interpret data to persuade themselves about that their previously stated arguments may not be adequate in accounting for phenomenon under negotiation. Thus, PTs may change their initial minds in the presence of concrete data-based and evidence-based articulations that are constructed by the learning community or research group consisting the TEs and PTs. In this context, the TEs with this conception experienced teaching as a way of persuasion for altering initial thinking systems of learners in the presence of data collection, analysis and interpretation processes to generate investigation-based arguments.

"I think pre-service teachers' in-depth learning of topics is similar to our processes of sense-making or science-making. That means learning something means researching into it. The more their processes are similar to our processes, the better they can learn something. I think science, learning and research are closely linked." (Elementary Science Teacher Education, Male; participant-29).

A teacher educator specified another aspect of the Conception-4 as learning or teaching by collectively doing science instead of *doing lesson*. He was of the idea that learning processes of the PTs resemble to the learning processes of, for instance, professional social scientists as teacher educators. Thus, this participant experienced the learning process as engaging in scientific investigation processes thus university-based teaching should be designed and implemented as a research-based activity. As he mentioned that there should be a close interrelation between doing science, learning and research and more importantly these overlapped processes cannot be separated from teaching university science, as the participant emphasized.

#### Conception-5: Teaching as creating a pedagogical toolkit

For this conception level, the TEs provided the most sophisticated externalisations about teaching and learning. To describe, the TEs with this conception apprehended teaching as a way of continuously forming and revising a teaching repertoire by dynamically creating the content-specific pedagogical content knowledge. To be clear, the TEs with this conception experienced teaching as transforming knowledge into more teachable parts for the sake of the student-led understanding (Table 2).

For this pedagogical purpose, the TEs explicated the interwoven parts of their teaching profession as being knowledgeable about initial conceptions or misunderstandings of PTs about for instance an educational phenomenon. More importantly, the TEs with this conception saw themselves as *curriculum technicians* to generate content-specific teaching approaches, strategies or representations in proliferating teachable moments in the classroom for the university-based teaching.

The TEs with this conception held an understanding that there are some particular contents that should be negotiated and elaborated by means of data collection, analysis and interpretation. Beyond, apart from the questionable university-based contents, there are also straightforward contents that can be directly conveyed to PTs. Thus, the TEs with this conception seemed to make a lesson-based or topic-based categorisation of contents as either requiring an interthinking accompanied by the argumentative dialogues between the TEs and PTs or through internally persuasive monologues created and presented by the TEs. In this context, the TEs with this conception seemed not to experience teaching as a way by separating subject-centred (teacher-centred) modes of teaching from the skill-centred (learner-centred) modes of instruction. Indeed, the TEs with this conception held an understanding about developing teaching processes in a combined, systematic and pragmatist manner that can be arranged by nature and structure of contents to be taught.

"The contents of some courses can be prepared in a context-based manner. I mean, some topics can have more contact with daily life. When this is the case, learners can learn better. In other words, we should transform the context by taking some specific contexts into account. That doesn't mean we completely change the content. For example, I refer to Olympic games while teaching something pertaining probability phenomenon. In Olympic games, the participants must be randomly checked to ensure that the athletes do not receive doping. The learners work in a real context of the subject of probability when doing mathematical calculations. There are many examples like this. When you ponder about different subjects, you may find something different." (Primary Mathematics Education, Male; participant-33).

A participant from primary mathematics education department provided a concrete example how he created his analytically-oriented parts of his pedagogical toolkit in teaching particular subjects of mathematics. He stated about the *contextualising* the subjects while tutoring. He presented a very specific teaching sequence instance to demonstrate how he contextualised probability phenomenon by referring to the Olympic games' rationality while handling with doping control processes. As he mentioned, in order to show the statistical power of random incidents to control over a community's decisions (in this example athlete community), he referred Olympic games as his students tried to acquire background mathematics of probability by attributing to a recontextualised daily experience.

## DISCUSSION

To show the structural relationships (relatedness, overlapped positions of the reported conceptions) between the conceptions of teaching, outcome space was created (Table 3). Four hierarchical levels emerged and from Level 1 to Level 4 there was an incremental inclusivity of awareness regarding teaching phenomenon. Table 3 also displays the focused dimensions of the phenomenon. Conception-1 and Conception-2 are placed within Level-1. The TEs with Conception-1 incorporated only



**Table 3:** Outcome Space

Hierarchies	Categories of Description	Focused Dimensions		
		Learner Focused (1)	Teacher Focused (2)	Teacher-Learner Focused (3)
<b>LEVEL 1</b>	1. Knowledge transmission modes of teaching (A)	*	A2	*
	2. Arbitrary inclusion or exclusion of the teacher or learner (B)	B1	B2	*
<b>LEVEL 2</b>	3. Teaching as evaluating, judging, criticising and legitimating others' arguments (C)	*	*	C3
<b>LEVEL 3</b>	4. Teaching as a collective research process (D)	*	*	D3
<b>LEVEL 4</b>	5. Teaching as creating a pedagogical toolkit (E)	*	*	E3

teacher into instructional processes. The TEs with Conception-1 restricted their conceptions to only the teacher. This finding is compatible with Leon-Carillo's (2007) knowledge-source concept, Fox's (1983) transferring concept, Gurney's (1995) delivery concept or Hadar's (2009) school learning concept.

The TEs with Conception-1 excluded PTs from instructional sequences by imparting knowledge and requesting to recall atomised information and this knowledge transmission modes of teaching were also detected in other studies (Dall'Alba 1991; Martin & Balla 1991; Pratt 1992; Samuelowicz & Bain 2001). Within Conception-1, the TEs' expressions were gathered around delivering sophisticated knowledge that can be transcended by the PTs to the other fields of everyday routines. There were emphases on the future use of the knowledge within Conception-1. However, that knowledge is transferred to the less knowledgeable others and not constructed or transformed by PTs. Equivalent results were also reported in other studies (e.g. Pratt 1992; Samuelowicz & Bain 2001).

At the Level-1, Conception-2 was appeared as a rather amorphous conception (Tondeur et al. 2008; van Driel, Bulte & Verloop 2007) since the TEs with Conception-2 put the PTs into the instructional sequences by excluding themselves or put themselves into the instructional streaming by ignoring the voices of the PTs. The TEs with Conception-2 seemed to perceive learner-centred teaching as a teaching approach in which a teacher's instructional liabilities are minimalised and even removed. For the TEs with Conception-2, teaching is something that is undertaken by learners and it may be viable in the absence of the teacher. This can be conceived as a misunderstanding of the participatory TEs with Conception-2. To sum up, at the Level-1, the TEs' conceptions are either teacher-centred or amorphous and seemed not to incorporate any concrete traces of other side's (the PTs) intellectual contributions.

For Level-2, the TEs focused on the necessity of teacher-student intellectual interactions for teaching. Moreover, the TEs with Conception-3 (Table 3) put emphasis on student-student interactions in describing their teaching. The teacher-student and student-student exchanges signify the directionality of the discursive exchanges that was reported by other studies either as one-way (from teacher to students) or two-way to negotiate meaning (e.g., Samuelowicz & Bain 1992). In this study, apart

from other studies, there was more emphases on the student-student verbal exchanges through student-led criticisms, legitimisations, evaluations and judgments on the alternative ways of thinking proposed as in the form of claims by different members.

The TEs with Conception-3 seemed to make a distinction between misconceptions and alternative conceptions of the PTs that modify their teaching practices. Actually, the TEs with Conception-3 advocated the idea that alternative/spontaneous preconceptions of PTs regarding the topic under consideration are not equal to misconceptions. The TEs did not conceive the PTs' alternative, incomplete or spontaneous conceptions as in the form of misconceptions. This conception of teaching can be attached to Vygotskian-based teaching (Vygotsky 1978; 1981). In a sense, the TEs with Conception-3 distinguished spontaneous conceptions and formalised (scientific) conceptions. According to the TEs with this conception, the spontaneous conceptions of the PTs are developed through everyday experience and communication and are formed aside from any process aimed specifically at mastering them. As the TEs with this conception believed that university-based or scientific concepts can be formed through formal instruction as "the birth of the scientific concept begins not with an immediate encounter with things but with a mediated relationship to the object" (Vygotsky, 1987). In other studies, more learner-centred educators defined their teaching as preventing students from misunderstandings or misconceptions (e.g., Samuelowicz & Bain 2001). This argument is not valid for the results of the current study since the TEs with Conception-3 assigned a pedagogical value to alternating thinking systems to rearrange the streaming of the instructional sequences.

According to the TEs with Conception-3, alternating thinking systems must be first considered, then should be modified or elaborated through negotiations of meanings to reach an intellectual consensus. The TEs with Conception-3 externalised ways of modifying or extending PTs' spontaneous conceptions. According to the TEs, one of the instrumental ways of coping with alternating conceptions is to present internally persuasive assertions to them (Mortimer & Scott 2003). In a sense, not only the TEs but also the PTs must be responsible for modifying each other's differentiating thinking to get somewhere

as an intellectual consensus (Engle & Conant 2002). The TEs with Conception-3 seemed to experience teaching as a kind of socially validated system.

The TEs' conceptions seemed to be substantially related with the Vygotskian meaning making. The TEs with Conception-3 seemed to believe that teaching or meaning making is a dialogic process. In the Vygotskian sense, meaning-making of a phenomenon can be attained in two planes (Vygotsky 1978): interpsychological (social plane) and intrapsychological (cognitive plane). On the interpsychological plane, a teacher and students can rehearse and perform various social languages by diverse semiotic mechanisms (symbols, diagrams, graphics) as in the forms of speech genres. On the intrapsychological plane, following the internalisation of the reproduced phenomena among the group members, individual thinking as the appropriation of the previously negotiated concepts for individualised schemes is performed (Vygotsky 1978).

According to the TEs with Conception-3, interpsychological processes are formed through contradiction-posing processes that are mostly handled by the TEs. Moreover, intrapsychological processes are relatively handled by the PTs when they are involved in contradiction-solving processes by deliberately evaluating, criticising, judging and legitimating their classmates' claims.

Intramental processes of the PTs can be conceived as internalisations or transformations of the socially validated thinking for individualised uses. The PTs may appropriate socially negotiated claims for individually-oriented uses and applications (John-Steiner & Mahn 1996). However, both in this study and other studies, internalisation or transformation processes of the socially shared ideas have not been considered in a holistic sense by the participants. In this study, the TEs with Conception-3 made references to the social negotiations of meaning by stressing on intermental plane through interthinking. In related studies, acquired knowledge was divided into two sections from the lens of the respondents: externally-oriented and personalised constructs. In these studies (Bain et al. 1998; Kember 1997, Martin and Ramsden 1992), there was a concrete division between internal (individual plane) and external (social plane) or within and without. None of the studies have fictionalised an interrelation between individual plane and social plane. Thus, even though there were signs of the Vygotskian meaning making among the clarifications of the TEs with Conception-3, in a particular sense, individualised transformations of the socially validated aspects as in the form of internalisation were not adequately externalised.

For a broader documentation of teaching phenomenon, indicated as Level-3 and Conception-4 (Table 3), the TEs depicted teaching as a researched-based process. The TEs with Conception-4 acknowledged the PTs as scholarly-oriented peers who should be able to collect, analyse and interpret data. The TEs with Conception-4 did not delimit co-constructivist teaching by only referring to interpersonal negotiations of meaning. Furthermore, for becoming more persuading, evidence-based assertions should be created by the PTs.

In related studies, this type of teaching conception was portrayed as encouraging knowledge creation (Dall'Alba 1991; Martin & Balla 1991; Pratt 1992). The TEs with Conception-4 were of the idea that desired learning outcome of a teaching process should be a visible change in ways of thinking about topic under negotiation as revealed by other studies (Dall'Alba 1991; Martin & Balla 1991; Pratt 1992). By means of data gathering, analysis and interpretation processes, it may be more credible for the PTs to hold an interpretation of individualised reality as termed by other studies (Bain et al. 1998; Martin & Ramsden 1992). Moreover, if a way of persuading people to shift their ideas is to invite them to criticise each other's claims, other is to promote the PTs for engaging in data-based reasoning as confirmed by other studies with regards to TEs' conceptions of teaching (Martin & Balla 1991; Pratt 1992; Prosser, Trigwell, & Taylor 1994).

In this study, the broadest conception of teaching the TEs reported was found as Conception-5 (Level-4, Table 3) including externalisations about generating a dynamic and flexible pedagogical toolkit for teaching. Within the expressions of the TEs with Conception-5, there were several references to Shulman's (1986a) missing paradigm for teaching. In a sense, the TEs with Conception-5 seemed to go beyond knowledge of subject matter per se to the dimension of subject matter knowledge for teaching.

One of the most salient point within the expressions of the TEs with Conception-5 was that every topic may require a specific approach of teaching. The clarifications of the TEs with Conception-5 implied the relation between topic and teaching methods for teaching that topic that displays epistemic prerequisites in addition to psychological/pedagogical orientations. To explicate the reported conceptions of the TEs in this category, concept of learning demand (Scott 1998) can be barrowed.

It was clear in the clarifications of the TEs with Conception-5 that a predetermined topic can be analysed in terms of its specific aspects that may require more dialogic transactions of verbal thinking and may involve more monologic exchanges for the topic's specific aspects. This requires both an epistemological and psychological interpretation in the sense of concept of learning demand (Leach & Scott 2000).

The teaching and learning representations of the PTs are constructed, communicated and validated within everyday culture in which the PTs have been lived by. The PTs therefore come to classrooms with their pre-ideas that can be more or less far away from the scientific point of view that is expected to be acquired by the PTs. A critical and closer analysis of a topic can reveal communalities and differences between the everyday notions of the PTs and scientific points of views. The greater communality between two camps of thinkers-talkers' thinking and talking about, for instance, how to teach may signal a direct lecturing or other kind of representational activity. To advocate, there would be no epistemological gap between the everyday and formalised (scientific) notions regarding the topic under negotiation, for instance, school levels and school-based organizations in the context of Turkish Education

System as a straightforward piece of the content to be taught (*"Because the subject is clear, the student's head is clear."* Table 2; Conception-5).

On the other hand, same topic may include specific pieces entailing greater epistemological and ontological gaps or cognitive demands regarding developed notions between two camps (PTs and TEs) of thinkers-talkers. To put it differently, if everyday representations (of the PTs) of particular pieces of phenomenon (e.g., how to teach) under negotiation are substantially different from scientific representations or reasoning, learning may prove difficult. When this is the case, more dialogic teaching may be more of an issue in handling both alternating notions of the PTs and formalised notions of scientific communities. This may create a pedagogical-discursive tension for the TEs when there are greater gaps between two camps of thinkers and talkers' conceptualisations regarding a specific topic (*"The discussion had been branching out and become complicated. Enabling reconciliation was very difficult in some moments. Even when consensus was not achieved, all the students had targeted me by saying that I wrote wrong scenarios."* Table 2; Conception-5). To explicate, in this discursive journey, from everyday notions to scientific point of view, the TEs are the often-hard-pressed tour mediating between PTs' everyday verbal thinking and the thought and language of scientific communities.

When this is the case, as reported by the TEs with Conception-5, teaching is a rather sophisticated phenomenon requiring a systematic and intentional combinations of dialogic and monologic teaching by analysing learning demands that are tacitly or overtly embedded in the diversified university-based subjects.

### CONCLUSIONS and IMPLICATIONS

In conclusion, a continuum/spectrum was established by deeply analysing reported teaching experiences of the TEs. Outcome space confirms an increasing inclusivity of awareness regarding teaching experiences of the TEs and a variance in terms of conceptualisations of the experiences of teaching moments. Within the TEs' teaching conceptions both potential for uniformity and potential for variation were emerged. The TEs clarified both knowledge-transmission modes of teaching and broader styles of teaching as knowledge co-construction (e.g., creating pedagogical toolkit in response to learning demands with regards to more or less cognitive gaps regarding epistemological underpinnings).

In the study, it was comprehended that, a participatory teacher educator might have greater interpretations incorporating mostly contemporary views of learning and teaching, for instance, Vygotskian-based paradigm. However, as the participatory TEs' colleagues, and careful observers of their lecturing processes, we, as the researchers, have to and should admit that broader conceptualisations have not reflected to in-class teaching. In other words, the researchers have frequently observed during their academic life till now that there has been an incongruity between the reported teaching concepts

and in-class pedagogical decisions/actions. There may be countless reasons of the incongruity thesis such as contextual barriers, technical obstacles or student-led traits in addition to teacher-led factors. Thus, as a further research initiation, there must be closer interrogations of the conceptions and actions of TEs in a reflective context to find out the overarching rules governing congruity and incongruity conditions.

It has been well accepted that TEs may not develop an understanding and consciousness regarding their teaching conceptions, their effects on PTs' intellectual and pedagogical outcomes and contradictions between reported conceptions and enacted actions. To construct a tangible meta-awareness for TEs, they may (should) be involved in deliberately designed and implemented professional development programs. Following Schon's (1983; 1987) recommendations, during professional development processes, in educating a reflective practitioner, TEs may make self-reflections on multi-layered aspects of developed conceptions and enacted actions to systematically observe and evaluate their conception-action dichotomies for being excellent in university-based teaching. Methodologically, mentioned awareness and conception-action congruity may be more viable through stimulated-recall sessions as the core part of several self-reflective professional development attempts (Calderhead 1981).

### Limitations of the Study

This study aimed at depicting the TEs' conceptions of teaching in the sense of university-based context. As all research studies incorporates, the current study also includes some methodological restrictions. The researchers of the current study operated a convenient sampling strategy for some technical issues and this negatively affected the generalizations of the research outcomes for other contexts. To our knowledge, even though qualitatively-oriented studies *do not aim to generalise reached findings*, external readers can internalise or generalise findings from a research process. In other words, in the qualitative researches similar to this, *not the researchers but the external readers* may make the generalisations to consider, compare, contrast and juxtapose their own context and the context in which a qualitative research is carried out. However, as a limitation of the study, most of the teacher educators were research assistants ( $n=19$ ) as well as assistant professors ( $n=13$ ), thus only these group of educators may generalise the findings of the study to their own contexts. In addition, this study was conducted for only teacher educators. To expand our vision pertaining teaching in the context of higher education, other faculties' educators should be included in that type of research processes.

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## REFERENCES

- Åkerlind, G. S. (2003). Growing and developing as a university teacher-variation in meaning. *Studies in Higher Education*, 28, 375-390.
- Åkerlind, G. S. (2008). A phenomenographic approach to developing academics' understanding of the nature of teaching and learning. *Teaching in Higher Education*, 13(6), 633-644.
- Åkerlind, G. S. (2012). Variation and commonality in phenomenographic research methods. *Higher Education Research & Development*, 31(1), 115-127.
- Arslanoglu, Ö. (2015). *An examination of how the theory-practice relationship of pedagogy courses is conceived and perceived by the participants, and how management of education systems and faculties can enhance the quality of teacher education in Turkey* (Unpublished Doctoral Dissertation). Durham University, London, United Kingdom.
- Bain, J. D., McNaught, C., Mills, C., & Lueckenhausen, G. (1998). Describing computer facilitated learning environments in higher education. *Learning Environments Research*, 1, 163-180.
- Berry, M. (1981). Systemic linguistics and discourse analysis: A multi-layered approach to exchange structure. In M. Coulthard & M. Montgomery (Eds.), *Studies in discourse analysis* (pp. 120-145). London: Routledge and Kegan Paul.
- Berry, A. (2007). Reconceptualizing Teacher Educator Knowledge as Tensions: Exploring the Tension Between Valuing and Reconstructing Experience. *Studying Teacher Education*, 3(2), 117-134.
- Booth, S. (1997). On phenomenography, learning and teaching. *Higher Education Research and Development*, 16(2), 135-158.
- Bullock, S. M., & T. Christou. (2009). Exploring the Radical Middle Between Theory and Practice: A Collaborative Self-Study of Beginning Teacher Educators. *Studying Teacher Education* 5(1), 75-88.
- Bullough, Jr. R. (1997). Becoming a teacher. Self and the social location of teacher education. *International Handbook of Teachers and Teaching*, (pp. 79-134). Dordrecht: Kluwer.
- Calderhead, J. (1981). Stimulated recall: A method for research on teaching. *British Journal of Educational Psychology*, 51(2), 211-217.
- Dall'Alba, G. (1991). Foreshadowing conceptions of teaching. In Ross, B. (Ed.), *Research and Development in Higher Education*, Vol. 13. Sydney: HERDSA (pp. 293-297).
- Darling-Hammond, L. (2006). *Powerful teacher education: Lessons from exemplary programs*. San Francisco: Jossey-Bass.
- Dinkelman, T., Margolis, J. & Sikkenga, K. (2006). From teacher to teacher educator: Experiences, expectations, and expatriation. *Studying Teacher Education* 2(1), 5-23.
- Donche, V., & Petegem, P. (2011). Teacher Educators' Conceptions of Learning to Teach and Related Teaching Strategies. *Research Papers in Education*, 26(2), 207-222.
- Engle, R. A., & Conant, F. R. (2002). Guiding principles for fostering productive disciplinary engagement: Explaining an emergent argument in a community of learner's classroom. *Cognition and Instruction*, 20, 399-484.
- Fox, D. (1983). Personal theories of teaching. *Studies in Higher Education*, 8, 151-163.
- Goodwin, A. L., & Kosnik, C. (2013). Quality teacher educators=quality teachers? Conceptualizing essential domains of knowledge for those who teach teachers. *Teacher Development*, 17(3), 334-346.
- Gow, L., & Kember, D. (1993). Conceptions of teaching and their relationship to student learning. *British Journal of Educational Psychology*, 63, 20-33.
- Gurney, B. F. (1995). Tugboats and tennis games: Pre-service conceptions of teaching and learning revealed through metaphors. *Journal of Research in Science Teaching*, 32(6), 569-583.
- Hadar, L. (2009). Ideal versus school learning: Analyzing Israeli secondary school students' conceptions of learning. *International Journal of Educational Research*, 48(1), 1-11.
- John-Steiner, V., & Mahn, H. (1996). Sociocultural approaches to learning and development: A Vygotskian Framework. *Educational Psychological*, 31(3/4), 191-206.
- Kember, D., & Gow, L. (1994). Orientations to teaching and their effect on the quality of student learning. *Journal of Higher Education*, 65, 58-74.
- Kember, D. (1997). A reconceptualisation of the research into university academics' conceptions of teaching. *Learning and Instruction*, 7, 225-275.
- Kosnik, C., & Beck, C. (2008). In the shadows: Non-tenure-line instructors in pre-service teacher education. *European Journal of Teacher Education* 31(2), 185-202.
- Krull, E., & Raudsepp, I. (2012). Developmental changes in student teachers' conceptions of learning and teaching resulting from studying a course in educational psychology. In J. Mikk, M. Veisson, & P. Luik (Eds.), *Lifelong learning and teacher development*, Vol. 4 (pp. 97-112). Frankfurt am Main: Peter Lang Publishing Group.
- Leach, J., & Scott, P. (2000). *The concept of learning demand as a tool for designing teaching sequences*. Paper prepared at the meeting research-based teaching sequences, Université Paris VII, France, November.
- Lemke, J.L. (1990). *Talking science: Language, learning and values*. Norwood, NJ: Ablex.
- Leon-Carillo C. (2007) Filipino pre-service education students' preconceptions of teacher roles viewed through a metaphorical lens. *Asia-Pacific Journal of Teacher Education*, 35(2), 197-217.
- Lin, A. M. Y. (2007). What's the use of "triadic dialogue"? Activity theory, conversation analysis and analysis of pedagogical practices. *Pedagogies*, 2(2), 77-94.
- Loughran, J. (2006). *Developing a Pedagogy of Teacher Education: Understanding Teaching and Learning about Teaching*. New York: Routledge.
- Loughran, J. (2008). *Toward a Better Understanding of Teaching and Learning about Teaching*. In Handbook of Research on Teacher Education: Enduring Questions in Changing Contexts. 3rd ed., edited by M. Cochran-Smith, S. Feiman-Nemser, and J. McIntyre, (pp. 1177-1182). New York: Routledge.
- Magnusson, S., Krajcik, J., & Borko, H. (1999). Nature, sources and development of pedagogical content knowledge. In by J. Gess-Newsome and N. G. Lederman (eds), *Examining pedagogical content knowledge*, (pp. 95-132). Dordrecht: Kluwer.



- Mameli, C., & Molinari, L. (2013). Interactive micro-processes in classroom discourse: turning points and emergent meanings. *Research Papers in Education*, 28(2), 196-211.
- Martin, E., & Balla, M. (1991). *Conceptions of teaching and implications for learning*. In
- Martin, E., & Ramsden, P. (1992). An expanding awareness: how lecturers change their understanding of teaching. In M. S. Parer, (ed.), *Research and Development in Higher Education*, Vol. 15. Sydney: HERDSA, pp. 148-155.
- Marton, F. (1986). Phenomenography: A research approach to investigating different understandings of reality. *Journal of Thought*, 21(3), 28-49.
- Marton, F. (1995). On non-verbal learning 1. Level of processing and level of outcome. *Scandinavian Journal of Psychology*, 16, 273-279.
- Marton, F., & Booth, S. (1997). *Learning and awareness*. Hillsdale, N. J.: Lawrence Erlbaum.
- Mortimer, E., & Scott, P. (2003). *Meaning making in secondary science classrooms*. Maidenhead, England: Open University Press.
- Murray, J. (2005). Re-addressing the priorities: New teacher educators and induction into higher education. *European Journal of Teacher Education*, 28(1), 67-85.
- Murray, J. & Kosnik, C. (2011). Academic work and identities in teacher education. *Journal of Education for Teaching*, 37(3), 243-246.
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332.
- Pratt, D. D. (1992). Conceptions of teaching. *Adult Education Quarterly*, 42, 203-220.
- Prosser, M., Trigwell, K., & Taylor, P. (1994). A phenomenographic study of academics' conceptions of science learning and teaching. *Learning and Instruction*, 4, 217-232.
- Prosser, M., & Trigwell, K. (1999). *Understanding learning and teaching: The experience in higher education*. Buckingham: Open University Press.
- Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula (Ed), *Handbook of Research in Teacher Education*, (pp.102-119). New York: Macmillan.
- Samuelowicz, K., & Bain, J. D. (1992). Conceptions of teaching held by academic teachers. *Higher Education*, 24, 93-111.
- Samuelowicz, K., & Bain, J. D. (2001). Revisiting academics' beliefs about teaching and learning. *Higher Education*, 41, 299-395.
- Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schon, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Scott, P. H. (1998). Teacher talk and meaning making in science classrooms: A Vygotskian analysis and review. *Studies in Science Education*, 32, 45-80.
- Shulman, L. S. (1986a). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14.
- Sjostrom, B., & Dahlgren, L. O. (2002). Applying phenomenography in nursing research. *Journal of Advanced Nursing*, 40(3), 339-345.
- Timmerman, G. (2009). Teacher educators modelling their teachers? *European Journal of Teacher Education*, 32(3), 225-238.
- Tondeur, J., Hermans, R., van Braak, J., & Valcke, M. (2008). Exploring the link between teachers' educational belief profiles and different types of computer use in the classroom. *Computers in Human Behavior*, 24, 2541-2553.
- Vanassche, E., & Kelchtermans, G. (2016). A narrative analysis of a teacher educator's professional learning journey. *European Journal of Teacher Education*, 39(3), 355-367.
- Van Driel, J. H., Bulte, A. M. W., & Verloop, N. (2007). The relationship between teachers' general beliefs about teaching and learning and their domain specific curricular beliefs. *Learning and Instruction*, 17, 156-171.
- Vloet, K., & van Swet, J. (2010). I can only learn in dialogue! Exploring professional identities in teacher education. *Professional Development in Education*, 36(1-2), 149-168.
- Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1981). The genesis of higher mental functions. In J. W. Wertsch (Ed.), *The concept of activity in Soviet psychology* (pp. 144-188). Armonk, N. Y.: Sharpe.
- Vygotsky, L. S. (1987). Thinking and speech (N. Minick, Trans.). In R. W. Rieber & A. S. Carton (Eds.), *The collected works of L. S. Vygotsky: Vol. 1. Problems of general psychology*, (pp. 39-285). New York: Plenum Press. (Original work published 1934).
- Wildman, T.M. (2008). Learning. In J.S. Neil & K. Rasmussen (Eds.), *Encyclopedia of educational psychology* (Vol. 2, pp. 573-578). Los Angeles: Sage Publications.
- Zeichner, K. (2005). Becoming a teacher educator: A personal perspective. *Teaching and Teacher Education*, 21(2), 117-124.