EDUR • Educação em Revista. 2021; 37:e235838
DOI: http://dx.doi.org/10.1590/0102-4698235838

ARTIGO

PEDAGOGIES OF PRE-SERVICE TEACHER EDUCATION: THE CORE PRACTICE CONSORTIUM CASE

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ABSTRACT: This paper presents and discusses pedagogies developed by the Core Practice Consortium (CPC), a group of 12 Graduate Schools of Education in the United States who collaborate in teacher education research and practice since 2012. The method was a bibliographical review of the academic production of CPC's main researchers for the last ten years. As a result, we found that the CPC is a "practice-based teacher education" approach and aims to prepare student teachers to enact practices considered essential for teaching in k12 education. For this purpose, researchers identified core practices for teaching in different subjects – the content – and pedagogies that appear to be effective on the process of teaching core practices to future teachers. The evidences produced by the consortium and explored in this paper may serve as an inspiration to reflections about pedagogies in the Brazilian context.

Keywords: teaching practices, pedagogies, teacher initial education.

PRÁTICAS FORMATIVAS NA FORMAÇÃO INICIAL DOCENTE: O CASO DO CONSÓRCIO DE PRÁTICA ESSENCIAL

RESUMO: Este trabalho apresenta e discute as práticas formativas desenvolvidas pelo Consórcio de Prática Essencial (*Core Practice Consortium - CPC*), um conjunto de 12 Faculdades de Educação dos Estados Unidos que colaboram em pesquisas e iniciativas de formação de professores desde 2012. A metodologia utilizada foi uma revisão bibliográfica das produções acadêmicas das principais pesquisadoras do grupo nos últimos dez anos. Como resultado, identificou-se que a abordagem proposta pelo CPC se insere na "formação de professores centrada na prática" e busca preparar os licenciandos para desenvolver práticas consideradas essenciais para a docência na educação básica. Para tanto, os pesquisadores do consórcio identificaram práticas essenciais da docência em diferentes áreas do conhecimento – o conteúdo de

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ensino – e práticas formativas que se mostram efetivas no processo de ensino das práticas essenciais para futuros professores. As evidências produzidas pelo consórcio e exploradas neste trabalho podem se constituir em inspiração para as reflexões acerca de práticas formativas no contexto brasileiro.

Palavras-chave: práticas de ensino, práticas formativas, formação inicial de professores.

PRÁCTICAS FORMATIVAS EN LA FORMACIÓN INICIAL DOCENTE: EL CASO DEL CONSORCIO DE PRÁCTICA ESENCIAL

RESUMEN: Este trabajo presenta y discute las prácticas formativas desarrolladas por el Consorcio de Práctica Esencial (*Core Practice Consortium - CPC*), un conjunto de 12 Facultades de Educación de los Estados Unidos que colaboran en investigaciones e iniciativas de formación de profesores desde 2012. A metodología utilizada fue una revisión bibliográfica de las producciones académicas de las principales investigadoras del grupo en los últimos diez años. Como resultado, identificó-se que el abordaje propuesta por el CPC se insiere en la "formación de profesores centrada en la práctica" y busca preparar los licenciandos para desarrollar prácticas consideradas esenciales para la docencia en la educación básica. Para tanto, los investigadores identificaron prácticas esenciales de la docencia en diferentes áreas del conocimiento – el contenido de la enseñanza – y prácticas formativas que se muestran efectivas en el proceso de enseñanza de las prácticas esenciales para futuros profesores. Las evidencias producidas por el consorcio de investigadores pueden constituirse en inspiración para las reflexiones acerca de prácticas formativas en el contexto brasileño.

Palabras clave: prácticas de enseñanza, prácticas formativas, formación inicial de profesores.

INTRODUCTION

The teaching work, like as medicine, law, or other professions, requires the mastery of a body of specific knowledge and the engagement in proper professional practices (HOYLEY, 1995; SHULMAN, 1987). Acknowledging teaching as a profession means that an individual is not born or becomes a teacher by a natural undetermined process resting entirely on the subject's talent (VILLEGAS-REIMERS, 2003). On the contrary, it assumes that becoming a teacher requires practical and theoretical learning through different experiences offered in the initial preparation and the ones provided throughout one's career.

Researchers in the field of teacher education are engaged in identifying such experiences. Over the last 25 years, there were several studies directed to identify the different ways through which professional knowledge, necessary for quality teaching, has been provided to future teachers. The literature suggests different approaches with focuses that ranges from theoretical knowledge (SHULMAN, 1987) and teaching know-how (TARDIF; GAUTHIER, 2001; FEIMAN-NEMSER, 2003) to pedagogical skills and abilities needed by a good teacher (PERRENOUD, 2001; DESIMONE; HOCHBERG; MCMAKEN, 2016).

One of the most relevant aspects different scholars identified on pre-service teacher education is that, while content matters ("what is taught"), the means by which the content is taught and the educator's pedagogies ("how to teach"), are equally or more important than content. Considering that all future teachers were exposed to several ways of teaching during their school trajectory as students, they might possess a perception about what it means to be a teacher even before starting the teacher education program. This type of observational learning develops deeply ingrained beliefs and images in future teacher about how to teach, which often lead them to mimic traditional pedagogies their former teachers adopted (BALL; COHEN, 1999; LORTIE, 1975; VAILLANT; MARCELO, 2012). However, knowledge transmission strategies are rarely able to properly prepare future teachers, considering the new challenges posed by the contemporary world to the classroom: to promote, through the appropriation of school contents, flexible, independent, and creative thinking (BALL; COHEN, 1999). For this to happen, the whole process of teacher education - beginning at the undergraduate level and continuing through professional development and professional collaboration, requires the articulation of new theoretical and practical knowledge that can be applied in the service of K-12 students learning.

Aiming to corroborate the systematization of teacher education experiences grounded in the practice, this paper investigated pedagogies used in initial teaching education in different contexts. More specifically, it presents and discusses the Core Practice Consortium (CPC) approach to pre-service teacher education. The CPC is a set of 12 American schools of education that collaborate on research and teacher education projects since 2012. This paper investigates which conception of teacher education is present in the work of CPC, what are the core practices and how they support teachers' learning, and what type of pedagogies are used by the consortium. The selection was guided by the scientific character of the investigation on the effectiveness of such practices in the preparation of future teachers. The systematization of these studies' findings aims to contribute to the debate on pre-service teacher education in the Brazilian context.

To this end, this paper is organized in four sections, including this introduction. The second section discusses the theoretical assumptions of practice-based teacher education, the framework of reference within which CPC is inserted. The third section presents the methodology used in this literature review. The fourth section presents and analyzes the results of CPC researchers' publications review. It is followed by the article's conclusion, discussing how such findings may support reflection and research over teacher's education in the national context.

THEORETICAL FRAMEWORK: VISIONS OF PROFESSIONALISM AND PRACTICE-BASED TEACHER EDUCATION

If, on one hand, there is a consensus on the international literature about the importance of teachers for improving the quality of education, there is still a great debate about what would be the features of a professional capable of promoting effective learning in the classroom (AUGUSTE; KIHN;

MILLER, 2010; HANUSHEK, 2014; DARLING-HAMMOND, 2014; ZEICHNER, 2012; GROSSMAN; KAVANAGH; DEAN, 2018). The identification of this professional profile involves teaching visions guided by very distinct philosophies and ideologies, comprising researchers from universities, research and think tanks centers, public policies makers and non-governmental organizations (NGOs).

Specifically in the American context, two perspectives have stood out around the definition of what would characterize an efficient teaching professional. On the one hand, some researchers claim that such professionals would be those academically talented and highly motivated individuals in relation to the teaching profession. Such idea is based on the principle that one's personal features are the engines of educational transformation. On the other hand, there are some researchers whose ideas about professionalization are grounded on the participation in a robust education and oriented towards professional practice. According to this perspective, teaching effectiveness would be the result of a education that strengthens the knowledge base and the teachers' practices. This approach is based on the principle that individuals' actions, which can be transformed through initial and continuing education, should be the focus of educational transformation.

The first view is defended by researchers who believe it is unnecessary - or less relevant - to require a teacher to hold a degree in a traditional pre-service teacher education program or to demonstrate their ability through a certification - prerequisites that represent the most common preparation form and entrance into the teaching career in the United States (HANUSHEK; RIVKIN, 2004; GORDON; KANE; STAIGER, 2006). According to these authors, there would be no robust empiric evidence that teachers with traditional certification produce better results in terms of their students' performance and, therefore, there would be no justification for maintaining this type of obstacle to the entrance into the teaching profession. Based on this observation, they advocate that any professional interested in teaching, even without the required credentials, should be accepted as a teacher and evaluated through the performance of his students in standardized tests - when it would then be possible to identify whether the subject would be a good teacher, guiding the decision to keep him in the profession or not.

The second view suggests the reform of the curriculum of pre-service programs, placing pedagogical practice at the program's center, so that teachers are better prepared to deal with contemporary teaching challenges (DARLING-HAMMOND, 2014). According to Zeichner (2012), an important characteristic of practice-based courses is their systematic focus on developing graduates' skills to apply high-leverage practices with their students.

The proposal to improve the quality of initial teacher education courses by putting the teaching exercise at the center is not new in the American context (ZEICHNER, 2012). Known as practice-centered or practice-based teacher education (PBTE), this approach had its first initiatives in the 1920s, when a set with more than 1000 practices and activities common to the profession was built based on extensive field research with teachers from all over the country. These practices, added to the definition of a set of identifiable personality traits, were intended to form the scientific basis for the construction of a teacher education curriculum. According to Forzani (2014), the research in question was not based on any particular teaching conception and there was no theory through which inclusion or exclusion of an activity could be decided but consisted of a detailed analysis of the teaching work.

In the 1960s and 1970s, when behavioral theories dominated the teaching research, PBTE initiatives in the United States focused on the idea of a teacher education based on specific skills. The proposed training model was marked by the identification of specific teaching skills and opportunities for future teachers to practice and repeat the exercises. In this model, the pedagogy of micro-teaching emerged in the initial teacher education, a strategy through which a particular classroom practice is rehearsed to be perfectly reproduced (MCDONALD; KAZEMI; KAVANAGH, 2013). This model was questioned for consisting of a simplistic list of activities that did not require professional judgment or reflection on the part of those involved, resulting in a purely technical teaching conception (GROSSMAN; KAVANAGH; DEAN, 2018).

In contrast to this approach, in the 1980s the focus of teacher education in the United States turned towards teachers' knowledge and reflection, with a cognitive perspective. Based on such idea, teaching is seen as a series of complex professional decisions, which are individual and contextualized, and require a specific teaching knowledge base (SHULMAN, 1987). To support the development of this

type of capacity, the use of case study as a pedagogy has come to be highly emphasized in pre-service teacher education (GROSSMAN, 2005). The approach of such cases aimed at strengthening the teacher's knowledge repertoire about potential approaches and strategies used in different contexts (SHULMAN, 1986).

Although different in their nature, both approaches focus on the development of specific individual qualities (whether specific skills or a body of theoretical knowledge) and have influenced in different policies such as certification, recruitment, and teacher retention in the American context. However, several experts, including the CPC participating researchers, highlight that there is little evidence of the contribution of those approaches to promote effective classroom practices (BALL; FORZANI, 2009; MCDONALD; KAZEMI; KAVANAGH, 2013).

According to these experts, recently studies in the field of teachers' education have shown that focusing on the development of aspects restricted to the teachers' individual repertoire would be insufficient to raise the teaching quality. To stimulate high-level learning, it is necessary a program that provides teacher a repertoire that allows them to know their students from a cognitive and social perspective, to understand the content that must be taught from a pedagogical perspective, and to be able to structure activities that engage students in deep learning (BALL; FORZANI, 2009; BRANSFORD; COCKING, 2000; DARLING-HAMMOND, 2000; DARLING-HAMMOND; BRANSFORD, 2005).

Thus, the new practice-based teacher education approach embodies a perspective of professionalism in which the teacher is someone who has a great intellectual repertoire about what he teaches, but also a great capacity to put such knowledge into practice in the different classroom circumstances. The pre-service education program must offer the future professional several opportunities to approach and explore tasks and actions specific to the teaching exercise. The Core Practice Consortium emerges in the midst of such reflections.

In the next section, we present the methodology for analyzing the practices investigated by this group is presented, followed by a discussion of the research findings.

METHODOLOGY

This study adopted bibliographic review as methodology. The research in which this paper is inserted sought to use literature reviews to identify pedagogies used in initial teacher education in different contexts with the potential to contribute for improving how graduate students learn to teach. Thus, the study intended to identify and understand different perspectives on the pre-service teacher education programs and their respective practices in order to better prepare future teachers. The adopted procedures should seek certain diversity of pedagogies and/or concepts on which they are based, while trying to ensure that these pedagogies demonstrate a high contributing potential for preparing future teachers.

Based on these guidelines, the literature search was based on "reference groups" which, according to Gatti (2005, p. 30) constitute "networks for exchanging ideas and disseminating proposals and research findings." The selection of the aforementioned groups followed the cited criteria: a) research focus should be on teachers' educators and b) the existence of a considerable volume of productions showing, in some way, an ongoing investigation process and a mature dialogue with other researchers on the matter.

In Brazil, American and French-speaking authors have a strong influence in the field of teacher education. Authors such as Kenneth Zeichner and Marylin Cochran-Smith, as well as Maurice Tardif and Claude Lessard are frequent references in Brazilian scholar's productions on the `subject. Based on prior knowledge of the research team, as well as from expert indications, reference groups were sought in the context of the United States, French-speaking countries such as France, Belgium, Switzerland and Canada, and Brazil. The effort was concentrated in finding researchers within the field of initial teacher education that involved research and proposition of pedagogies.

In one of these initiatives, departing from publications produced in the American literature within the scope of the practice known as "practice-based teacher education" (PBTE), a specific reference

group of researchers was identified within this approach, the Core Practice Consortium (CPC). This Consortium brings together 12 American schools of education to collaborate on research projects aimed at teacher education based on core practices, such as Boston Teacher Residency, San Francisco State University, Stanford University, University of California - Los Angeles, University of Colorado-Boulder, University of Illinois-Chicago, University of Michigan, University of Notre Dame, University of Pennsylvania, University of Virginia, University of Washington, University of Wisconsin.

The Consortium website[4] presents a list of researchers who participate in the groups at universities and a set of publications by the group. Based on this information, a list of potential authors was drawn up to be the focus of the review, namely, those listed as groups' researchers with publications indicated on the Consortium's page: Deborah Ball, Francesca Forzani, Ashley Cartun, Elizabeth Dutro, Brad Fogo, Megan Franke, Elham Kazemi, Hala Ghousseini, Pam Grossman, Morva McDonald, Matt Kloser, Magdalene Lampert, Sarah Kavanagh, Megan Kelley-Petersen, Jessica Thompson, Mark Windschitl.

Then, a search in the ERIC database[5] for publications of the list's authors was done, followed by the selection of the author's papers approaching core practices published in the last 10 years. The main authors for whom publications on this theme were found and who remained as reference authors were Deborah Ball, Francesca Forzani, Elham Kazemi, Hala Ghousseini, Pam Grossman, Morva McDonald and Magdalene Lampert.

Thus, the literature review contained in this study focused on these authors' last 10 years publications addressing core practices, being complemented by some other older publications by the same authors or other experts.

Based on the bibliographic production of this reference group, the present study sought to answer the following questions:

- Which concepts of teacher education does CPC adopt?
- What are the core practices and how they support the recommended CPC professional education?
- What are the recommended pedagogies by CPC for teachers to learn how to teach? For what purposes? How are they used? What are the potentials and limits?

In the next section, the answers found in the bibliographic review to these questions are explored. Afterwards, the paper is concluded with reflections on how such practices may support the debate on the Brazilian teacher's education.

RESULTS

CPC's conceptions on teacher education

The movement focused on the study of core practices was born as an "attempt to weave together novices' development of meaningful knowledge for teaching with their capacity to actually enact ambitious teaching in particular disciplines in the classroom" (MCDONALD; KAZEMI; KAVANAGH, 2013, p. 379). Based on socio-cultural theories that underlie both the educators' formative practices regarding the educational perspective that should be in the k-12 classroom, the movement aims to overcome the long-standing divide between what future teachers learn at the university and what they are able to accomplish when they arrive at schools (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014).

The teacher conception underlying the production and practices of the CPC group consists of a professional who, through a specialized and intentional activity - teaching - increases the probability of students achieving the proposed learning objectives. This means that, in addition to being able to learn, teachers must be able to identify what are the mechanisms that facilitate the learning development by other individuals - that is, the students. In this sense, they need to identify the different ways through

[4] https://www.corepracticeconsortium.com/
[5] https://eric.ed.gov/

which students think about a certain content or problem, strategically plan teaching actions and learning experiences, and be able to map students' progress and productively interfere during the process (BALL; FORZANI, 2009).

Comparing the conceptions of teacher and teaching present in the CPC research, Forzani (2014) identifies three core ideas. The first is that teaching should be geared towards learning goals based on high expectations: all students are expected to develop high levels of comprehension, reasoning, and problem-solving skills. The second is that the type of teaching that will help students achieve these expectations is partially improvised, depending on ideas and contributions that emerge in the classroom, and student teachers must be prepared to deal with the uncertainty resulting from this dynamic. The third is that this teaching approach requires placing the specific content to be taught as a critical component of the goals and activities that constitute the pre-service program's curriculum.

In this sense, the group of CPC-associated researchers advocates radical reform in teacher education curriculums, suggesting that it must be entirely centered on teacher preparation for classroom practice. This involves turning the focus to the teachers' work in a thorough and detailed manner, that is, to the main tasks that teachers must put into action to support the learning of all students. Therefore, for the CPC, what makes a teachers' education programs "practice-based" is their systematic focus on developing future teachers' knowledge and skills to successfully implement teaching core practices in k-12 education (GROSSMAN; KAVANAGH; DEAN, 2018).

Focusing the entire pre-service teacher education curriculum on practice would even mean a work reorientation with the historical, cultural, political, economic, and social foundations of education contained in the courses. From the perspective of CPC researchers' group, the teacher preparation in this type of curricular component needs to answer questions regarding teaching work reality through examples using cases and practices' records, making a connection between them and theoretical and empirical research (BALL; FORZANI, 2009).

At the time of CPC creation, Zeichner (2012) pointed out that none of the existing PBTE initiatives to date had been able to detail what this reorientation of the education foundations to become more compatible with practice meant. Moreover, when discussing the range of existing PBTE initiatives, the author highlighted the need to expand the scope of what is considered central or essential in teacher education so that teachers are not seen as "technicians who are able to implement a particular set of teaching strategies" (p. 379). This is because previous efforts ignored the need to "ground teachers' technical ability to understand the historical, cultural, political, economic, and social contexts in which their work is embedded" (GREENE, 1978 apud ZEICHNER, 2012 p. 380).

Considering the group's perspective on the teaching professional, the research developed by the academics participating in CPC focused on the identification of two aspects complementing each other and, to some extent, answering to Zeichner's questions: identification of core practices for teaching - that is, what future teachers should learn in their programs - and pedagogies that should be adopted by educators to better prepare such professionals. It is noteworthy that the experiences of identifying teaching practices and pedagogies are still focused on teaching methodologies courses and internship, not reaching the disciplines related to the education foundations, in a similar way.

Core Practices

Core practices[6] consists in

> identifiable components (fundamental to teaching and grounded in disciplinary goals) that teachers enact to support learning. Core practices consists of strategies, routines, and moves that can be unpacked and learned by teachers (GROSSMAN; KAVANAGH; DEAN, 2018, p. 4).

[6] The term "core practices" seems to have been consolidated as the most used expression to represent this type of practices. However, several other terms are found in the literature to identify them: key practices, central practices, or, especially, high-leverage practices (DUTRO AND CARTUM, 2016).

These practices are a set of selected teaching practices - limited in quantity, but central to teaching activities - that enable the preparation of beginner teachers for the main classroom challenges, so they can learn from their experiences and build more knowledge, ensuring students to develop a high-level curriculum. Therefore, core practices are selected teaching aspects aimed to develop a teaching professional able to articulate theoretical knowledge of his teaching field with what he needs to do in the classroom with his future students (BALL; FORZANI, 2009; BALL; SLEEP; BOERST; BASS, 2009; GROSSMAN; MCDONALD, 2008; KNIGHT; LLOYD; ARBAUGH; GAMSON; MCDONALD; NOLAN, 2014; MCDONALD; KAZEMI; KAVANAGH, 2013; GROSSMAN; KAVANAGH; DEAN, 2018).

Teacher education programs designed around core practices aim for making those practices a strong teaching foundation. In this sense, these practices mobilize, and are articulated with, other central aspects of teaching: curriculum planning, assessment strategies and use of teaching materials (GROSSMAN; HAMMERNESS; MCDONALD, 2009). Thus, they are categorized as an organizational conceptual framework within which other teaching components are articulated and integrated (WINDSCHITL; THOMPSON; BRAATEN; STROUPE, 2012). Such practices are selected considering their ability to provide future teachers with conceptual and practical tools to promote an ambitious, equity-focused education. As a result of this guiding framework, core practices demand the student-teacher to be imbued with the certainty that all students, regardless of their socioeconomic, cultural, gender, or racial-ethnic conditions, can achieve, in depth, what is proposed in the curriculum. To this end, they constitute conceptual and practical tools so that student teacher, once in the classroom, can support students so that they can learn complex and central ideas in the different disciplines, helping them to participate in discussions proper to the different fields of knowledge, and to solve authentic problems in different fields (MCDONALD; KAZEMI; KAVANAGH, 2013).

Placing core practices at the center of pre-service teacher education curriculum requires defining what these practices should be, as well as defining how they should be presented to student teachers, that is, which pedagogies teacher educators must adopt. Grossman, Hammerness, and McDonald (2009) suggest there are three broader core practices groups that may support the development of future teachers' capacity to teach different subjects. The first group encompasses the classroom culture development, including several specific practices such as organizing productive group work, establishing coexistence norms, and time management, among other aspects. A second practices group regards the ability to stimulate and make visible students' thinking, anticipate their answers and stimulate the thinking that follows. Finally, the third group of general practices that can be learned by teachers and that are central to ambitious education comprises the organization of productive classroom discussions. As part of this practice, future teachers should be able to ask questions and propose problems, monitor participation, and respond to students' ideas.

Although these common practices can be applied across subjects, the researchers recognize that specific fields require particular learning practices (BALL; FORZIANI, 2009; GROSSMAN; HAMMERNESS; MCDONALD, 2009). As an example of subject-specific practices, Windschitl, Thompson, Braaten, and Stroupe (2012) identify a group of four "high-leverage practices" related to the science investigative model, which supports students to develop evidence-based explanations for natural phenomena. The first practice, "Building the Big Idea", concerns planning. The others are action practices, that is, practices directly related to interactive work with students: stimulating students' thinking to adapt instruction, helping them make sense of materials and activities, and prompting them to provide evidence-based explanations. Some of these practices are related to the general ones proposed by Grossman, Hammerness, and McDonald (2009), but are in line with the needs of science teachers, associated with specific content and focused on scientific processes, such as providing evidence-based explanations.

In the field of mathematics, two sets of core practices discussed by CPC are common in teacher education. The first set consists of practices related to stimulation and response to students' thinking, for example, ways to access students' mathematical thinking, to guide students to notice their peers' ideas, and to respond constructively to students' mistakes (CAMPBELL; ELLIOT, 2015; GHOUSSEINI; BEASLEY; LORD, 2015). The second set includes practices related to organizing and conducting productive mathematics discussions, such as anticipating the potential students' answers to

the presented problems, monitoring the answers given to the problems during discussion, selecting specific students to present their thinking during the lesson, sequencing the answers in a logical order related to the learning objectives, and connecting the different ideas presented by students (SMITH; STEIN, 2011; STEIN; ENGLE; SMITH; HUGHES, 2008). These practices comprise a material produced by the National Council of Mathematics Teachers in the United States and provide a foundation for mathematics teaching methodology courses focused on the use of core practices (BIEN; CARLSON; KAZEMI; REISMAN; SCHEVE; WELLS, 2018; GHOUSSEINI; HERBST, 2016; TYMINSKI; ZAMBAK; DRAKE; LAND, 2014).

However, CPC researchers emphasize their purpose is not to identify a single set of practices for the field as a whole or for each field of knowledge (MCDONALD; KAZEMI; KAVANAGH, 2013), neither to define a list of skills or techniques separated from principles and theories (GROSSMAN; KAVANAGH; DEAN, 2018). The idea is that each set of educators[7], in their context, becomes able to identify core practices with which they can develop their professional preparation work (GROSSMAN; KAVANAGH; DEAN, 2018). The movement, thus, understands that the field benefits if trainers are also able to agree on a set of criteria for identifying, naming, and selecting core practices and that, from the gathering of diverse educators engaged in the same way, a community of practices is created around this vision (MCDONALD; KAZEMI; KAVANAGH, 2013). CPC is a concrete representation of this community.

A significant number of experts have been engaged with the identification of a set of high-quality teaching practices - or core practices - to be the focus of their initial teacher education courses (FRANKE; GROSSMAN; HATCH; RICHERT; SCHULTZ, 2006; KAZEMI; HINTZ, 2008; KAZEMI; LAMPERT; GHOUSSEINI, 2007; SLEEP; BOERST; BALL, 2007). Grossman, Hammerness, McDonald (2009) indicate that although definitions vary widely among these authors, all definitions of core practices share the following characteristics:

> - Practices that occur with high frequency in teaching;
> - Practices that novices can enact in classrooms across different curricula or instructional approaches;
> - Practices that novices can actually begin to master;
> - Practices that allow novices to learn more about students and about teaching;
> - Practices that preserve the integrity and complexity of teaching; and
> - Practices that are research-based and have the potential to improve student achievement. (GROSSMAN; HAMMERNESS; MCDONALD, 2009, p. 277).

For McDonald, Kazemi, and Kavanagh (2013), this list represents a good starting point for proposing an agreement for the field around common ideas for identifying, naming, and selecting core practices. The authors underscore that what is important is not a consensus on a final set of teaching practices, but rather an ongoing dialogue with the field and among researchers about how to conceptualize practices' features that support the learning of high-quality education by teaching professionals.

Furthermore, it is worth noting that, when focusing on core practices, trainers should address both conceptual and practical aspects associated with any teaching practice. The idea is for trainers to focus on the theoretical principles around the reason - why - to use that type of practice, so that student teachers understand when and under which conditions it should be adopted, but also provide opportunities for them to learn how to use the routines involved in that teaching practice (GROSSMAN; HAMMERNESS; MCDONALD, 2009).

A central aspect of these practices is their capacity to be transferred. In an initial teacher education course, it is impossible to cover all the content and all the practices teachers need to know to be successful in their profession. The curriculum for pre-service teacher education, thus, needs to be carefully designed to support the future professionals' development of knowledge and skills that will

[7] This involves all the professionals involved in student teachers education, that is, university professors, researchers, and teachers who monitor the internships and guide the student teachers in schools.

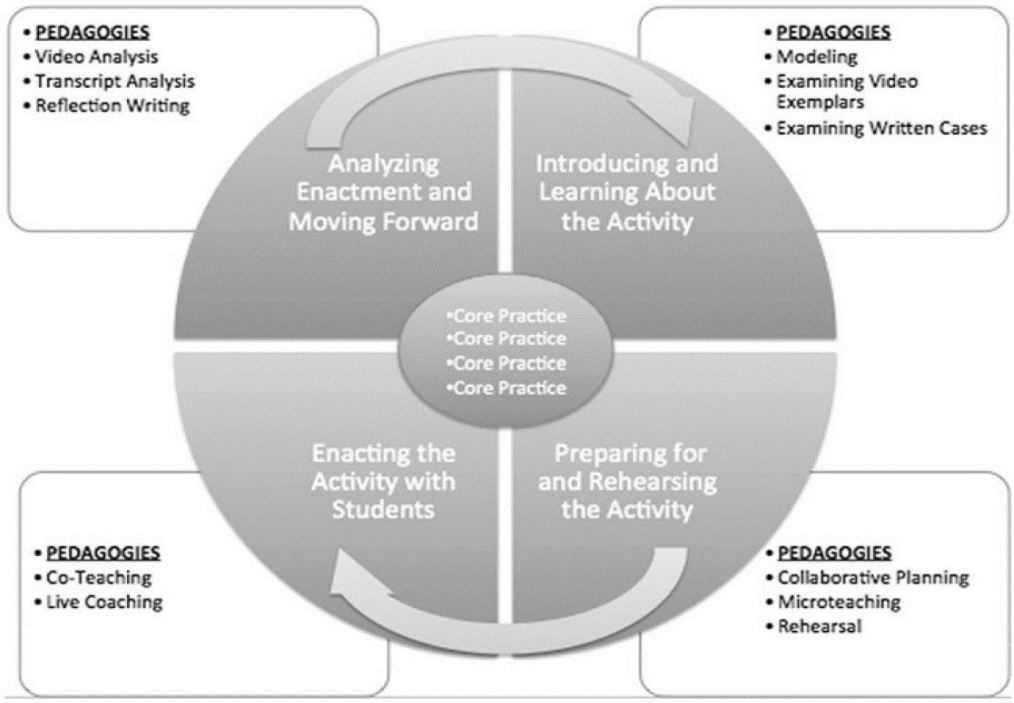
enable them to continue learning from their classroom experience (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014). This design implies not only a focus on specific practices, but also the use of pedagogical strategies specific to teacher education - here named pedagogies - which break down such specific practices in such a way they can be learned step by step by future teachers, making up a strengthened and structured foundation so that the future teachers are able to put them into action when the time comes (GROSSMAN; HAMMERNESS; MCDONALD, 2009).

Teaching practices for core practices teaching

In addition to identifying core practices that constitute the central content of future teachers' education, CPC researchers highlight the importance of pedagogies - that is, the methodologies - adopted by teacher educators. McDonald, Kazemi, and Kavanagh (2013) suggests a structure for teaching core practices that educators can adopt based on a cycle of teaching practices so that the core practice is learned by the student teacher in a structured and grounded way. The idea is that prospective teachers are trained to take ownership of a given core practice, e.g., organizing productive discussions, in a progressive way, so that they can learn it in a safe and controlled environment to, then, apply it in a classroom, ensuring the opportunity for reflection after implementation.

The steps that make up the cycle and guide the teaching methodology around core practices are based on sociocultural and situated learning principles (LAVE; WENGER, 1991; WENGER, 2010). Two premises of the collective learning cycle highlight the following aspects: the first concerns the student teachers' appropriation of practices through legitimate peripheral participation strategies. In this model, the teacher educator initially conducts the learning activity, and gradually the student teacher takes ownership of it and starts executing small parts of the task in controlled environments, until he or she is ready to conduct the learning activity autonomously. The second refers the student teachers' learning within an effective learning community, incorporating the principle that human learning has an inherently social nature. This cycle is represented bellow in Figure 1.

Figure 1. Cycle for collectively learning to engage in an authentic and ambitious instructional activity (MCDONALD; KAZEMI; KAVANAGH, 2013, p. 382).



In the cycle's initial stage, McDonald, Kazemi, and Kavanagh (2013) suggest trainers to introduce an activity through the use of modeling - when the teacher educator performs the activity with student teachers as it would occur with k-12 student, through the analysis of classroom videos or reading case studies in which a teacher would apply the activity in question. These three formative practices are all representations of practices, which includes all the means by which practice work is made visible to future teachers during their preparation (GROSSMAN; KAVANAGH; DEAN, 2018), so as to help them develop a picture of the activity and the practices involved in it (MCDONALD; KAZEMI; KAVANAGH, 2013).

Two examples on the use of practice representations for conducting productive discussions in mathematics illustrate this idea. Ghousseini and Herbst (2016) reported that student teachers experienced discussion from the students' perspectives by first performing a challenging mathematical activity and then participating in a discussion mediated by the course's professor. In another program, based on the use of Five Practices for Conducting Productive Discussions (TYMINSKI; ZAMBAK; DRAKE; LAND, 2014), student teachers analyzed videos of productive classroom discussions and experienced them. In both cases, the authors highlight the importance of this pedagogical strategy in teacher education, as it helps to compose a conceptual framework that expands the mere practice description through reading. Whether through video analysis or modelling experience, future teachers have the opportunity to fully experience the practice in case. Such moves corroborate the learning process of this practice, the understanding of its different components, and the future application in real classrooms.

Already in this first cycle stage, teacher educators can make use of a pedagogical strategy first proposed by Grossman, Hammerness and McDonald (2009): decomposition, which aims to "break" the core practice into small elements that can be discussed and learned by future teachers. The underlying principle of decomposition is the idea that simply experiencing an interesting activity does not make the future teacher able to reproduce it, and even less able to create different and appropriate activities for the contexts in which he will teach. The student teacher must have the opportunity to understand what is happening "behind the scene", that is, which decisions were made by the educator, the reasoning that guided their choices, why the activity was conducted in a certain way and not another, and what are the pedagogical implications of these actions (DANIELSON; SHAUGHNESSY; JAY, 2018).

In the case presented by Ghousseini and Herbst (2016), for example, student teachers had to analyze and categorize different elements of the work experienced from a rubric. This strategy, according to the authors, was essential for student teachers to make sense not only of the different core practices elements, but also to perceive different levels of performance, thereby creating a parameter with which they could compare their future work and continue to learn. In Tyminski, Zambak, Drake, and Land's (2014) study, the detailed decomposition of practice occurred only at the end of the process, after the practice was approached and applied in the classroom context. By working with *Five Practices for Organizing and Conducting Productive Discussions* (SMITH; STEIN, 2011), the authors formally introduced the terminologies and different practices aspects. Based on Grossman, Hammerness, and McDonald (2009), they highlight the centrality of a language and a framework for describing the practice. Such element supports the provision of specific feedback to student teachers, highlighting their efforts to put into action each of the elements that make up the practice (GROSSMAN; HAMMERNESS; MCDONALD, 2009).

Once student teachers have an image of the studied practices from a representation, approximation of practice is important, i.e., an experience that approximates the real thing, but performed in a controlled environment (GROSSMAN; KAVANAGH; DEAN, 2018). McDonald, Kazemi, and Kavanagh (2013) suggest planning and rehearsing the studied practice as the first stage of approximation. Approximations of practice enable student teachers to understand specific aspects of the core practice in question, including opportunities to separately rehearse and apply components of complex practices in settings of reduced complexity (GROSSMAN; HAMMERNESS; MCDONALD, 2009). The idea is to provide more opportunities for student teachers to apply several pedagogical actions central to core practices, but in controlled environments-especially in the university classroom, among peers and trainers rather than with real students.

Rehearsal is a formative practice often adopted by several experiments with core practices in teacher education (GHOUSSEINI; HERBST, 2016; KAZEMI; GHOUSSEINI; CUNARD; TURROU, 2016; LAMPERT; FRANKE; KAZEMI; GHOUSSEINI; TURROU; BEASLEY; CUNARD; CROWE, 2013; TYMINSKI; ZAMBAK; DRAKE; LAND, 2014). It begins when student teachers, after understanding and breaking down the practice, prepare a short activity segment, anticipating their actions with students, the questions they might ask, how they will handle common misconceptions, and how they will ask questions to stimulate students' reflection. Then, student teachers rehearse this segment with their peers, who play the role of learners. At the end of the rehearsal, both the classmates and the teacher educator give feedback so that the student teacher can reflect on and adjust this practice for future application.

The following moment is the application of the activity with real students in the school classroom where they do their internship. Usually, they work with small groups of students identified by the classes' regular teacher and focus the work on a specific practice aspect. The practice application with this small group of students is monitored by the classroom regular teacher, who gives feedback to the student teachers and helps them to reflect on what went well and which difficulties are related to the applied practice. The regular teacher`s presence helps the student teachers to reflect on why certain strategies are adopted, and consequently favors the reflective process and the learning continuity (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014). From a legitimate peripheral participation perspective, we notice that the learner already has a concrete or authentic task, but still in a controlled environment and under the supervision of the partner teacher.

An important aspect to be highlighted in this phase is the classroom teacher's central role in the student teacher preparation during internship. More than simply opening his classroom to the students, the regent teacher offers direct feedback on the practice application, practices modeling, and assists the selection of students with whom the student teacher will apply the practice. He helps the student teacher to understand why he made a certain move, as well as to reflect on how he should deal with specific issues that appear in class from lived experience (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014).

Finally, in possession of the records of the practice application, whether these are videos or written experience reports, the student teachers return to the university classroom and collectively reflect on the experiences they had with k-12 students, in a process of investigation of their practice. This reflection leads to the incorporation of new practice elements, and the cycle repeats. This phase of analysis is focused on supporting future teachers to learn from their own experience - a skill that will help with their professional performance development (MCDONALD; KAZEMI; KAVANAGH, 2013).

Such an example of this cycle's application occurs in Boston Teaching Residency, where we observe the four stages of the learning cycle proposed by McDonald, Kazemi, and Kavanagh (2013). In this experience, student teachers learned the practice of facilitating a whole-class discussion during the internship discipline. To begin, the teacher educators modeled whole-class discussion in classes on disciplinary content at the university. The student teachers planned the discussions for classes in which they interned with extensive support, during teaching methods classes, in small group planning sessions and with individual mentoring. In teaching methods classes, the student teachers rehearsed the discussions they would later facilitate with k-12 students. Then, when they conducted the discussions with the classes of students in schools, they received real-time mentoring from the internship teacher and the classes' regent teacher. Afterwards, with both the internship teacher and regent teacher present, the group collaboratively reviewed notes they made about the facilitation, student assignments, and/or videos to study what the students seemed to have understood and planned next steps for intern's and student's learning (BIEN; CARLSON; KAZEMI; REISMAN; SCHEVE; WELLS, 2018).

Another example involves the strategies adopted by the English Language Teaching at Secondary Education course from University of Washington to conduct discussions about literary works and systematize student learning (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014). The teacher educators in this course begin the cycle by modeling conceptual tools that are tied to more routine practices, so that student teachers can understand the required lesson structure in which this practice is developed. They use some materials to

anchor the discussion, named "mentor texts", such as Harper Lee's book *To Kill a Mockingbird*. The modeled routines are both relational and procedural, such as welcoming students to the door, presenting the schedule and learning goals, and discussing the meaning of these goals with students. While exploring the text elements, teachers model the type of language that should be used, as well as questioning strategies. This modeling offers student teachers an idea of how they can propose deeper, guiding questions to discuss the aspects of the mentor text they want to explore. All modeling is then broken down and explored through extensive reflection (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014). Aligning this approach with the idea of legitimate peripheral participation, we see here the moment in which the apprentice merely observes the master's practice.

In the next step of this example, the student teachers have to plan and rehearse a similar activity. Given that at the modeling time they were asked to reflect on the learning objectives of this activity and could observe its centrality in students, they become capable to structure their planning starting from clear and student-centered learning goals. Once the goals are established, student teachers plan a sequence of exploration of the mentor text they are working with and rehearse its application with their peers in the classroom. At this point, they receive feedbacks from both peers and trainers, and the activity culminates with a reflection on how they can improve their practice for it to be implemented in their internship schools (MCDONALD; KAZEMI; KELLEY-PETERSEN; MIKOLASY; THOMPSON; VALENCIA; WINDSCHITL, 2014). It is observed at this point how the learner begins to take ownership in a controlled manner and with intensive support from the teacher educator and their peers.

Finally, with the practice application records, whether these are videos or written reports about the experience, the student teachers return to the university classrooms and, through the analysis of their practice, reflect collectively on their experiences with real students. This reflection process leads to the incorporation of new elements into their practice and the cycle repeats.

When describing a more structured proposal of formative practices for teacher education, these CPC researchers aim to promote the exchange of ideas between: (a) different places where initial preparation occurs, such as the university and the schools where student teachers intern; (b) different fields of knowledge; and (c) different types of curriculum components, such as the disciplines of foundations, teaching methods, and supervised internship (MCDONALD; KAZEMI; KAVANAGH, 2013). In other words, they propose the core practices and the use of this cycle of pedagogies as a common language that permeates the pre-service curriculum as a whole. Grossman, Hammerness, and McDonald (2009) go further, proposing the programs' curriculum to be designed around the core practices. As a consequence, all disciplines - including the fundamental ones - would have a clear link to core practices. Such an approach would represent a deep paradigmatic shift in the way teacher education courses are structured.

FINAL CONSIDERATIONS

The literature review conducted in this paper identified a positive example of curricular and pedagogical approach for initial teacher education in different studies of the Core Practices Consortium. During a time when rethinking the teacher education curriculum is a central challenge in Brazilian educational policies, looking at good examples that are result of extensive research and reflection by the universities involved seems a good and promising strategy.

Among the core practices central elements, we highlight three aspects that can corroborate the analysis of the paths of teacher education in the face of the pressures for innovation. First, it is important to emphasize that the proposal of identifying core practices is based on the perspective that teaching, as a profession, is a specialized and intentional activity, and thus, any teacher in preparation needs to have access to a set of specific professional knowledge. The proposal of identifying practices that are central to teaching is, in this sense, an exercise of mapping the knowledge and actions that are unique to teacher education.

Second, we emphasize that the centrality of practice does not imply the absence of reflection. On the contrary, it is an approach in which theory and action go hand in hand for the development of

high-level competencies, where future teachers not only learn abstractly about how learning occurs in classroom but are able to apply this knowledge in real contexts.

Third, it is critical to emphasize the transfer nature of these practices. Any program, however thorough, would never be able to cover all the classroom challenges. What the core practices propose, in this sense, is the selection of a few practices that are powerful enough to trigger a process in which the teachers continue to learn from their practice. The nature of an education based on the identification of powerful and well-structured practices is to promote learning at a metacognitive level, that is, to provide future teachers with conceptual and cognitive tools so they can deal with the challenges they will find in their classrooms.

Regarding the disciplines and locations of programs, it is clear the diversity in the examples of core practices and pedagogies to learn them found in this literature review. However, all the examples found dealt with experiences in teaching methods courses or in clinical practice - in internships in schools. There were no reports of experiences of work based on core practices that took place in foundations courses. In part, this aspect is explained by the fact that core practices are relatively new as an organizational structure in teacher education and were born within methods courses. Nevertheless, the paths pointed out by the existing studies so far prove to be prolific for the reflection on the incorporation of such strategies in the aforementioned foundations courses.

Finally, it is important to highlight the importance of pedagogies in this process. As discussed throughout the text, the identification of methodologies to educate future teachers with core practices as the learning object is a fundamental component of the work being developed by the CPC. The simple identification of key contents - the core practices - is a fundamental, but not sufficient, condition to better prepare teachers for the classroom's challenges. It is fundamental to offer learning experiences in which students can experience the core practices, discuss them in depth, and discuss their application, being able to decide when and how to use them. In this sense, the strategies of representation, decomposition, and approximation of practice proposed by the consortium's researchers prove to be fertile ground for rethinking the pre-service programs in Brazil.

In the Brazilian context, overcoming the dichotomy between theory and practice in teacher education has long been discussed. Experiences such as those of the CPC may indicate ways to overcome this problem. Transforming teacher education to be centered on practice - that is, to be truly oriented to the nature of the teaching profession - requires a deep reworking of the program curriculum. The curriculum redesign requires both the identification of core content and an implementation that adopts methodologies appropriate for the future teacher's preparation. These practices have been built by a teacher community based on their research and teaching experiences. Therefore, the core practices and the pedagogies associated with them are a possible way to anchor the debate on initial education in Brazil, given their scientific nature and empirical experimentation.

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Submitted on: 04/01/2020.
Approved on: 03/23/2012.