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## Towards a Consensus: Harmonizing Definitions and Consistency in Terminology Use of Conceptions of Teaching in Higher Education. A Systematic Literature Review

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### Abstract

*Teaching conceptions in higher education, or so-called academics' conceptions of teaching (ACTs), are essential in informing teaching behaviors and influencing students' learning. Consequently, several attempts have been made since the 1990s to understand what ACTs represent and how they can be developed towards student-centered teaching. However, the expected results did not occur as planned because ACTs were frequently misinterpreted mainly because of the similarities with teaching beliefs and other comparable concepts like cognitions about teaching or perspectives of teaching. Hence, many fundamental issues still need to be solved (e.g., ACTs definition, terminology use, measurement, etc.). The present systematic literature review aimed to clarify the conceptual discrepancies in the ACTs' definitions and terminology and propose a consensus regarding the most appropriate working definition and terminological use. We analyzed 1123 studies using systematic online searching in the Web of Science Database and citation searching. After the eligibility process, we came across 78 eligible articles. The results showed that most of the studies used the terminology and definitions of "conceptions of teaching" (Pratt, 1992) to the detriment of the "beliefs of teaching" or another related term. Even though the concepts "conceptions of teaching" and "beliefs of teaching" come from different theoretical perspectives—where "conceptions" originate from a phenomenological approach, characterized by qualitative methodologies, and "beliefs" come from a cognitive approach, represented by quantitative studies—most studies used them interchangeably. However, the authors only extremely rarely ( $N = 2$ ) appeared aware of this interchangeability and explicitly mentioned it. While the "conceptions of teaching" emerged as the most utilized term, Pratt's (1992) definition was the most often employed definition of ACTs. We advocate for consistency in teaching conceptions, research definitions, and terminological use, paramount for diminishing the risk of misinterpretation, comparing, and synthesizing findings, as well as straightforward communication among educationalists, researchers, and policymakers.*

**Keywords:** academics' conceptions of teaching, beliefs of teaching, framework of definitions and terminology, higher education, systematic literature review

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## 1. Introduction

The traditional model of a teacher who instructs, communicates, displays, illustrates, and knows everything, expecting students' attentiveness, effort, comprehension, and knowledge acquisition to occur, is no longer effective in promoting learning outcomes. Effective teaching requires an instructional approach centered on student needs, involving active, collaborative, and self-regulated learning (Vermunt et al., 2017). As student-centered teaching in higher education (HE) was proven to foster better outcomes in terms of student learning and inclusivity (Klemenčič et al., 2020), one of the main stakes of academic developers is helping academics to successfully transition towards student-centered or learning-focused instruction (Cassidy & Ahmad, 2019). There is a higher chance that students will be authentically engaged in their learning process and embrace reflective study practices (i.e., deep learning approaches) if their teachers embrace student-centered instruction (Asikainen & Gijbels, 2017). However, there is consistent evidence that HE in Europe, but not solely, is still centered on traditional teaching (e.g., lecturers, teacher-centered practices), which makes the shifting paradigm from what teachers know and like to teach to what students need to learn less probable (Klemenčič et al., 2020).

Teaching can now be explained more than merely delivering or discussing information. Therefore, a crucial aspect of the teaching transformation is the alteration of teachers' conceptions of teaching (Sadler, 2012a, 2012b). Numerous studies have concluded that developing university teaching conceptions (i.e., thinking about teaching) is the primary groundwork of their teaching competencies (Bowden, 1990; Gibbs & Coffey, 2004; Karm et al., 2022). Before adopting student-centered teaching strategies, academics must be aware of and modify their teaching conceptions to facilitate student learning (Kember, 1997). However, even if HE institutions have invested massive resources in the last decades in the instructional training of academics, university pedagogical training programs have modest effects on the desired conceptual change (Ilie et al., 2020). Nevertheless, the modest impact of the existing training programs on ACTs development is not surprising as the improvement and further transposition of ACTs in observable teaching behaviors remains (i.e., just like it was 30 years ago) one of the many "mysteries of higher education" (Murray & MacDonald, 1997, p. 331; Samluelowicz & Bain, 1992, p. 110).

Over the last thirty years, there have been several attempts to understand what conceptions of teaching are and how they can be enhanced, not only in the case of academics but in the case of teachers at all educational levels (Åkerlind, 2008; Kagan, 1992a; Kane et al., 2002; Kember, 1997; Pratt, 1992; Karm et al., 2022). However, the lack of clarity in ACT definitions and conceptual delimitations, especially with the concept of *teaching beliefs* but also with other related concepts (e.g., teachers' thinking about teaching, cognitions about teaching, subjective theories, perspectives about teaching, or teaching orientations), caused massive ambiguity in the terminology used, making

progress unlikely (Fischer & Hanze, 2020; Kagan, 1992b; Kane et al., 2002; Kember, 1997). These ambiguities are also partially attributed to the nature of existing published empirical investigations, which are primarily theoretical and founded on relatively small numbers of participants, making the findings' general effect unclear and less definitive (Kagan, 1990; Pajares, 1992; Saroyan et al., 2009). After more than fifty years of investigations, there is still no clear agreement concerning the categories describing ACTs and the association between those categories (i.e., whether they are independent or hierarchical or whether frontiers between them are soft or hard) (Entwistle & Walker, 2002; Kember, 1997; Samuelowicz & Bain, 1992, 2001).

In the current manuscript<sup>1</sup>, we aim to systematically synthesize the knowledge of previous research that investigated ACTs and see what the roots of the definition of teaching conceptions are and to what extent the authors in the field consistently used and acknowledged their origins in their papers. Specifically, after presenting a short synthesis of the previous systematic literature reviews on teaching conceptions or beliefs at all teacher education levels (i.e., primary, secondary, HE, and adult education), we discussed the need for a new synthesis of teaching conceptions in HE teachers. Further, we presented the state-of-the-art regarding (1) how conceptions of teaching in HE (ACTs) were defined and (2) how consistently the similarities in the terminology and definitions of "teaching conceptions" and "teaching beliefs" were acknowledged and used throughout the years and advanced two central research questions. Additionally, we introduced the design, the method (i.e., literature search and inclusion criteria), and our systematic literature review findings. This work also presents potential implications for ACTs, communication between the main stakeholders (i.e., academic developers, researchers, and policymakers), and implications for future investigations to develop teaching conceptions in HE.

### **Previous reviews and fundamental papers on conceptions and beliefs about teaching**

An empirical paper (Pratt, 1992) that is critical for the understanding of ACTs and six literature reviews that (Kagan, 1990, 1992a, 1992b; Kane et al., 2002; Kember, 1997; Pajares, 1992) summed up the research on teaching conceptions in the educational field in the last century. While the paper of Pratt (1992) analyzed teaching conceptions of adults and adults' teachers and only is a qualitative study with a selective literature review, four of the six literature reviews analyzed teachers' beliefs at primary and secondary educational levels (Kagan, 1990, 1992a, 1992b; Pajares, 1992). Only two reviews informed the research on conceptions of teaching strictly at the HE level (Kember,

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<sup>1</sup> With special attention to the studies that present differences in the use of the terminology of ACTs and ABTs or studies in which the differences or similarities cannot be figured out (see Table 3), as most of the existing literature considered them as interchangeable, the present manuscript uses "conceptions of teaching" and "beliefs of teaching" as largely synonymous. Terminological demarcations and elucidation of differences and similarities regarding "conceptions of teaching" and "beliefs of teaching" are discussed throughout the manuscript.

1997; Kane et al., 2002). As the roots, definitions, meanings delineations, and usage of ACTs and ABTs terminology are messy, we included literature reviews and fundamental papers on primary and secondary teacher and adult education in the theoretical synthesis to portray the two concepts' differences and similarities. We will briefly synthesize all the seven papers to understand better the origins and trajectories of the definitions and terminology related to ACTs and/or academics' beliefs of teaching (i.e., ABTs).

Between 1990 and 1992, Dona M. Kagan realized a series of three reviews on primary and secondary teachers' beliefs and related concepts, like teacher cognition, conceptions, knowledge, and self-reflections on learning and teaching (Kagan, 1990, 1992a, 1992b). Even if all three reviews are considered foundational for the understanding of ABTs, none of them meet the methodological criteria of a systematic literature review. In her first literature review of this series of three, Donna Kagan (1990) reported on a synthesis of 49 articles (i.e., from 1981 to 1989). The author acknowledges that the review lacks the red storyline and organization of systematic analysis such that substantive issues and findings are emphasized. Instead, she presented and discussed the reviewed studies regarding the method(s) employed to access and assess teacher cognition. The author analyzed five approaches to assess the teacher's cognition in this first review. One of the assessment approaches was related to "direct and non-inferential ways of evaluating teacher's beliefs". Kagan (1990) defined the cognition of teachers (i.e., both pre- and in-service) as being formed by their self-reflections, knowledge, and beliefs of teaching, students, and the subject matter (i.e., content). Regardless of the definition, she mentioned that she uses teacher's beliefs and knowledge interchangeably because what a teacher knows regarding teaching is highly subjective. In her first review, Kagan (1990) defines beliefs of teaching as "The highly personal ways in which a teacher understands classrooms, students, the nature of learning, the teacher's role in the classroom, and the goals of education" (p. 423). Moreover, she also discusses several ambiguities and contradictions addressed in the following reviews.

In her second review (Kagan, 1992a), the author reported on a synthesis of 25 studies on teacher's beliefs (from 1981 to 1990). In this review, the author proposes a more refined version of the teacher belief definition, adding that teacher beliefs are often unconscious, tacit assumptions about teaching, the subject matter, learning and students. Also, the author concluded that teacher beliefs are hard to change, pointing out the scarcity of empirical proof of effective conceptual transformations in teachers (e.g., academics' teaching beliefs contextualization, beliefs' translation into the classroom, etc.).

In her third review, Kagan (1992b) analyzed 40 pieces of research that examined the topic of learning-to-teach (i.e., issued between 1987 and 1991) for debutants and preservice teachers. Kagan (1992b) reported that in their first teaching year or the preservice period, there is a single developmental phase in which debutants mainly develop their understanding of pupils. Further, based on this understanding, novices adjust and rebuild their portrayals of themselves as teachers and develop teaching and classroom management procedures and routines. Kagan (1992) concluded that

preservice teacher training programs failed to adequately address the development of teachers' beliefs and instruction development.

Concomitantly with Kagan's (1992a, 1992b) second and third literature reviews, Pajares investigated 36 studies published on a broader time horizon (between 1968 and 1991) on teachers' and candidates' (i.e., preservice teachers) beliefs. Pajares (1992) was in the same line as Kagan (1992a) and claimed the poor conceptualization, the scarcity of definitions, different understandings, and the inconsistency in the usage of terminology of teachers' beliefs. However, the analysis of Pajares was more specific in examining the multitude of meanings attributed to teachers' beliefs and how those meanings differed from other similar concepts (e.g., conceptions, orientations, knowledge, etc.). In his review, based on previous findings, Pajares (1992) offers a comprehensive picture of teachers' beliefs, giving a broad definition and a synthesis of 16 fundamental assumptions about teachers' educational beliefs. Pajares (1992) asserts that research on teachers' beliefs should become a must as they may prove to be one of the most important constructs in educational research. Nevertheless, his review mainly focuses on teacher cognition research, investigating only preservice and secondary education teachers' beliefs, knowledge, and conceptions underpinning their instruction practice. Also, even though the author specifies that studies usually struggle with the methodology and design, such information about the reviewed studies needs to be included.

Unlike the previously described reviews, Pratt's (1992) study uses the terminology of "conceptions of teaching" instead of "teacher beliefs". Even though Pratt's study is not a systematic literature review but a qualitative study with a selective literature review, he cautiously delineated his methods in the paper (e.g., "guiding frames of reference", "phenomenography as research methodology", "data collection", and "data analysis"). Given the importance of this work in the domain, as the state-of-the-art regarding ACTs cannot be concluded without considering Pratt's (1992) work, we decided to include its work in this section. In his study, Pratt and his collaborators interviewed 253 adults and adult teachers from five countries (i.e., the USA, Canada, Singapore, Hong Kong, and China). According to Pratt (1992), teaching conceptions are the groundwork when it comes to the study and practice of teaching. In his study, Pratt operated the recall of teaching activities and methods (i.e., participants' descriptions of their teaching) as representative (proxy) for the participant's actual actions and teaching practices. Teachers' teaching approaches and adult students' learning processes are seen by Pratt (1992) as equivalent sets of components in an interdependent and dynamic trilogy formed of beliefs, intentions, and actions. In this trilogy, most people's beliefs signal/inform their intentions, which successively direct the teaching process. Pratt (1992) discovered five categories of teaching conceptions (i.e., c1: delivering the subject's content or engineering; c2: apprenticeship or the modeling of students; c3: stimulating the intellect, developmental; c4: fostering individual agency, nurturing; and c5: pursuing a fairer society also called social reform). The associations between teachers, learners, context, content, and ideal vision characterize the identified categories of teaching



conceptions. As defined by Pratt in 1992: "Conceptions are specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world and, in so doing, use those abstract representations to delimit something from and relate it to other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world" (p. 204). Additionally, in his end note, Pratt specifies that through the paper the term conception will be referred to not as a verb, but as a noun (i.e., conception (noun) = "an abstract, cognitive representation of some phenomenon"). Pratt (1992) furnishes a structured framework that distinguishes between conceptions of teaching, actions, intentions, and beliefs. He acknowledges these elements are interrelated but different within the broader context of teaching conceptions.

Kember (1997) reported a synthesis of 13 studies issued between 1983 and 1994. In his review, Kember organized the research on ACT under two comprehensive orientations (i.e., learning-oriented/student-centered and content-oriented/teacher-centered). Each orientation is compounded by two associated conceptions bonded by an intermediate and transitory category (i.e., interaction between students and teacher). According to Kember, the two orientations represent two poles (i.e., within a continuum), among which the five conceptions describe well-defined points. Also, Kember (1997) argues for the academics' possibility to shift their teaching conceptions across the continuum over time. Kember specifies the use of "beliefs of teaching" terminology and acknowledges that it is less commonly used in research in HE. However, Kember acknowledges that in most investigations, this terminology is synonymous with Pratts' (1992) definition of teaching conceptions, acknowledging that although there are minor differences between ACTs and ABTs terms, they were used as 'largely synonymous' in most existing studies. It is worth mentioning that Kember does not advance its definition of ACTs but uses Pratts' (1992) definition and uses ACTs and ABTs interchangeably. However, Kember (1997) advanced a relational model between ACTS, academics' teaching approaches, and learning outcomes. As far as we know, Kember's synthesis is the first literature review exclusively on teaching conceptions of university teachers.

Based on an analysis of fifty papers (i.e., published between 1983 and 2001), Kane and her colleagues (2002) thoroughly reviewed the literature on ABTs and academics' teaching practices. First, the authors elucidated the background of research on beliefs of teaching in primary and secondary teachers (i.e., research on teacher knowledge and beliefs and confusing terminology). Second, the theoretical framework employed to investigate the academics' theories of action is presented. Additionally, in the Appendix, the authors attached summaries of the analyzed studies presenting the identification information of the paper, the theoretical framework, research focus, participants, data assembled, and data analysis techniques. Therefore, the primary aim of this critical review was to assess the correspondence between academics' espoused action theories and the theories they use in their teaching. According to the authors, some of the analyzed studies

told only half of the story (i.e., they could not distinguish between what academics said about their teaching and what they effectively did in their teaching practice). The authors advanced valuable suggestions for academics' instructional development and future studies on ACTs (i.e., data collection, data analysis, irregular terminology use, etc.). Also, the authors signaled the errors made in the process of knowledge import on teachers' beliefs from research on primary and secondary to HE. After reviewing the studies on ACTs and ABTs, Kane et al. (2002) concluded that it is obvious that academics form teaching conceptions or beliefs in HE in general and also regarding their objectives and intentions in the class. Kane et al. (2002) noted the complexity and variation in terminology within literature, emphasizing that researchers often use terms like teacher cognition, knowledge, beliefs, and conceptions interchangeably. Specifically, in the case of "teaching conceptions" and "teaching beliefs," they concluded that these two terms are occasionally used interchangeably and other times with distinct meanings, highlighting the necessity of differentiating between them to avoid vague or misleading conclusions. The authors analyzed how ACTs and ABTs were used in several studies, indicating variability in how they are applied and understood in research contexts. Even if Kane et al. (2002) do not inherently view the terms as interchangeable, they recognize that broader literature may treat them as such. Hence, to aid further study, Kane and her colleagues advocate for a more unambiguous distinction between these terms and agree upon standard definitions, accentuating the importance of concomitantly examining teaching beliefs or conceptions and actual teaching practices.

### **The need for a new synthesis of academics' conceptions of teaching (ACTs)**

Based on the prior literature reviews on ACTs and/or ABTs at all educational levels, we summarized recommendations for future investigations concerning the necessity of agreeing on the conceptualization of teaching beliefs/conceptions, their meaning, and terminological consistency at all educational levels, not only HE. We presented the evolution of suggestions in Table 1.

An important first step in making the most of the resources invested in enhancing teaching practices in HE is a systematic review that could ensure a comprehensive understanding of how conceptions and beliefs are defined, understood, and used by researchers and professionals in the field. Next, after clarifying those, there is a higher chance that one could understand how ACTs and/or ABTs can shape teaching practices and their efficacy.

Even though they did not systematically solve the mystery themselves, the last synthesis on ACTs and ABTs signaled the necessity of clarifying those two fundamental issues (Kane et al., 2002; Kember, 1997) or otherwise, there will be misunderstandings and misuses that will make their understanding even harder. Which, to some extent, did happen (Åkerlind, 2008; Degago & Kaino, 2015).

Table 1. The expansion of the suggestions for forthcoming examinations to address the conceptualization and terminological consistency use emphasized in the prior literature reviews on investigations that examined the conceptions and/or beliefs of teaching

Topics of proposed suggestions for future studies	Kagan (1990, 1992a, 1992b)	Pajares (1992)	Pratt (1992)	Kember (1997)	Kane et al. (2002)
	Primary and secondary teacher education		Adult education	Higher education	
<b>s1. the conceptions/beliefs of teaching definition</b>					
(1) explore more in-depth the nature of teaching beliefs/conceptions acquisition	⊗	⊗	⊗	⊗	⊗
(2) careful reconsideration & agreement on the conceptualization of teaching beliefs/conceptions	⊗	⊗		⊗	⊗
(3) adult educators / academic developers / teacher trainers must first clarify their own conceptions/beliefs of teaching			⊗	⊗	
(4) further investigation of the relationship between dimensions/categories (i.e., discrete categories vs. continuum with well-defined positions)	⊗	⊗	⊗	⊗	⊗
(5) more research on the coherence (and disallowances) between learning to teach in standard preservice (i.e., primary, secondary, and within the higher education context)	⊗	⊗			⊗
<b>s2. consistency in the use of terminology</b>					
general agreement on the meaning of teaching beliefs and teaching conceptions	⊗	⊗	⊗	⊗	⊗

**Note:** s1 and s2 = categories of suggestions for future studies; ⊗ = the authors of the respective literature review made at least a recommendation from the issue illustrated in the first column.

Since then, there have been many publications and evolutions in the domain. However, none of the studies published after 2002 systematically approached those critical matters. To fill those gaps, we further advanced two main research questions.

### ***The current systematic literature review***

***Q1. Is there a preferred definition among the researchers who studied teaching conceptions in HE?***

The main difficulty in investigating ACTs lies in the ambiguity with which they are defined. According to Tillema (2000), conceptions derive from academics' beliefs, including previous experiences, school practices, and personality traits. According to Pratt (1992), it is the other way around: conceptions of teaching are composed of a trilogy of beliefs, intentions, and actions. While some authors consider the academics' conceptions about learning as different concepts but strongly correlated with ACTs (Trigwell & Prosser, 1996), others consider them an integral part of ACTs (Young, 2008; Jacobs et al., 2012). In another study, teaching conceptions and beliefs are considered different concepts (Entwistle et al., 2000). According to the study conducted by Entwistle and his collaborators (2000) argue that ACTs are more accessible, can be deliberately developed, and have subjective connotations compared to ABTs. At the same time, beliefs



are considered emotion-driven, more intangible, and located at an unconscious level (Entwistle et al., 2000). Vermunt and Endedijk (2011) give a distinct definition, which subsumes conceptions of a HE teacher's learning, good teaching, and beliefs regarding student learning under the umbrella of learning and teaching beliefs. Given the multitude of definitions and operationalizations when referring to ACTs and ABTs, a systematic approach must be conducted to clarify the definitions.

*Q2. How consistently were the similarities in the terminology and definitions of "teaching conceptions" and "teaching beliefs" in HE acknowledged and used throughout the years, and how "should" we name them?*

The terminology used in this research field is not a matter of personal preference but a crucial aspect of the research. In reality, the terminology is based on different epistemological assumptions (Åkerlind, 2008), ACTs being also called "conceptions about teaching and learning", "cognitions about teaching", "perspectives of teaching", or "teaching beliefs." Kane et al. (2002) signaled that in the process of knowledge importation from research on primary and secondary to HE on teachers' beliefs, numerous errors were made. ACTs and academics' teaching beliefs have been used interchangeably by Kember (1997), who noted in his review that it is also the case in other studies, even if those do not mention this interchangeable use. In his synthesis, Kember (1997) analyzed the use of "beliefs of teaching" terminology, concluding that it is less commonly used in research in HE. Nevertheless, his review was based on 13 studies published between 1983 and 1994. However, as Pratt (1992) remarked, defining conceptions/beliefs of teaching is, in the best case, a gamble/game of each player's preference. This seems to be still true as more recent studies, such as those by Åkerlind (2008) and Degago & Kaino (2015), have called for more clarity in the ACTs definition and terminology used.

## 2. Methodology

### Literature search procedures

The study selection process is presented in Figure 1. In the first phase, we searched for studies cited in previous reviews (i.e., backward citation searching) on the topic of ACTs or ABTs (Kane et al., 2002; Kember, 1997; Pajares, 1992; Pratt, 1992), as well as studies which cited these reviews, but not only (i.e., forward citation searching). We came across 56 articles. Then, we ran a systematic search in the specialized literature in the field, in the Web of Science database, using the following algorithm: "teach\* concept\*" OR "conception\* of teach\*" OR "teaching and learning conception\*" OR "conceptions of teaching and learning" OR "conceptions about teaching and learning" OR "conceptions about teaching" OR "teach\* beliefs" OR "beliefs of teach\*" OR "teaching and learning beliefs" OR "beliefs of teaching and learning" OR "beliefs about teaching and learning" OR "beliefs about teaching" AND "higher education" OR "college" OR "faculty teacher" OR

"professor\*" OR "teach\* assistant\*" OR "instructor" OR "academics" NOT "secondary education" OR "primary school". We looked in the resulting papers' titles and abstracts for mixtures of these syntagms or words. We imposed no limit on published sources. Our search was performed from 1 January 1900 to 4 September 2022 (the search day). After completing the search process, 1067 studies were found. In the first step, duplicate studies (N = 3) were removed. Together with the 56 papers identified from citation searching, we obtained an initial pool of 1120 articles. After the abstract analysis, 957 abstracts that did not meet the eligibility criteria were removed. Next, we analyzed 166 full-text papers, of which only 78 articles were eligible for the current analysis.

### **Inclusion criteria**

For the inclusion of the studies in the subsequent analyses, we considered two criteria: c1) the study must address a topic strictly related to the university level (i.e., "teaching conceptions", "conceptions of teaching", "conceptions about teaching", or "conceptions about learning and teaching") under this name or a related name (e.g., beliefs of teaching or another related concept); c2) conceptions of teaching or teaching beliefs must be measured in a self-reported manner, or academics must be the direct object of measurement/observation.

### **Coding of studies**

After the full-text analysis of the 78 final eligible studies in the final sample, we extracted information related to the following aspects: the question or problem that the study addresses; the key concepts, how they are defined, and what theories underlie them.

The studies' coding involved extracting quantitative and qualitative data from most of the sections of the analyzed research studies. To respond to our first research questions, besides the identification of study's characteristics (i.e., authors, publication year, and title), the used terminology (i.e., whether authors used ACT or beliefs of teaching), the definition (i.e., authors' definition or a definition taken from the literature), the equivalence regarding the use of ACT and ABTs, whether the authors mentioned if they are using the two terms interchangeably, and how they used the two terms (i.e., interchangeably or not).

### **Coding procedure**

Each of the 78 selected studies was independently coded by the present manuscript's first and second authors. First, the two coders independently coded a few studies. Afterward, the need for more clearness and consistency in the coding setup was debated to enhance coding consistency. The initial interrater reliability was 92.31%. In the case of the articles (N = 6), where the two authors individually reached different conclusions, online meetings and analysis of the differences were performed until the two coders had a 100% agreement.

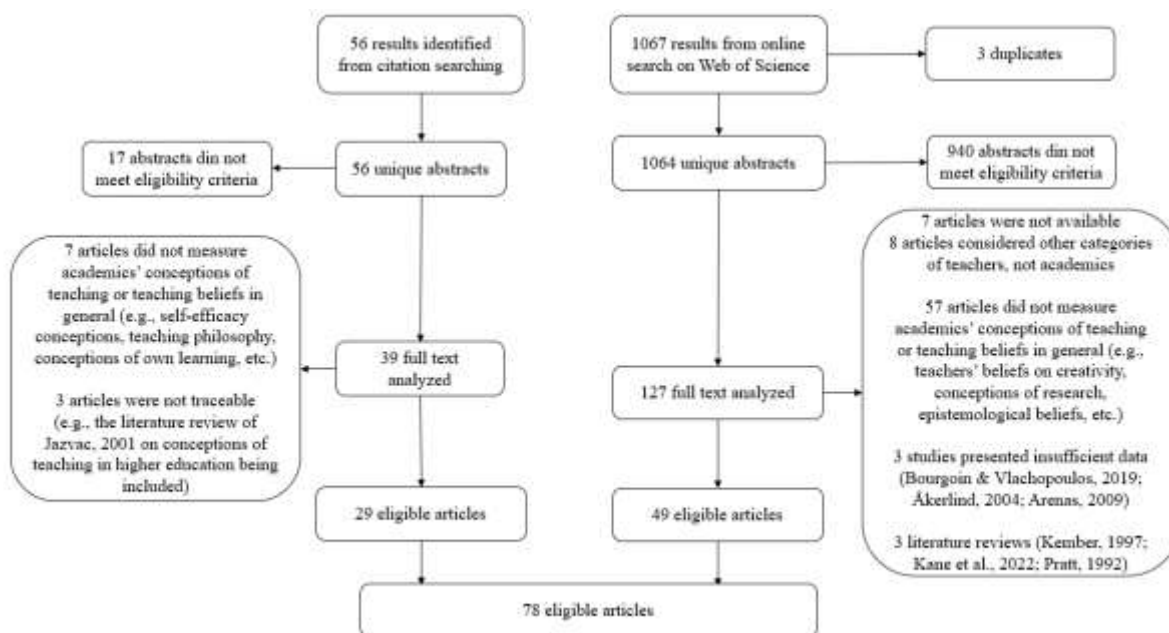


Figure 1. Systematic literature review process and selection of the papers for the current manuscript

### 3. Findings

This section briefly describes the main findings of our systematic analysis. For the first research question, we contrasted the most used definitions and the terminology referred to inside the definitions and studies (i.e., "names") of ACTs and/or ABTs in the HE research field with the more isolated ones (i.e., authors' own definitions or citations of other papers that did not advance a definition of ACTs or ABTs but only investigated one of them or both to some extent). It must be noted that we aimed to conduct an accountability of the existing definitions, not an in-depth analysis of the meanings of the definitions. Regarding our second research question, we assessed the consistency in the terminological use and the equivalence between ACTs and ABTs. For this, we categorized the articles into two main categories: those using the terminology interchangeably and those showing differences in the use of terminology.

As Table 2 shows, out of the 78 articles in the final sample, 37.18% ( $N = 29$  articles) presented at least one of the "more accurate" definitions resulting from a systematic literature review in the field of ACTs/ABTs at primary and secondary teacher education (Kagan, 1990, 1992a, 1992b and Pajares, 1992), adult education (Pratt, 1992), and HE (Kane et al., 2002; Kember, 1997). The same proportion of 37.18% ( $N = 29$ ) of the analyzed articles presented no clear definition of teaching beliefs or conceptions or had no definition. While 23.07% ( $N = 18$  articles) introduced their own definition of ACTs (not ABTs), in the case of 16.66% of the papers ( $N = 13$  articles), the authors cited some other articles that investigated ACTs or ABTs, even if the cited papers themselves used one of the "more accurate" definitions.

As some of the authors presented more than one definition of ACTs or ABTs (e.g., Lee, 2019 – cited two Nestor, 1987 and Pajares, 1997 when defining ABTs or Jacobs et al., 2012 which cited Pajares, 1997 and Kagan, 1992a when defining ABTs and Pratt, 1992 when defining ACTs), we came across 89 definitions, which will be further presented. The exact number and specifics of each definition are presented in Table 2. The following percentages regarding the first research question are referring to N = 89 identified definitions of ACTs and ABTs. The "conceptions of teaching" or one of the similar terms (e.g., teaching conceptions, conceptions about teaching, or conceptions of learning and teaching) emerged as the most utilized term (i.e., 73.03%) when defining teachers teaching conceptions and/or beliefs at the HE level. On the contrary, 14.61% (N = 13) used the "beliefs of teaching" terminology, while 12.36% (N = 11) even if they used the terminology of ABTs, they did not have a clear definition or no definition at all of ABTs.

The most employed definition of ACTs (19.23%, N = 15 out of 78 articles) was the one proposed by Pratt (1992). According to Pratt (1992, p. 204) teaching conceptions in HE are defined as: "... specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world".

*Table 3* illustrates the consistency in the terminological use throughout the analyzed articles and the equivalence between ACTs and ABTs. N = 44 (56.41%) of the 78 analyzed articles in the present endeavor used the terms ACTs and ABTs interchangeably. However, only 2 out of the 44 studies (i.e., Fischer & Hanze, 2020 and Devlin, 2006) specified that they used ACTs and ABTs as synonyms throughout the paper. The rest of the 42 studies used the terms as synonyms without specifying it.

We found substantial discrepancies in the use of terminology between ACTs and ABTs. Out of the 78 eligible articles, thirty-four (i.e., 43.6%) presented essential differences in terminology. Specifically, nine articles (i.e., 11.5%) specify the differences in the use of terminology, while eight articles (i.e., 10.3%) do not specify these differences. Also, six articles (i.e., 7.7%) do not mention ACTs, and two (i.e., 2.6%) do not cite any related articles. Furthermore, seven articles (i.e., 9.0%) do not mention ABTs, and another two (i.e., 2.6%) neither mention ABTs nor cite any associated articles.

Table 2. Summary of the terminology, definitions, and number of articles that defined or not teaching conceptions/beliefs in higher education (N = 78)

Papers referred to when citing definitions of ACTs/ABTs in the 78 analyzed papers	Text of the definition	The terminology used in defining teaching beliefs or conceptions		Total
		Conceptions of teaching <i>(conceptions of learning and teaching; teaching conceptions; conceptions about teaching)</i>	Beliefs of teaching <i>(beliefs about teaching, teaching beliefs)</i>	
<b>A "more accurate" definition resulting from a literature review in the field</b>				
Nespor (1987)	"Beliefs are important influences on the ways they conceptualize tasks and learn from experience . . . little attention has been accorded to the structure and functions of teachers' beliefs about their roles, their students, the subject matter areas they teach, and the schools they work in." (p. 317)	-	N <sub>def</sub> = 3 Addy & Blanchard, 2010; **Lee, 2019; Pajares, 1992	3
Pajares (1997)	The author did not offer a definition of ABTs but advanced sixteen fundamental assumptions that may be made when investigating teachers' educational beliefs.	-	N <sub>def</sub> = 3 Samuelowicz, 1999; ***Jacobs et al., 2012; Lee, 2019	3
Kagan (1992a)	"Teacher belief is defined broadly as tacit, often unconsciously held assumptions about students, classrooms, and the academic material to be taught." (p. 65)	N <sub>def</sub> = 3 Jacobs et al., 2014, 2016, 2020	N <sub>def</sub> = 4 Popova et al., 202; ***Jacobs et al., 2012; Chapman & McConnell, 2018; Popova et al., 2020	7
Pratt (1992)	"Conceptions are specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world." (p. 204)	N <sub>def</sub> = 15 Pacifico et al., 2021; **Jacobs et al., 2012, 2014, 2015b, 2016, 2020; ***Degago & Kaino, 2015; Pauler-Kuppinger & Jucks, 1992; Kember & Kwan, 2000; Mladenovici & Ilie, 2023; Saroyan et al., 2009; Light & Calkins, 2008; Calkins et al., 2022, Pacifico et al., 2020; Devlin, 2006	-	15
Kane et al. (2002)	Kane et al. (2002) do not propose a definition for ACTs or ABTs but instead advocate for a more unambiguous distinction between these terms and agreement upon standard definitions, accentuating the importance of concomitantly examining teaching beliefs or conceptions and actual teaching practices.	N <sub>def</sub> = 1 Seng & Geertsema, 2018	-	1
<b>Authors' own definition</b>				
Sadler (2012a, b)	Sadler uses the term "conceptions of teaching" to describe academics' ways of thinking about teaching. For example, the author acknowledges that:	x	-	2



Eley (2006)	<p>“A student-centred, learning-oriented conception of teaching is one category or way of thinking about teaching.” (Sadler, 2012b, p. 732).</p> <p>“Conceptions of teaching are seen as entities that can exist independently of detailed planning and teaching activities.” (p. 209)</p>	x	-	<b>1</b>
Buswell & Berdanier (2020)	<p>“Teaching conceptions, which are the values and rationales that instructors hold that guide teaching practices, are less studied.” (p. 1)</p>	x	-	<b>1</b>
Samuelowicz & Bain (1992)	<p>“Conceptions of teaching are answers to the question <i>What is teaching?</i> which may elicit directly the conceptions of teaching.” (p. 97)</p>	x	-	<b>1</b>
Karm et al. (2022)	<p>“How academics respond to these academic development opportunities is somewhat dependent on the academic’s conceptions of teaching – their role in the process, their perceptions of student roles, as well as their perceptions of the learning process itself.” (p. 2)</p>	x	-	<b>1</b>
VanDriel et al. (1997)	<p>“The conceptions of teaching identified referred to teachers’ beliefs about student-centered teaching, incorporating reflections on their current teaching practice with respect to developing metacognitive skills and evaluation.” (p. 10)</p>	x	-	<b>1</b>
McAlpine et al. (2006)	<p>“In our view, conceptions, the often unexamined values and beliefs that underlie our thinking and actions, are further from decision making and implementation than the levels of specificity identified in this study. They represent espoused, relatively abstract notions, perhaps idealized, that can be expressed in an enormous and complex range of different knowledge and goal statements, and ultimately enacted in a range of ways.” (p. 23)</p>	x	-	<b>1</b>
Entwistle & Walker (2000)	<p>“A sophisticated conception of teaching stems from the teacher’s own deep understanding of the subject, but depends on much more. It requires an act of imagination through which the teacher first envisages the subject from the students’ perspective, and then devises ways of helping the students across the initial gulf of incomprehension which separates them from the discourse of the discipline or profession.” (p. 22)</p>	x	-	<b>1</b>
Degago & Kaino (2015)	<p>“This study explored university instructors’ conceptions of teaching (the ways in which they understand and experience teaching), which according to scholars predominately determine how they approach their teaching and the way their students approach learning.” (p. 2)</p>	x	-	<b>1</b>
Owusu-Agyeman et al. (2017)	<p>“The conceptions of lecturers’ in teaching and learning processes only serve as philosophical underpinning that could be altered momentarily depending on the method a lecturer would adopt to meet the knowledge needs of students.” (p. 2)</p>	x	-	<b>1</b>

Åkerlind (2008)	<p>“From a phenomenographic perspective, different conceptions of teaching are seen as representing different breadths of awareness of the phenomenon of teaching, constituted as an experiential relationship between the teacher and the phenomenon.” (p. 634)</p> <p>“From a cognitivist perspective, different conceptions are seen as reflecting different beliefs about teaching associated with different mental representations of the phenomenon, constructed on the basis of individuals’ experience.” (p. 634-635)</p>	x	-	1
Barnett & Guzman-Valenzuela (2017)	<p>“Conceptions of teaching are, in essence, a response (by individual teachers; by course teams) to the tacit question: What is it to teach?” (p. 115)</p>	x	-	1
Postareff & Lindblom-Ylänne (2008)	<p>“Presumably, teachers’ underlying conceptions of teaching define teachers’ purposes of teaching.” (p. 118)</p>	x	-	1
Carvalho et al. (2021)	<p>“Conceptions of learning and teaching refer to what faculty think about teaching effectiveness.” (p. 745)</p>	x	-	1
Dall’Alba (1991)	<p>“Teachers’ conceptions or ways of understanding teaching were the object of phenomenographic analysis in this study.” (p. 293)</p>	x	-	1
Young (2008)	<p>“Fortunately, as assimilations of beliefs related to experience, conceptions of teaching are malleable and susceptible to ongoing change.” (p. 3)</p> <p>“...conceptions of teaching and learning can be understood to be in ongoing states of development.” (p. 3)</p>	x	-	1
Noben et al., 2021	<p>“Conceptions of teaching describe teachers’ views about teaching (i.e. the way they think about teaching and learning).” (p. 2)</p>	x	-	1
<b>Other definitions (i.e., not consecrated)</b>				
Entwistle & Walker (2000)			$N_{def} = 4$	
			Virtanen & Lindblom-Ylänne, 2010; Van den Bos & Brouwer, 2014; Degago & Kaino, 2015	4
VanDriel et al. (1997)	See the definitions above in the Authors’ own definition section		$N_{def} = 1$	
			Stevenson, Ferguson, & Power, 2014	1
Samuelowicz & Bain (1992)			-	
			$N_{def} = 1$	
			Ottenhoff-de Jonge et al., 2021	1
Virtanen & Lindblom-Ylänne (2010)	<p>“Conceptions of teaching are beliefs which form the background for approaches, meaning the sets of practices and strategies which will be implemented in the different contexts of teaching” (p. 356).</p>		$N_{def} = 2$	
			Gonzalez, 2011; Wegner & Nuckles, 2015	2

Ramsden (2003)	The author did not offer own definition of ACTs, but suggested the idea that ACTs reflect personal theories derived from academics' teaching experiences.	N <sub>def</sub> = 1 Mimirinis & Ahlberg, 2021	-	1
Kember & Kwan (2000)	The author did not offer own definition of ACTs in their paper, but uses the definition of Pratt (1992).	N <sub>def</sub> = 1 Degago & Kaino, 2015	-	1
Pratt (1998)	"Beliefs represent the most stable and least flexible aspect of a person's perspective on teaching." (p. 21)	-	N <sub>def</sub> = 1 Taylor et al., 2007	1
Harwood et al. (2006)	Beliefs are defined as "epistemological commitments to how a content domain should be taught" (p. 70). "We believe beginning teachers could be assisted significantly in their development if teacher educators ... would direct energy toward helping the beginning teacher to make explicit, carefully analyze, and thoughtfully explore and critique the metaphors and images they bring to teaching, inasmuch as they form the lenses through which teacher education and teaching are made either appropriately or inappropriately meaningful. Doing this would open up fresh ways of thinking about teacher education and development that are so essential to revitalization and reform." (p. 139)	-	N <sub>def</sub> = 1 Wheeler et al., 2017	1
Bullough & Knowles (1991)		N <sub>def</sub> = 1 Vilppu et al., 2019	-	1

***No clear definition of teaching beliefs or teaching conceptions OR no definition at all***

	N <sub>def</sub> = 18 Buswell, 2018; Stes & Van Petegem, 2011; Pedrosa-de-Jesus & Lopes, 2011; Trigwell & Prosser, 1996; Jucks & Hillbrink, 2017; Visser-Wijnveen et al., 2009; Murray & MacDonald, 1997; Tavakoli et al., 2015; Czajka & McConnell, 2019; Ho, Watkins, & Kelly, 2001; Owens, 2012; Sadler, 2012; Perez-Villalobos et al., 2019; Gow & Kember, 1993; Jacobs et al., 2015a; Pérez-Rodríguez et al., 2021; Prosser et al., 1994; De Rijdt et al., 2016	N <sub>def</sub> = 11 Rienties et al., 2013; Fischer & Hanze, 2020; Norton et al., 2005; Samuelowicz & Bain, 2001; Norton et al., 2010; Allendoerfer et al., 2014; Hativa, 2000; Guskey, 1986, 2002; Gilmore et al., 2014; Rienties et al., 2011	29
<b>TOTAL</b>	<b>N<sub>def</sub> = 65</b>	<b>N<sub>def</sub> = 24</b>	<b>89</b>

**Note:** x = an author / the authors used/created their own definitions of ACTs or ABTs; N<sub>def</sub> = number of definitions; \*\* = the author(s) cited two definitions of ABTs of ABTs or ACTs (e.g., Lee, 2019 cited Nestor's (1987) and Pajares' (1997) definition of ABT; Jacobs et al., 2016, 2020 cited Kagan, 1992 and Pratt 1992 when defining ACTs); \*\*\* = the authors used three different definitions of ACTs and ABTs (e.g., Degago & Kaino, 2015; Jacobs et al., 2012)

Table 3. Overview of the consistency in the terminological use and the equivalence between ACTs and ABTs (N = 78)

Interchangeably use of terminology			Differences in the use of terminology						N total analyzed articles	
Clearly specified	Not clearly specified	N total	Clearly specified	Not clearly specified	Not possible to be figured out					
					ACTs not mentioned throughout the paper	No articles cited ACTs in the paper	ABTs not mentioned throughout the paper	ABTs not mentioned & No articles cited ABTs in the paper		N total
N = 2	N = 42		N = 9	N = 8	N = 6	N = 2	N = 7	N = 2		
Fischer & Hanze, 2020; Devlin, 2006;	Perez-Villalobos et al., 2019; Vilppu et al., 2019; Mladenovici & Ilie, 2023; Eley, 2006; Pedrosa-de-Jesus & Lopes, 2011; Jacobs et al., 2015b, 2016; Norton et al., 2005, 2010; Gonzalez, 2011; Mimirinis & Ahlberg, 2011; Calkins et al., 2012; Karm et al., 2022; VanDriel et al., 1997; Lee, 2019; McAlpine et al., 2006;; Van den Bos & Brouwer, 2014; Entwistle & Walker, 2000; Degago & Kaino, 2015; Pauler-Kuppinger & Jucks, 2017; Owusu-Agyeman et al., 2017; Kember & Kwan, 2000; Visser-Wijnveen et., 2009; Wegner & Nuckles, 2015; Light and Calkins, 2008; Jacobs et al., 2015a; Stevenson et al., 2014; Pacifico et al., 2021; Åkerlind, 2008; Barnett & Guzman-Valenzuela, 2017; Rienties et al., 2013; Ho et al., 2001; Owens, 2012; Sadler, 2012a, 2012b; Allendoerfer et al., 2014; Hativa, 2000; Samuelowicz, 1999; Ottenhoff-de Jonge et al., 2021; Young, 2008; Rienties et al., 2011; De Rijdt et al., 2016;	44	Wheeler et al., 2017; Postareff & Lindblom-Ylänne, 2008; Buswell & Berdanier, 2020; Seng & Geertsema, 2018; Samuelowicz & Bain, 2001; 2010; Jacobs et al., 2012, 2014, 2020; Virtanen & Lindblom-Ylänne,	Saroyan et al., 2009; Murray & MacDonald, 1997; Tavakoli et al., 2015; Czajka & McConnell, 2019; Gow & Kember, 1993; Pacifico et al, 2020; Noben et al., 2021; Jucks & Hillbrink, 2017	Addy & Blanchard, 2010; Chapman & McConnell, 2018; Popova et al., 2020, 2021; Guskey, 1986, 2022	Taylor et al., 2007; Mattheis & Jensen, 2014	Pérez-Rodríguez et al., 2021; Samuelowicz & Bain, 1992; Buswell, 2018; Stes & Van Petegem, 2014; Gilmore et al., 2014; Trigwell & Prosser, 1996; Carvalho et al., 2021	Dall'Alba, 1991; Prosser et al., 1994	34	78

Note: N = number of articles.

#### 4. Discussion of the findings

Several researchers shouted long ago that the mystery of how ACTs are transposed in observable teaching practices must be solved as soon as possible (Kane et al., 2002; Kember, 1997; Samluelowicz & Bain, 1992). Nonetheless, this can be accomplished only by enhancing the findings' trustworthiness and agreement towards definitions and terminology of ACTs and ABTs (Kember, 1997; Pajares, 1992). This messy literature was reviewed only twice, specifically on higher education teaching conceptions (Kember, 1997; Kane et al., 2002). Even though Kember's (1997) and Kane and her colleagues' (2002) reviews brought some clarifications, their work's essence lies in their recommendations. Years have passed, and we still need to reach a consensus on the definition and terminology of ACTs.

It is essential to mention that this literature review aimed to systematically investigate the terminological consistency and definitional clarity concerning academics' "conceptions of teaching" (ACTs) and "beliefs of teaching" (ABTs) in previously published studies. Our main aim was not the creation via inductive (e.g., grounded theory or content analysis) or deductive procedures (e.g., operationalization or hypothesis testing) of a definition of ACTs or ABTs but to shed light on the consistency of the use of definitions and terminology until the search day (i.e., 4 September 2022). Our work focused on the demarcations between these two terms (i.e., ACTs and ABTs) and other related terms (i.e., cognitions about teaching or perspectives of teaching) and their definitions so that it could eventually lead to the establishment of a clear definition, explicit acknowledgment of terminology, and consistency in analysis and findings reporting.

Our systematic analysis showed that the vast majority of studies adhered to Pratt's (1992) definition of teaching conceptions and favored the use of the term "conceptions of teaching" under this form or an equivalent (e.g., conceptions about teaching or conceptions about learning and teaching). As Kember (1997) concluded in his literature review, the prevalent use of "conceptions of teaching" and the adoption of Pratt's (1992) definition may suggest a dominant trend. Although this conclusion is still valid today, we must be aware that although Pratt's definition was used predominantly, it was only the case for around 20% of the studies (i.e., N = 15 out of 78 articles). Additionally, 37.18% of studies presented no clear definition of teaching beliefs or conceptions or had no definition, while 23.07% introduced their own definition. Also, it should be emphasized that besides the definitions of Pratt (1992), Pajares (1997), Kagan (1990, 1992a, 1992b), and Nespor (1987), there were 23 more definitions of teaching conceptions vehiculated. The tremendously high number of ACTs and ABTs operationalization is an unmistakable indicator of the existing ambiguity in the field. By operationalizing the ACTs and ABTs definitions in the 78 analyzed articles, we strictly meant to emphasize the differences between how different authors tracked and used the ACTs or ABTs and not the meaning of the definitions themselves. Simpler said, we made an accountability of the definitions rather than an in-depth analysis of their meanings. A more in-depth analysis of the



diversity of definitions and the extent to which, even if they are different in writing, the meaning conveyed by the text is the same, almost the same, or profoundly different is needed.

Our results also emphasize the necessity for greater consistency and transparency in terminological usage. *The majority of the analyzed papers (56.41%) used the "conceptions of teaching" and "beliefs of teaching" interchangeably without explicit mention. On the contrary, the remaining 46.46% viewed them as distinguishable. However, in this latter stance, even if it was clear that there were differences in terminology usage, the differences were impossible to figure out or were not pinpointed.* The term "conceptions of teaching," which is rooted in the phenomenological paradigm and is characterized by qualitative methodologies, was predominantly utilized to the detriment of the "beliefs of teaching" terminology (i.e., which comes from the cognitive paradigm and is usually investigated via quantitative studies). Despite the distinct theoretical backgrounds of these two terms, our findings indicated that they were frequently used interchangeably in literature. However, only a tiny percentage of 2.6% (N = 2 out of 78 articles) acknowledged this interchangeability explicitly. Hence, this alleged lack of awareness stresses the possibility of misinterpretation and the challenge of comparing and synthesizing findings, representing critical literature gaps.

### **Implications for research and practice**

To improve the quality of teaching in HE, researchers must exploit the pedagogical empirical literature and theory to deepen their knowledge and share the findings of the inquiries so that other educationalists and researchers can analyze them, learn from them, and, if necessary, criticize them (Roxå & Mårtensson, 2009). In this systematic literature review, we advocate for consistency in research definitions and terminological use of teaching conceptions, paramount for minimizing the risk of misinterpretation, comparing, and synthesizing findings, as well as straightforward communication among educationalists, researchers, and policymakers.

In HE, it is rather often the case of interchangeable use of several concepts and phrases (e.g., cooperative and collaborative learning or staff development and instructional development) that share standard features even if their precise meanings sometimes differ (Arendale, 2005; Eraşcu & Mladenovici, 2023). Generally, regardless of the research topic, the quest for interchangeability presents several noteworthy implications for research and practice. Following Kember's (1997) buzzes, more recent studies also called for more clarity in the ACTs definition and terminology (Åkerlind, 2008; Degago & Kaino, 2015).

In our particular case, on the one hand, the interchangeability of "conceptions of teaching" and "beliefs of teaching" without explicit recognition raises several important implications. First, it increases the risk of misinterpretation (Samuelowicz, 1999). Terminological misinterpretation can lead to inconsistency in the understanding and application of research results, further skewing the development of robust theories.

Second, the scarcity of terminological and definitional consistency may make comparing and synthesizing findings across studies difficult (Åkerlind, 2008). Consequently, it may hinder the development of our understanding and the capacity to draw comprehensive conclusions. Third, it leads to the spread of uncertainty and a deficiency of understanding between the main educational actors. Consistent terminology is paramount for effective communication among educationalists, researchers, and policymakers. It ensures that dialogues are grounded in a shared understanding. Otherwise, facilitating coordinated efforts to improve teaching and learning practices in HE via effective training could be restrained (Sadler, 2012a).

On the other hand, it is crucial to distinguish between ACTs and ABTs, as this recognition also has essential implications. If we agree that ACTs form the lenses through which academics interpret their teaching, we could also suppose that a collection of teaching conceptions forms a framework theory that serves as a basis for explaining and predicting everyday instruction (Vosniadou & Skopeliti, 2014). By relying on such a framework theory, academics can make sense of their teaching situations (Vilppu et al., 2019). However, this is only possible if there is clarity in the research landscape of teaching conceptions. Hence, to develop more precise conceptual frameworks and advance the field of study, researchers must avoid confusion and ensure that a study is grounded in a well-defined theoretical basis. By clearly distinguishing between ACTs and other related terms, one can contribute to the improvement of research findings validity and their inclusion in meta-analyses and further systematic reviews.

### **Recommendations for future studies**

Considering the early presented arguments and the suggestions of earlier reviews at the pre-university level (Kagan, 1990, 1992a, 1992b; Pajares, 1992), the fundamental paper on adult education (Pratt, 1992) and the HE level (Kember, 1997; Kane et al., 2002), we advance the following recommendations for future studies aiming to investigate ACTs.

In order to enhance transparency and decrease the gamble of misinterpretation, future studies should establish and adhere to explicit definitions of "conceptions of teaching" and/or "beliefs of teaching" based on their theoretical underpinnings. Accordingly, the study of Devlin (2006) is an example of good practice regarding proper terminological usage and clear definitions. After a concise recap of the main issues in the context of ACTs absence of a precise and agreed-upon definition and consistent nomenclature use in the area), the author presents the most often terminology used interchangeably with the ACTs. Next, Devlin (2006) cites Pratt's (1992) definition of ACTs and further brings clarification regarding the definition and terminological usage throughout the paper: "For the sake of clarity, in this paper, conceptions of university teaching are defined as specific meanings attached to university teaching and learning phenomena, which are claimed to then mediate a teacher's view of, and responses to, their teaching context." (p. 112). This kind of practice can be easily employed, significantly reducing the chance of misinterpretation.

Future investigations should explicitly confess whether they use these terms interchangeably and justify their choice. This translucence will aid in comprehending the context and rationale behind the terminological use. As a good practice for the assumed interchangeability between ACTs and ABTs, we recommend the work of Fischer & Hanze (2020), which made a clear distinction between various terms (i.e., beliefs, conceptions, orientations to teaching, personal practical knowledge, subjective theories, and attitudes) that are often used to define how university teachers understand their role in the learning process and what they think about teaching. The authors also mention relevant research on ACTs (Kember, 1997; Trigwell & Prosser, 1996; Kane et al., 2002) to emphasize this terminological overlap. On the contrary, a relevant example of a situation when ACTs and ABTs are not used interchangeably but clearly expressed is the work of Jacobs et al. (2012). In their article, Jacobs and colleagues clearly defined ACTs by citing the work of Kagan (1992) and Pratt (1992). Afterward, the authors mentioned the following explanation: "Conceptions should be distinguished from beliefs (Fishbein & Ajzen, 1975) and perspectives (Pratt, Arseneau, & Collins, 2001; Pratt, 2001) related terms which are often used in the literature but encompass more aspects than conceptions do. Beliefs also include confidence in one's ability to affect student performance (teacher efficacy), nature of knowledge (epistemological beliefs) and causes of student performance." (p. e483).

Last but not least, future investigations on ACTs should emphasize the importance of definitional and terminological consistency. The correct use and clear distinctions between these two concepts can foster a more coherent and reliable body of literature which can further open the doors for more specific and tailored measurement instruments and informed and evidence-based educational policies (Sadler, 2012a). Without all those components, developing a precise language for understanding how academics represent their ACTs independently and about their teaching actions is unlikely (McAlpine et al., 2006).

### **Limitations of generalizations**

The current systematic literature review was written from a narrative perspective to gain more insights. Even if a meta-analytical study would acquire less in-depth data (Shih & Fan, 2009), it could provide some valuable insights by systematically and quantitatively analyzing definitions and variations of ACTs and/or ABTs. Looking forward to the coming investigations, employing more data analyses, clear coding schemes and definitions to manage heterogeneity, and carefully evaluating the methodological rigor of the incorporated studies using a qualitative assessment tool would also be beneficial.

Due to the eligible studies' number in our final database that examined teaching beliefs and/or teaching conceptions at the HE level and measured them, the current findings should be considered as indicative and subject to additional examination. A significant limitation of our study is that we performed our systematic literature search only in the Web of Science database concomitantly with the backward citation searching

techniques. Future studies should extend our search even further (i.e., unpublished sources) and update the search to date, as in between, some other studies respected our inclusion criteria but were published after the search day (e.g., Balan et al., 2023).

Another limitation of our investigation is that we focused mainly on the demarcations between ACTs and ABTs and their definitions, hoping this would lead to a clear framework of definitions and terminology. However, even though it is of paramount importance, focusing exclusively on definitions and terminological transparency provides only a partial picture. The lived experiences of teachers in HE, the challenges they encounter in day-to-day teaching, and the dynamic nature of their instruction practices are equally vital in understanding the full spectrum of ACTs and ABTs. Hence, it is crucial to delve more in-depth into the nuances that impact and discriminate them to understand these concepts better. For example, future studies could aim to refine existing definitions based on empirical evidence by utilizing either a deductive (e.g., starting with a theory of ACTs and/or ABTs or hypothesis and testing it against data) or inductive technique (e.g., content or thematic analysis). Also, complementary to the exact unambiguous usage of definitions and terminology, it would be worthwhile if future studies explore how ACTs and/or ABTs manifest in various educational contexts, how they interact with other relevant concepts (e.g., teachers teaching approaches or teaching self-perceived efficacy) and how external factors (e.g., institutional, cultural, or disciplinary disparities) influence their formation and manifestation which further influence academics' teaching behaviors (Fischer & Hanze, 2020; Mladenovici & Ilie, 2023; Sadler, 2012a).

## 5. Conclusion

*Our systematic literature review highlights the prevalent yet often unacknowledged interchangeability of "conceptions of teaching" and "beliefs of teaching". While Pratt's (1992) definition emerged as the most often employed one, teaching conceptions evolved as the most used terminology. Our results call for a concerted effort to achieve greater consistency in terminological use and definitional clarity of the teaching conceptions in higher education. Whether one uses ACTs and ABTs as interchangeable or not, it is essential to acknowledge their use to contribute to the minimization of existing ambiguities that lead to colossal misinterpretation. Also, to avoid perpetuating ambiguity and enhance the comparability of research findings, generalize the conclusion, and improve communication among the main stakeholders, one must very carefully read and cite the previous studies on ACTs and ABTs. In this regard, our synthesis may be beneficial. We hope that future studies will consider our recommendations and aim for consistency and accuracy in defining and using the terms ACTs, ABTs, and other messy concepts in the educational literature. Only in this way can researchers, practitioners, and academic developers contribute to a more coherent and impactful body of knowledge in the educational field.*

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