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Embracing Conceptualizations of English Language Teacher Education From a Complexity Perspective

Acoger conceptualizaciones de la formación del docente de inglés desde una perspectiva compleja

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Current conceptualizations of foreign language teacher education fail to represent the complexity of such education. This reflection highlights the need to embrace English language teacher education from a complex perspective. To explain this position, we define complex systems and complexity principles through examples of interconnected components of teacher education. Then, we trace emergent conceptualizations from theory and governmental documents that resonate with a complexity perspective. We suggest that efforts in this direction may better prepare prospective English teachers to face challenging realities in educational settings and will eventually improve students' learning, an outcome every stakeholder is aiming at.

Keywords: complex system, complexity perspective, complexity principles, English language teacher education

Las conceptualizaciones actuales de la formación de docentes de lenguas extranjeras no representan la complejidad de dicha formación. Esta reflexión destaca la necesidad de abordar la formación de profesores de inglés desde una perspectiva compleja. Para explicar esta posición, definimos los sistemas complejos y los principios de complejidad a través de ejemplos de componentes interconectados de la formación del profesorado. A continuación, rastreamos las conceptualizaciones emergentes de la teoría y los documentos gubernamentales que resuenan con una perspectiva de complejidad. Los esfuerzos en esta dirección pueden preparar mejor a los futuros profesores de inglés para enfrentarse a las desafiantes realidades de los entornos educativos y, en última instancia, mejorarán el aprendizaje de los estudiantes, un resultado al que aspiran todas las partes interesadas.

Palabras clave: formación de docentes de inglés, perspectiva de complejidad, principios de complejidad, sistema complejo

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Introduction

World changes affect economic, political, communicative, technological, and relational areas in society (Gómez-Francisco, 2010). These changes affect people's thoughts, perceptions, knowledge, and reactions to those dynamics (Vaillant, 2007). Also, people bi-directionally influence culture, family, society, educational settings, and relationships, which are historically located, diverse, and versatile (López-Rupérez, 1997). This "changeism" (Hill-Jackson & Lewis, 2010, p. xxi) affects education, given its socio-political and institutionalized nature (Morante & Gómez, 2007). For this reason, education is of great importance for societies (Ministerio de Educación Nacional [MEN], 2013; Rubiano, 2013) if they are to understand change and advance, progress and improve living and relational conditions of human beings. Therefore, it is important to inform education from perspectives that can take account of its bidirectional relationships with society and that recognize its inherent complexity.

Within a climate of constant change, teachers are fundamental agents in nations' achievement of their intended goals (García-Jaramillo et al., 2014; Schuck et al., 2018). Teachers' quality has been considered a key factor to assure that forthcoming generations maintain and upgrade their social and living conditions to their fullest. As scholarship shows (Darling-Hammond, 2006; Hattie, 2008; McLean Davies et al., 2015; Vezub, 2007), teachers are crucial in guaranteeing students' improvement in the educational system provided other factors are also developed (Cochran-Smith et al., 2017; Morante & Gómez, 2007) .

Global societal changes demand the alignment of education and teacher education (TE) to new visions. Societies need TE programs developed from perspectives that prepare teachers to respond to the increasing demands of educational settings (Darling-Hammond, 2006; Schuck et al., 2018; Vaillant, 2007). Programs are designed to equip teachers with knowledge, skills, and understandings so they can deal with changing realities. Therefore, English language teacher education (ELTE) configurations should recognize TE is a complex phenomenon and use that understanding to include knowledge derived from other sciences, which have advanced in their comprehension of how such complex phenomena function. Programs should, for instance, demonstrate in their designs how multiple factors interconnect to influence teachers' learning thus ultimately affecting teacher quality. Therefore, we propose that ELTE should attempt to integrate complexity epistemologies into their proposals to allow both teacher educators and preservice teachers to develop the knowledge skills and understandings to face variant, diverse, unique, and intricate phenomena (Vaillant, 2007) that surface in their classrooms.

In line with this, this paper aims at highlighting the need for current ELTE theoretical approaches to recognize and act upon the understanding that TE is a complex phenomenon. We suggest that teacher educators and designers should start thinking of language teachers' preparation using those considerations. We pose that ELTE programs should be distanced from a simplicity paradigm, which focuses on content knowledge over other highly influential factors. These factors are frequently addressed in relevant research, but they are far from being integrated into theoretical underpinnings of ELTE programs. ELTE needs to be informed by knowledge areas able to explain how a complex phenomenon such as English language teachers' learning really emerges. Joint efforts to improve their quality can be made in this direction. Such efforts would better equip prospective English language teachers to face challenging realities in educational settings and would eventually improve students' learning and development, an outcome every stakeholder is aiming at.

A Brief Note on Paradigms

The concept of paradigm has two main characteristics: a certain way to conceive and interpret reality and a shared world vision by a group of people (Sandin, 2003,

p. 28). The scientific classical paradigm is grounded in positivist-rationalist perspectives and entails procedures that separate phenomena into their parts to make them understandable and tractable for human beings. This implies fragmentation, simplification, reduction, and determination of such phenomena to be able to comprehend them. Most known phenomena have been studied under this paradigm. This "classical" paradigm has had a strong influence on three major aspects in education: theoretical, epistemological, and methodological. At this point, most of the ELTE configurations have grounded their theoretical foundations on the classical paradigm (also found in the literature as positivist, rationalist, and empiricist), which usually translates into models of transmission of knowledge. This is what counts as valid knowledge, which in turn is able to explain educational phenomena (Arellano, 2016). However, teaching and learning in education and in ELTE cannot be explained merely on the bases of the classical paradigm (Davis & Sumara, 2012; Gómez-Francisco, 2010; Roa-Acosta, 2006; Tello, 2004) as we argue in this reflection.

As mentioned, our current paradigmatic comprehension of education has derived from the classical paradigm, and therefore our understandings of how knowledge should be taught and learned result from it. This may have an incidence in the crisis we are living these days, which the World Development Report (WDR) has labelled as a "learning crisis" (World Bank, 2018). The WDR notes the crisis is happening in developing countries and further underlines the lack of recognition from the educational agents: "The learning crisis is real, but too often education systems operate as if it is not" (p. 83). Part of this crisis derives from ignoring that TE is a complex phenomenon and to improve it we first need to understand it better.

Scholarship in education has gradually started to establish more complex relations among teaching and learning processes; however, only until recently, the analysis of theoretical reflections in ELTE models has started to shift. There is a slow movement from traditional paradigms where knowledge transmission is equated to learning, to perspectives that integrate into the equation other interconnected factors such as reflection on teacher's classroom actions. Recent perspectives resonate with constructivist and socio-critical underpinnings as well as humanistic theoretical foundations (for a review of models, see Fandiño-Parra et al., 2016). The paradigmatic stance taken by ELTE influences how teaching and learning are instantiated in the programs. As follows, we will illustrate this point introducing conceptual orientations that have been traced in various reviews.

Main Conceptual Orientations in Teacher Education

Feiman-Nemser (1990) indicates five conceptual orientations from her review of theoretical perspectives in TE. The author defines conceptual orientation as "a coherent perspective on teaching, learning, and learning to teach that gives direction to the practical activities of educating teachers" (p. 6). The first one is *academic orientation* understood as terms of transmission of knowledge and development of understanding. The teacher is considered an "intellectual leader, scholar, subject matter specialist" (p. 7). The second is *personal orientation*, in which the student teacher is the core of the teaching and learning process and the focus is on learning, instead of teaching: "Learning to teach is construed as a process of learning to understand, develop, and use oneself effectively" (p. 8). The third is *critical orientation,* which emphasizes the power of education in creating a fairer and more democratic society. The fourth is *technological orientation,* which centers on the idea that teachers are consumers of research in order to use principles and practices. The fifth is *practical orientation;* it revolves around "knowledge about teaching and a means of learning to teach" (p. 15). In this regard, Vieira and Moreira (2008, as cited in Fandiño-Parra et al., 2016) point out that ELTE still

tells teachers what and how to do things. Even though these orientations have marked ELTE configurations and made great contributions to the field, they have done so from a fragmenting view, thus falling short in preparing teachers from stances that recognize the multidimensionality of ELTE.

When TE is looked at from a diachronic historical perspective, one can say that it has transitioned from conceptions based on behaviorism and constructivism to humanistic and socio-historical views of teaching and learning. The underlying conception defines the main components of ELTE; therefore, ELTE has shifted from aiming that teachers exhibit desirable behaviors producing good teaching to focusing on their gaining awareness of the assumptions, beliefs, and perceptions that influence their classroom practices and promote effective teaching; to helping teachers design and experience practices that respond to local contexts and needs (Ell et al., 2017).

An illustration of such shifts is provided as follows. As has been explained frequently, the behaviorist view of learning translates into as a series of learned "skills, tasks, routines, and strategies" (Stuart & Tatto, 2000, p. 500) that student teachers need to put into action in the classroom. Instances of "what works best" in teaching can be seen in this conception (Richards, 1998). This understanding assumes traditional models isolated from contexts or classroom situations, "and despite this, prospective teachers are expected to reproduce what they learned in a 'cascade' or replica effect, in a kind of contagion of what they have learned" (determinism; Salas, 2006, as cited in Rodríguez & Alamilla, 2018, p. 16).

The constructivist view in ELTE entails that student teachers develop an understanding of subject matter and pedagogy with the purpose of reflecting and creating instances of theory and practice in context. The humanistic approach to ELTE considers that teaching is based on the interactions of human beings, highlighting that learning is a human experience (Iannone & Carline, 1971). This approach aims at meeting preservice teachers' human needs and at preparing them to encounter students with a wide range of intellectual and humanistic needs. The ultimate goal is supporting human growth. Those conceptions have given support to different models which emphasize cores of intellectual, social (K. E. Johnson, 2009; Nguyen, 2016), humanistic, or technical stances (see Cochran-Smith & Lytle, 1999; Fandiño-Parra et al., 2016; Feiman-Nemser, 1990; Freeman, 2006; Wallace, 1991) or more integrative ELTE proposals (Kumaravadivelu, 2012). This shows a gradual shift that acknowledges ELTE as a complex endeavor aimed at uncovering the relationship of the multiplicity of components that affect teachers' learning.

Current Teacher Education Configurations

Morin (2005) remarks that to acknowledge a complexity perspective we first have to acknowledge the existence of a simplicity one. A simplicity or classical paradigm explains phenomena in terms of linear cause–effect, fragmentation, determinism,[1] and mechanism by separating their parts, in the understanding that to study the whole implies studying the sum of its parts. This paradigm is grounded on "evidence, fragmentation, lineal causality, exhaustivity, immutability, irrefragability, universality, and reversibility" (Roa-Acosta, 2006, p. 151).

To illustrate the linearity, we can consider the theory and practice dichotomy. This follows a cause–effect relationship, where teachers receive knowledge (the empty vessel concept) and consequently they will know how to apply it in class. In other words, the cascade effect: "A certain and linear process within which knowledge is transmitted more or less directly from teacher to student by following a fixed and scientifically predetermined sequence of instructions" (Cochran-Smith, 2003, p. 97).

1 "The philosophical attitude . . . that everything that is going to happen is absolutely determined (fixed) by what has already happened; everything that has already happened can in principle be determined (calculated) by careful scrutiny of current conditions" (Davis & Sumara, 2006, p. 9).

Fragmentation, in this context could be exemplified with the series of discrete components commonly found in ELTE programs, suggesting that separated learning components (or parts) will lead to effective preservice teacher learning and practice (the whole). Furthermore, ELTE and specifically, initial ELTE, in many contexts, have focused on training, which emphasizes the hierarchy of instructional methods as the priority of most programs' rationale. Fragmentation has resulted in the profession being instrumentalized or infused with a technical vision (Cárdenas et al., 2010; Schön, 1987). As Zemelman (1998, as cited in Tello, 2004) states, this represents a constraint since we simultaneously "have to ask ourselves the question about how to stimulate the willingness to think, especially when what is privileged is simply the ability of how to do" (p. 7).

We suggest that ELTE configurations have been fragmented and therefore instrumentalized. To overcome this, Aoki (as cited in Pinar & Irwin, 2004) proposes a movement towards a multidimensional curriculum and suggests that "we need to seek out new orientations that allow us to free ourselves of the tunnel vision effect of mono-dimensionality" (p. 1). Aoki advises the design and implementation of TE based on "human experiences within the classroom situation" (p. 3) allowing this way that preservice teachers "theorize from their practice and practice what they theorize" (Kumaravadivelu, 2012, p. 15), contributing to a more multidimensional orientation in ELTE.

Aoki (as cited in Pinar & Irwin, 2004) also recommends those experiences be undertaken on the basis of reflection. Being a teacher means more than performing skills and delivering content. He highlights the issue of curriculum-as-plan and curriculum-as-lived in the "in between" that emerges from these two perspectives, which call for "an understanding of our own being as teachers" (p. 15). He indicates that attention has been focused on the outcomes of teaching (the *what* and *how to*) instead of on the "understanding of teaching" (p. 17) (the *whys*). Within the outcome orientation, effective teaching has been reduced to views of "doing," sidelining that teaching "may have more to do with the being of teacher—who a teacher is" (p. 17) than with outcomes. In our reflection, we subscribe to Aoki's view. In his interpretations of curriculum-as-lived, this author has connected the complexity of the classroom to the teaching world: multiplicity, layers, spaces of difference, in a more humanized frame for understanding teaching and teachers, thus moving away from an understanding of teaching and teachers as means: a complex view of ELTE.

Teacher Education and Its Instantiation in the Colombian Context

Given the fact that global TE has been developed mainly under the simplicity perspective, it is not surprising that TE in Colombia has also been permeated by this worldwide perspective, and traces of this vision might persist in some educational settings. The Decree 18583 (2017) comprises the four components for TE programs in Colombia: (a) general foundations, (b) subject matter and disciplinary subjects, (c) the foundations of education and pedagogy, and (d) didactics. However, the document makes no explicit reference to attitudes and aptitudes to support the development of teachers as agents of social change; also, there is not much reference to schools as places of social and cultural development. This perspective does not seem to be enough to explain complex phenomena such as knowing and learning (Kumaravadivelu, 2012) in education or ELTE.

Calls for a more complex perspective are found in the literature. Arismendi (2016) acknowledges the need to recognize the cultural and plurilingual Colombian diversity; Giraldo et al. (2019) challenge the traditional and fragmented curricular foundations; Fontalvo (2017) suggests curricular views be "open, critical, decolonizing, complex, non-linear, and self-organizing" (p. 228); the OECD report underscores the need for contextualized

Colombian Initial Teacher Education (Radinger et al, 2018); and Castañeda-Londoño (2019) highlights language teachers' necessity to construct local knowledge base mindsets. Therefore, efforts should be made to ensure ELTE programs embrace diversity and increase contextualization to prepare teachers for the challenges of our variegated educational contexts.

Teacher training and reflective practices play a key role in ELTE but are not sufficient on their own to account for the complexity of this phenomenon. Evidently, teachers need to learn "how to do things," and exhibit effective techniques and skills in classrooms; they also need to reflect on their experiences undergone during practices, what went wrong or right, to improve their practices. However, the classroom scenario challenges teachers to do more than that; they need to integrate other factors that contribute to the whole of teaching. ELTE needs to recognize the influence of factors such as the context itself, and the interactions between teachers and students in the background of the school context, for instance. Such factors affect teachers' actions and students' learning and development. This perspective understands education as a complex system, embracing the "new relationship[s] between the whole and its parts" (Gómez-Francisco, 2010, p. 191). This new understanding should assume "that teaching is a complex and somewhat uncertain process with knowledge constructed in the interactions of particular teachers, students, materials, texts, and prior experiences" (Cochran-Smith, 2003, p. 97).

A Complexity Perspective to Support Understanding of Teacher Education

ELTE programs should acknowledge advances deriving from complexity perspectives and incorporate what is pertinent from these advances into their theoretical approaches to infuse curricular plans, methodologies, and didactics (Roa-Acosta, 2006). Current ELTE theoretical perspectives recognize some components which are instantiated in subjects related to instructional methods, pedagogy, disciplinary matters, and theories of education; other components related to English language teachers' learning are not easy to grasp and evidence such as teachers' beliefs, assumptions, reflections, learning experiences, and personal values, to name just a few. These components seem to be interrelated, enriched, and affected by the interactions of teachers, students, educational policy, curriculum (as agents), as well as the environment (context and setting dynamic conditions; society and culture). These interactions are complex and affect TE, teacher development, and practices. So, efforts should be made to understand the complexity of ELTE. This raises the question of what a complex system is, what complexity is, and how these concepts relate to teacher education.

Systems and Complex Systems

To understand why education and, consequently, ELTE are considered complex systems, one must start with a definition of system. Morin (1990) explains that a system is "an interrelation of elements which constitute an entity or a global unit" (p. 123). According to Morin (1990), two important conditions stand out here: elements are interrelated, and the unit, understood and constituted by those interrelated components. Also, when this unit and its interrelated components have a regular and stable relation, the system is said to be organized.

Morin (1990) explains that systems organization entails the disposition among components or individual's relations which produces a complex unit or system. This one possesses unknown qualities in the elements level. Organization brings together elements, events, or individuals that end up forming a unit (a whole). Organization in the system "transforms, produces, gathers, and maintains" (p. 126) the system itself. Complexity is conceived at this point because the unit reveals "infinite combinations of simultaneous interactions and that

abounded in non-linear interrelations" (Barberousse, 2008, p. 99). This means that complexity is born within the same system. As in education, multiple interactions of agents result in multiple decisions. Problems originate from diverse and varied situations and decisions occurring on a daily basis in schools as well as varied ways of solving problems. These interactions, problems, and decisions are not evident in curricula or syllabi. This illustrates that systems cannot be explained by only the elements that constitute it, but also by the multiple interactions of its components and the agents in it.

Key Principles of Complexity and of Complex Systems

N. Johnson (2009, pp. 13–16) identifies some key principles of complexity evident in any complex system as follows:

1. "The system contains a collection of many interacting objects or agents" (p. 13). To illustrate this, notice that education is considered a complex system due to the multiple agents that constitute it: students, teachers, supervisors, coordinators, and educational stakeholders that take part in this context and share information, duties, and so on. Therefore, individual agents cannot be conceived out of the system (for example, teachers cannot be conceived without their relations to students). According to N. Johnson (2009), these agents interact physically as members of the same group, and share information as a group. Within a given group, some subcommunities emerge as well because they share other types of information or features with certain members. These interconnected networks and agents are one of the most important characteristics of a system.

2. "The agents' behavior is affected by feedback" (N. Johnson, 2009, p. 14). This means that actions in the past have effects in the present. Also, actions of an event or context can have an effect in another context. Therefore, systems have memory of actions which they can use to transform or have an effect on the present.

3. "The objects/agents can adapt their strategies according to their history" (p. 14). This means, according to N. Johnson (2009), that they can improve their performance by adapting their own behavior by themselves.

4. "The system is typically open" (p. 14). N. Johnson (2009) explains that a system can be influenced or affected by its environment. In education, this can easily be registered when schools need to adapt their own curriculum due to policy reforms or technological changes that influence schools to transform their own functioning.

5. "The system appears to be alive" (p. 14). N. Johnson (2009) indicates that a system's evolution occurs in a highly "non-trivial" (see Morin, 2005) and most of the time "complicated" way. Complicated means determined by agents' ecology who interact and adapt thanks to memory or feedback, as explained previously.

6. "The system exhibits emergent phenomena which are generally surprising and may be extreme" (N. Johnson, 2009, p. 15). This means that systems are "far from equilibrium" (N. Johnson, 2009, p. 15); which means that everything could happen and that the resulting phenomena cannot be predicted based on the information (based on the properties) each object/agent has.

7. "The system shows an intricated mix of ordered and disorder behavior" (p. 15). Systems are considered to operate in a sort of flow between order and disorder.

We suggest, as other authors, that TE is a complex system (Davis & Sumara, 2006; Koopmans, 2017; Michel, 2016; van Geert & Steenbeek, 2014). Hence, we think that many of the principles of complexity allow for better understanding of how TE works as such perspective "aims to account for how the interactive parts of a complex system give rise to the system's collective behavior and how such a system simultaneously interacts with its environment" (Larsen-Freeman & Cameron, 2008, p. 1). In that sense, a complexity perspective could trace how ELTE components and their articulation infuse prospective teachers'

responses to problems, decision-making, and professional growth in a multiplicity of school contexts and occurrences. It could also trace how the components' multiple interactions and use of information, both past and present, inform preservice teachers' learning and the role of the environment in teachers' learning and self-organization; in short, how this information is understood to enhance teachers' learning. Carta de Fortaleza (2010) proposes thinking of education from a complexity and transdisciplinary view supported by three formative dimensions: auto formation, hetero formation, and eco-formation, which are pivotal to revitalize TE as well as acceptance of "openness, flexibility, dialogue, self-eco-organization and autonomy, in addition to greater attention to emergencies, to the ecology of action, to intersubjectivity enriched by multiple references" (p. 4).

A complexity perspective does not reject knowledge derived from classical perspectives; it advances from it to solve its limitations to understand complex phenomena (López-Rupérez, 1997) and account for the relationships between the whole and the parts; therefore, we need to inquire how they interconnect and interact to produce and acquire knowledge leading to meaningful outcomes for all agents. Tello (2004) highlights that all agents in the TE system are active agents; therefore, able to transform knowledge. We concur with Tello (2004) that those in charge of education are obliged to revisit education concepts and "vary the training and profession categories" (p. 7) consistent with their particular necessities, as well as "deepen the education analysis from a multidimensional opening of social reality and senses, without anticipating what the teacher's role will be because it will surely be different from what the teacher 'is being prepared' for" (p. 7).

We suggest that TE, and specifically initial TE research, should continue to deemphasize the linearity still persistent in how we approach and understand TE. As Cochran-Smith et al. (2014) argue:

> In many countries, there are multiple studies intended to improve initial teacher education. These have generally focused on pieces of teacher education rather than wholes, and have used an underlying linear logic. It may be, however, that what is needed are new research questions and theoretical frameworks that account for wholes, not just parts, and take complex, rather than reductionist perspectives. (p. 1)

In fact, educational research has gradually unveiled other bodies of knowledge that have demonstrated the exertion of great influence on teachers' education and their professional performance in the classroom: school culture and beliefs (Hongboontri & Keawkhong, 2014), beliefs affecting different teachers' performances and behaviors (García & Rey, 2013; Gómez-Muñoz, 2010; Mansfield & Volet, 2014), empowerment (Fandiño-Parra, 2010), more contextualized reflective practice and resistance to dominant discourses (Guerrero-Nieto & Quintero-Polo, 2009; Torres-Martínez, 2009), identity (Arvaja, 2016; Hamilton & Clandinin, 2011; Pennington & Richards, 2015; Santoro, 2014). Therefore, ELTE should expand its knowledge bases to improve prospective teachers' education with what best supports their learning and future classroom practices. Such components also encompass the development of critical and reflective attitudes, autonomy, and awareness of classroom and students' particularities (Martínez Agudo, 2011). In a similar vein, Livingston and Flores (2017) report a 40-year review on research and highlight a variety of topics that suggest meaningful emerging areas enriching the "how to" in TE:

> Teacher professional learning, research and enquiry in TE, partnerships in teacher education, linking research and the use of data to teaching, teacher leadership, intercultural and multicultural issues, inclusive education, diversity, mentoring, reflective practice, digital competence, teacher portfolios, teacher retention, identity, motivation for teaching and teacher educators. (p. 551)

Livingston and Flores (2017) report the theory and practice divide as a matter of constant inquiry and indicate that "identify[ing] the professional learning needs of teachers at the initial teacher education is necessary." There is also recognition of "the complexity of learning and teaching as a social, moral, political and economic endeavor" (p. 555). Findings from this review suggest that TE is moving (but probably too slowly) in the acceptance and acting upon the knowledge of the multiplicity of existing components that should be considered in TE conceptualizations.

Authors as Ling (2017) make a strong call for the recognition of complexity in TE if we are to respond to the challenges posed by our present and future societal demands. The author explains current challenges faced in TE conceptualization:

> Teacher education needs to be an iterative process rather than a linear one and needs to be backwards, forwards, inside-out and outside-in somewhat simultaneously, because it is complex, recursive and has multiple layers. Add to this the broader issues faced within a super complex, twenty first century knowledge society, where the future is not only unknown but unknowable, and where the frameworks by which we make sense of our world are moving, blurring and shifting as well as being highly contested and contestable. (p. 562)

We suggest it is possible to conceptualize ELTE as a complex system. It seems that some ELTE components and agents are more visible (performance in classroom) than others (decision-making, identity, beliefs, assumptions, ideologies, moral and ethical values) that may be revealed through discourse. They can also influence and interact with teachers' learning. Furthermore, they interact following principles of complex systems, that is, contexts and educational settings provoke emergence of new responses, new learning, and growth. Teachers have the potential to improve their own behaviors.

Conceptualizations of Teacher Education in Colombia

In terms of conceptualization of teacher preparation, the Colombian Ministry of Education (MEN, 2013) gave its first steps by acknowledging that TE needs to be recognized as a complex system. This stance presents TE as a complex system in its general structure, recognizing it as an organization with its inherent dynamics. According to the MEN (2013), this system consists of three interrelated units that connect in different ways: initial TE, in-service education, and professional teacher development. Within this system, there are three recognized articulation axes: pedagogy, research, and evaluation (p. 59).

Accordingly, the MEN (2013) considers it important to highlight the purposes that the *Sistema Nacional de Formación de Educadores* (National System of Teacher Education) proposed in the 1996–2016 ten-year educational development plan, namely, teacher education and initial and ongoing integral development as key factors to guarantee the quality of education. However, the MEN claims these components do not function in isolation and quality should be articulated with the education system, policies, and other areas such as labor, infrastructure, and supplies.

The document also states that teachers are agents who should recognize their role in constructing quality in three dimensions: personal, social, and professional. Teachers are considered social agents, with knowledge and pedagogical experiences, in relation to their socio-cultural contexts and are able to build innovation through their own praxis with a great role in social transformation (MEN, 2013, p. 44). However, Decree 18583, enacted in 2017, does not deepen in these instances.

The MEN document defines the importance of teachers as social agents seeking for social transformation. The document presents teachers as embedded in four types of learning: doing, knowing, living, and being;

these learnings happen through teachers' pedagogical experiences, not in isolation but in a given socio-cultural context (p. 44). The MEN document puts forward a complexity perspective for teacher preparation in order to improve teachers' human development from the very initial phases (MEN, 2013):

> The main issue is that of the educators themselves, since it is a matter of preparing not a process and procedure operator, but a qualified human being for a very significant social task, whose horizon must impact not only the country's economic development, but also social and moral development in general, quality life and human well-being. (p. 20)

Global challenges and national societal demands call for ELTE configurations from a complex view to tackle the complexities of ELTE itself; as well as to respond to the different and diverse educational settings claiming for social transformation in our context. The MEN has kept in mind that teacher quality requires the coordinated process of different stakeholders with the intention of improving education in the nation. Within this context, the MEN recognized the complexity of systems as a way to respond to the rapid changes of transformations in the knowledge society; these demand the reorganization of the processes of teacher qualification and education. "Therefore, teacher education goes beyond enabling professional and labor function for the educational system; it aims at an integral teacher's formation: of being, knowing, doing, and living with others" (MEN, 2013, p. 46).

This multidimensionality requires assuming a different conceptual stance that acknowledges other interconnected aspects. The MEN (2013) also recognizes that due to its nature, TE should be approached from a complexity view, "supported in social and cultural dynamics, which in turn also demand its transformation" (p. 46).

At this point, ELTE, approached under a complex perspective, may reveal some components which are invisible in ELTE configurations, their interrelations, and operation, and how they affect preservice teachers' growth and learning such as "personal beliefs and values as strong influences" (Ell et al., 2017, p. 341). Consequently, research to help identify and recognize invisible components, their influences, interactions, and emergence in teachers' formation is essential.

Moving From Conceptualization to Design

The need to comprehend and research the different components that constitute ELTE (initial and ongoing) is increasing as highlighted by different scholars (Davis & Sumara, 2006; Ell et al., 2017; Gray & Colucci-Gray, 2010; Ludlow et al., 2017; Ricca, 2012; Smitherman Pratt, 2011). However, there is a long way to go in that direction.

ELTE naturally evolves as a complex system in which known components (disciplinary knowledge, pedagogy, teaching practice, culture, educational setting, identity, conceptions, perceptions, and beliefs) interact with each other and influence preservice teachers' learning and development; as well as their practices in classrooms and in the world. These elements that make up part of a teacher's system interact as well with students and communities which are complex systems too. They all come into play, interacting, making relations, influencing each other, emerging as new systems to prompt for making decisions; consequently, teachers themselves become the key to unveil the phenomena, as suggested by Phelps (2005):

> No-one knows the complex interplay of factors that impact on an individual, or the significance of any one factor, greater than the individuals themselves. This is not to assume for a moment that the individual learner is fully aware of all these factors, but rather that they are in a better position to understand them than anyone else. (p. 40)

English language teachers in processes of initial education as well as all other teachers are always

developing, learning, knowing, being, and constantly becoming social and human beings. This implies not stable, but permanent formation and transformation, not only for teachers, but also for the reality around them: "The educator listens to the word of the other and her or his own voice; from here, he/she is transformed and renewed. An educator who is not formed him/herself in 'formation' does not form, only informs" (Mèlich, 2011, p. 50).

As highlighted by Cochran-Smith and Zeichner (2005), people, when asked, would agree that

> teacher education needs to be improved, but there is a vast disagreement about how, why, and for what purposes. Calls for change stem from complex social, political, and organizational goals that are quite different from one another in history and tradition. (p. 43)

More than ever, ELTE cannot be regarded as an isolated area, where pedagogy and content override other type of influences in teachers' learning; instead, it should be seen as operating within human actions for future transformation and empowering teachers for social design. Instances of theory and practice cannot be explained in only epistemological frames of knowledge transmission, or linear cause–effect. Calls to develop more integrative, complex analysis of teachers' learning should be happening.

ELTE programs systematically and intentionally designed and studied from a complex perspective could facilitate the understanding of the complex nature of teachers' learning and development. This understanding would lead to new ways of working and enhancing prospective teachers' professionalism as well as their learning and developmental conditions. Understanding TE in such an integral way will go beyond listing components to understand their relations, interdependencies, interactions, and influences; in other words, how the TE system works and emerges.

It is time to further acknowledge ELTE as a complex system and, as such, start working to see how as a system it is entangled and nested in multiple classroom dynamics that comprise connected, dependent, and interdependent phenomena. Nevertheless, according to Davis and Sumara (2006), this complexity perspective cannot be seen as

> an explanatory system. . . . The fact that complexity thinking pays attention to diverse sensibilities should not be taken to mean that the perspective represents some sort of effort to embrace the "best" elements from, for example, classical science or recent postmodern critiques of scientism. (p. 4)

There are no doubts English language teachers play an important role in society's transformation, therefore ELTE demands continuous efforts to comprehend the complex nature of teachers' learning and development. How do interactions of components in teacher education occur? What aspects emerge as a result of individual and collective interactions, associations, and connections? How can we start visualizing these aspects in concrete images or understandings? Can they be materialized in a curriculum? If so, how? Could a better understanding of this complexity help to improve and transform societies? Can "good teaching" and "effective teaching" be materialized as one if we develop a better understanding of ELTE complexity? These questions should guide ours as well as other teacher educators' reflections and actions to enrich conceptualizations of ELTE.

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