Language teacher professional education: The role of peer-to-peer learning in online environments

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Abstract

This article provides a theoretical discussion regarding the implications of peer-to-peer learning in online environments for language teacher professional learning and second language academic literacy. It approaches the use of technology as means to enhance prospective teachers' cognition and metacognition skills and to foster their language learning, as Language Teacher Education programs usually fulfil a twofold purpose: to learn the language itself and to learn how to teach it as a foreign language. In order to arrive at these implications, it presents a grounded discussion on sociocultural perspective within L2 teacher education, teachers' beliefs, and mediation in the sociocultural perspective. The discussion reinforces the significance of peer-activities (peer-observation and peer-feedback) to foster a teacher development process. Moreover, it suggests that a guided peer-activity, such as employing the use of carefully elaborated rubrics, could enhance this process.

Keywords: Language teacher education, Peer-to-peer learning, Peer-feedback, Online peer-review

1. Introduction

Teacher Education is a process where we have to understand ourselves to be able to modify concepts and to become aware of what surrounds us to provide better guidance to students, i.e., "the teacher cannot help the student to overcome his or her ignorance if the teacher himself or herself cannot permanently overcome his or hers" (Freire, 1996, p. 95, our translation). And reflecting on self-behavior and especially reflecting with the support of a peer is an essential activity to achieve awareness. To exemplify, Hendry et

al. (2021) report that their study with teachers conducting peer-observation demonstrates that this activity enhances their practice. Moreover, Comoglu and Dikilitas (2020) highlight the role of verbally recorded reflections on developing mutual motivation, deepening ideas, and providing mutual support in Peer Practicum.

However, on another research with teachers having to write their reflections using an online-shared journal, Elhussain and Khojah (2020) concluded that the data show little evidence of this enhancement. The authors report that teachers' writings were more descriptive than reflective. Perhaps guiding the activity with thoroughly designed rubrics could assist in reaching the aimed reflectiveness, as demonstrated in a research conducted by Muck (2015) employing rubrics. Employing Muck (2015, p. 18)'s words, the "opportunity for reflection and their [participants'] perception of the importance of informal knowledge may have been fostered by the rubrics". According to the author, rubrics also allowed participants to organize and articulate their thoughts, to examine events in an organized way, recollect thoughts, identify issues and challenges, select information, and rethink the structure of knowledge. "These cognitive processes promoted a metacognitive process: participants became aware of what they know and reflected on how they developed the knowledge of what they know" (Muck, 2015, p. 18).

Therefore, peer-to-peer activities, such as peer-feedback, guided by attentive rubrics could be an activity to promote expert mediation in Teacher Education programs. After all, as Johnson and Golombek (2020, p. 124) state, "[c]reating opportunities for teachers to reflect on and re-conceptualize how they might enact their teaching practices in varied instructional contexts will no doubt be part of the life-long professional development of all L2 teachers".

On the other hand, it is undeniable that these activities involving peers are very time demanding on several levels, such as on the elaboration, development, and evaluation of the activity. This scenario has been changing with the affordances of new technologies that are enabling changes in education. One example of such technology that automatizes the entire peer-feedback process and evaluation is the multimodal online resource called CGScholar (Muck, 2015, 2016; Muck & Sadki, 2015).

In this line of thought, bearing in mind the significance of peer-activities (peer-observation and peer-feedback) to foster a teacher development process, and acknowledging that a guided peer-activity, such as employing the use of carefully elaborated rubrics, could enhance this process, this essay intends to shine some light on the subject of mediation in online Teacher Education programs. It discusses some implications of peer-to-peer learning in online environments for teacher professional learning and second language academic literacy, such as the use of technology as means to enhance prospective teachers' cognition and metacognition skills and to foster their language learning, as these programs usually fulfil a twofold purpose: to learn the language itself and to learn how to teach it as a foreign language.

This essay is organized in the following fashion, and it contains excerpts of chapters from one of the authors' doctoral dissertation. Firstly, it presents a grounded discussion on the following aspects, in that order: 1) Sociocultural perspective within L2 teacher education, 2) Teachers' beliefs, and 3) Mediation in the sociocultural perspective. In the sequence, it provides some implications of peer-to-peer learning in online environments for teacher professional learning and second language academic literacy. Finally, it presents some final considerations.

2. Sociocultural perspective within L2 teacher education

The point of view through which researchers have seen teacher learning, according to Johnson (2009), has shifted from a positivist epistemological perspective to an interpretative perspective. The main difference between them is in how they place teachers (either in-service or in pre-service) and knowledge in society. The positivist epistemological perspective perceives teachers as isolated objects of scientific investigation, studying their psychological self and not taking into account their relationship with society. Knowledge, in this view, is external to the individual and can be captured in isolation. The interpretative epistemological perspective, on the other hand, observes what teachers do and how and why they do it. This perspective sees the teacher as part of society and, consequently, knowledge as something that is socially built.

It is possible to state that perspectives on language teacher education have shifted from one extreme to the other. There is the positivist epistemological perspective, which is based on knowledge- transmission, on the one hand, and the interpretive epistemological perspective, which is socially situated, on the other hand. The former defines "learning as an internal psychological process isolated in the mind of the learner and largely free from the social and physical contexts within which it occurs" (Lenneberg, 1967, in Johnson, 2009, p. 7). In this line of reasoning, learning is considered as an individual and isolated process in which context, culture and social interactions are irrelevant.

In this perspective, Johnson (2009, p. 8) states that knowledge about teaching and learning can be transmitted, for instance, through lectures and books, and can be transported to other settings as something static. She states that knowledge "is considered to be objective and identifiable and represents generalizable truths. In other words, knowledge is out there and can be captured through the use of scientific methods" (Johnson, 2009, p. 7). These scientific methods, as stated by the author, encompass replicable methods that take into account issues of validity and reliability as well as a random selection of participants to be representative of a population. Based on that, results are generalizable, and this knowledge (the result of research) is transported to other contexts. Considering this epistemological view of knowledge, Freeman and Johnson (1998, p. 399) claim that

> teacher education programs generally operated under the assumption that teachers needed discrete amounts of knowledge, usually in the form of general theories and methods that were assumed to be applicable to any teaching context. Learning to teach was viewed as learning about teaching in context (the teacher education program), observing and practicing teaching in another (the practicum), and, eventually, developing effective teaching behaviors in yet a third context (usually in the first years of teaching). (Freeman & Johnson, 1998, p. 399)

In the 1970s, as Johnson (2009) states, in reaction to this epistemological perspective, realizing that classrooms are complex settings embedded with context and culture, researchers realized that it was insufficient to know what teachers do. There was a need to have access and to disclose why teachers do what they do. The central question for researchers became, in Johnson (2009, p. 9) words, "How do teachers

participate in and constitute their professional world?".

These investigations of teacher cognition lead to a reconceptualization of the knowledge-base of L2 teacher education moving the epistemological perspective from knowledge-transmission to cultural and socially-situated. What should, then, language teachers know in order to teach a language? The knowledgebase in L2 teacher education, according to Johnson (2009, p. 11),

> informs three broad areas: (1) the content of L2 teacher education programs: *What L2 teachers need to know*; (2) the pedagogies that are taught in L2 teacher education programs: *How L2 teachers should teach*; and (3) the institutional forms of delivery through which both the content and the pedagogies are learned: *How L2 teachers learn to teach*. (Johnson, 2009, p. 11)

The focus of this article is to discuss how to develop and implement effective pedagogy in online settings of teacher education, especially in the two last-mentioned areas, which demand mediation. In the sociocultural perspective, learning to teach, in Johnson's words, "is based on the assumption that knowing, thinking, and understanding come from participating in the social practices of learning and teaching in specific classroom and school situations" (Johnson, 2009, p. 13). From this perspective, context, culture and social interactions are essential.

For that reason, the sociocultural perspective embraces several issues inherent to L2 teacher education, namely: 1) it provides explanations for teacher learning cognitive processes; 2) it understands teacher education as a continuum process of reformulation and reconstruction; 3) it provides both "the content and the processes of L2 teacher education" (p. 13) interrelating everyday knowledge to scientific knowledge; and 4) it involves teacher educators in utilizing mediational tools integral to the context (Johnson, 2009). These concerns will be briefly addressed in this order.

As listed in the previous paragraph, drawing on Johnson (2009), the first of the issues inherent to L2 teacher education, in a socio-cultural viewpoint, is that it provides explanations for the cognitive processes taking place in teacher learning. The sociocultural perspective "provides us with a theory of mind that recognizes the inherent interconnectedness of the cognitive and the social" (Johnson, 2009, p. 13). According to the author, it allows the understanding of teachers' reasoning and transformation, and the effect of this process on themselves, on the students, and on the activities they engage in.

A second issue is that a sociocultural perspective understands teacher education as a continuum of processes of reformulation and reconstruction. Johnson (2009, p. 13) asserts that "a sociocultural perspective on L2 teacher education involves changing, and not simply reproducing, L2 teachers and their instructional activities". According to this line of thought, the author states that this perspective recognizes teacher education as a process through which reformulation takes place in order to meet "both individual and local needs" (*idem*). Information and communications technologies (ICTs) can be helpful in this process. Alonso (2008), when discussing the relation between ICTs and teacher education in the Brazilian context, states that it is expected that the ICTs would "catalyze transformations in the modes of teaching and learning, in the way of being a professor" (Alonso, 2008, p. 748).

A third issue is the fact that a sociocultural perspective provides the content and the processes of L2 teacher education (Johnson, 2009, p. 13), as well as interconnecting everyday knowledge to scientific

knowledge. According to Johnson (2009), students arrive at L2 teacher education programs with their assumptions concerning language and language learning and teaching. These assumptions come from the experiences they have faced in their lives as students and as teachers. This knowledge, in the sociocultural perspective, is regarded as everyday knowledge. The other type of knowledge, the scientific – which is produced in a theoretical realm – offers prospective teachers the opportunity to go beyond their everyday concepts. It is an opportunity to reevaluate, reformulate, and resignify beliefs as well as to change behaviors. It is important to state that these two types of knowledge have a dialogic relationship. The relevance of this rests on the fact that it "positions teachers not as passive recipients of theory but as active users and producers of theory on their own right, for their own means, and as appropriate for their own instructional contexts" (Cochran-Smith & Lytle, 1993, in Johnson, 2009, p. 15).

The last concern is that a sociocultural perspective involves teacher educators in utilizing mediational tools and creating new tools to promote opportunities for teachers to externalize their everyday concepts – their beliefs. Once these concepts on a certain issue are externalized, through mediation, scientific concepts are introduced. Beliefs, then, are reconceptualized. Moreover, this reconceptualization is a process that results in a different outcome for each individual due to his or her everyday concepts and the specific social and cultural context s/he is inserted in (Johnson, 2009).

In sum, while the positivist epistemological perspective to language teacher education is based on knowledge-transmission, the sociocultural perspective is a cultural and socially situated perspective. The former understands teachers as passive receivers and deliverers of a package of static knowledge that is already complete and can be delivered in and applied to different contexts. The latter, on the other hand, comprehends teachers as life-long activists in their own process of learning and teaching as knowledge is socially co-constructed and mediated.

3. Teachers' beliefs

Eisenhart et al. (1988) conducted a review of literature on teacher beliefs from the early 1960s to the mid-1980s. They went to the cognitive anthropology field to build their working definition of teacher beliefs, which is the definition adopted by the present investigation. They state that "to accept a proposition as true is to value it in some way for logical, empirical, social, or emotional reasons. That is, a belief is a way to describe a relationship between a task, an action, an event, or another person and an attitude of a person toward it" (Eisenhart et al., 1988, p. 53).

Teachers' beliefs are personal judgments regarding the process of teaching and learning, derived from their experiences as learners (of languages and other subjects), as learners of teaching, and as teachers. These personal judgments are characterized as knowledge developed in and with our social activities. In sociocultural theory, this knowledge is called *spontaneous concept* (Vygotsky, 1986) or *everyday concept* (Johnson, 2009). In addition to this knowledge is the *scientific concept* (Johnson, 2009; Vygotsky, 1986) which embraces the knowledge that is produced on theoretical grounds. The challenge of teacher education, according to Johnson (2009), is to introduce scientific concepts in a way that they can connect to everyday concepts establishing a dialectic relationship.

These concepts are all constructed in specific contexts. Human cognition, as Golombek and Doran

(2014, p. 104) state, "is conceptualized as originating in and being shaped by engagement in social activities, emerging on the inter-psychological plane and gradually transforming to the intra-psychological plane". Cognition, in Kalantzis and Cope (2012, p. 211)'s words, "happens as much outside of the brain as it does inside. It finds fertile ground in the open potentialities of the brain, and so shapes the brain. The transformative task of education is to support this learning process". Context, therefore, in line with sociocultural theory, shapes teachers' conceptualization of teaching inasmuch as these experiences (as learners and teachers) happen in specific cultural and socially grounded spaces. In other words, teachers' social interactions in their cultural environment performing it. It is a process from the external interactions to an internal personal mediation.

From a sociocultural perspective, this process of transformation from inter to intra-psychological planes is called internalization (Golombek & Doran, 2014, in Johnson, 2009). It is when "a person's activity is initially mediated by other people or cultural artifacts but later comes to be controlled by him/herself as he or she appropriates and reconstructs resources to regulate his or her own activities" (Johnson, 2009, p. 18). Golombek and Doran (2014) argue that the mind is mediated as "humans understand and act on the world by means of psychological tools that are appropriated in the context of specific goal- oriented sociocultural activities" (Golombek & Doran, 2014, p. 104). This mediation, according to Johnson (2009, p. 18) occurs through three types of tools: 1) cultural artifacts and activities, which, as an example, can be the "textbooks and the instructional activities they engender" (Johnson, 2009, p. 18); 2) concepts, such as the idea of teaching as the act of simply delivering knowledge; and 3) social relations, as the "differential power relations between teachers and students" (Johnson, 2009, p. 18).

A sociocultural perspective on education perceives teaching, learning, and development as interrelated (Johnson, 2009). In this line of thought, instead of being teacher-centered or student-centered, education is centered on the activities and resources that students and teachers engage in together with the purpose of leading student's cognitive development.

This cognitive development is achieved through instruction. According to the author's definition of instruction through a sociocultural lens, cognitive development is the ultimate goal and one that is reached through a cyclical process of dialogic mediation. Students need to be aware of the everyday concepts they are dealing with so that the scientific concepts can be introduced and, through meaningful activities, they would be able to re-conceptualize those concepts and solve problems by themselves (Johnson, 2009, p. 63). Instruction, in this sense, as Johnson points out, "can be characterized as a dialogic mediation process of reconceptualizing and recontextualizing knowledge" (*idem* p. 62). It is precisely the dialogic mediation process of reconceptualizing and recontextualizing knowledge that relates concept development to teachers' beliefs. This conceptual thinking, according to Vygotsky (1998, in Johnson, 2009, p. 64) is "a new form of intellectual activity".

Moreover, Johnson (2009) argues for the notion of a dialectic relationship between the everyday concepts and the scientific concepts. One is built and/or developed upon the other. To illustrate this mediation process I will provide the three examples she offers to (i) demonstrate the reconceptualization of concepts of methodology, language, and teaching; (ii) the reconceptualization of reading comprehension instruction; and (iii) the scaffolded learning and assisted performance.

In order to illustrate the reconceptualization of concepts of methodology, language, and teaching,

Johnson describes, for example, the activities she engaged in with her Master's students when she observed their everyday concepts on methodology, in which they believed in the idea that there is the best method of teaching; on language, which they conceived, for example as being a static entity; and on teaching, which they comprehended as the act of delivering content. Johnson then introduced scientific concepts and, through activities involving verbalization, she promoted dialogic mediation.

In the last two instances, the author illustrates the reconceptualization of reading comprehension instruction and scaffolded learning, and assisted performance. The former describes how a teacher engages in a dialogic relation with the researcher: the teacher verbalizing her thinking and the researcher influencing it. The latter provides extracts of classroom interaction – examples of how the quality of both teachers' questioning patterns and their mediation of classroom interaction can lead to cognitive development.

4. Mediation in the sociocultural perspective

According to Kohl (1997), Vygotsky studied the higher mental processes, which are those that are more complex, such as imagining something we are not seeing or thinking in a future event. These higher mental processes are different from the elementary mechanisms, which are reflexive actions, automatized actions and simple associative process between events. A central conception to understand the psychological functioning of these higher mental processes is the concept of mediation. Vygotsky (1981) states that human beings can have a direct relation to the world, or they can have a mediated relation to it. In his words,

> [i]f we turn our attention to types of social connection, we discover that even relations among people are of two types. It is possible to have direct and mediated relations among people. Direct relations are those based on instinctive forms of expressive movement and action. […] At a higher level of development, however, mediated relations among people emerge. The essential feature of these relations is the sign, which aids in establishing this social interaction (Vygotsky, 1981, pp. 159-160).

This mediation can be through instruments or signs. Drawing on Kohl (1997), the instruments are objects that exist between someone and his/her objective. For example, when one wants to turn on the television employing a remote control, the remote control is the instrument. As for signs, they are psychological instruments. The author states, they work as symbolic instruments. They are the representation of objects, situations or events. Moreover, they are collectively built inside society by interaction; their meaning is shared in society.

Mediation, however, is a broad term in Vygotsky's thinking, according to Wertsch (2007). The author outlined Vygotsky's mediation in two general types: explicit mediation and implicit mediation. He summarizes the differences between them in the following:

> Explicit mediation involves the intentional introduction of signs into an ongoing flow of activity. In this case, the sign tends to be designed and introduced by an

> external agent, such as a tutor, who can help reorganize an activity in some way. In contrast, implicit mediation typically involves signs in the form of natural language that have evolved in the service of communication and are then harnessed in other forms of activity. (Wertsch, 2007, p. 185)

In Lantolf and Thorne (2006, p. 63)'s view, everything is mediated. For them, the difference is that in some cases the mediation is external (that can be seen) and in other cases the mediation is internal (it happens in our minds).

In any case, external/internal or implicit/explicit, mediation is what leads someone from A to B, being A and B everything: a thought, a place, an object, an action, and so on. Sometimes we can accomplish the task of achieving B by ourselves employing just our mind as mediator. Other times, however, we need guidance from someone or something with more knowledge to go from A to B. To exemplify the two situations, imagine that a group of students receives the task of writing a play. Some of them may have knowledge of the literary elements that comprise the genre drama (context, dialogue, plot, characters, symbolism); they will perform the task employing this knowledge. Other students, on the other hand, might be completely unaware of the requirements of the genre drama, and other students may know that the genre requires separate dialogues for each character, but they are still unable to grasp the complexity of the task. Therefore, they need guiding help to write the play. Some possible help sources could be the following: their peers who know what the literary elements are; the teacher who assigned the task; books and/or online texts on the subject; and so on.

Vygotsky (1978) calls *actual developmental level* the stage where students accomplish moving from A to B by themselves, and *potential developmental level* the stage where students need more expert guidance to arrive at B. From the example above, it is already possible to visualize that each student may have a different level of knowledge about the elements of drama at the moment they received the task. This means that the students who are at the potential developmental level will need more or less guidance on the subject to accomplish the task. The theorist named this amount of needed guidance the *zone of proximal development* (ZPD), which is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 33). Still employing the example, each student then would be in a different ZPD.

5. The implications of peer-to-peer learning in online environments for teacher professional learning and second language academic literacy

The concepts presented in the preceding sections provide the essential elements to understand the role of knowledge reconceptualization in teacher education and the function of mediation in this process. This is particularly relevant because mediation is a core resource on online peer-review processes, which can foster prospective teachers' metacognition. Inasmuch as knowledge is mediated and co-constructed during peer-review, knowledge is being reconceptualized and recontextualized. In this sense, it demonstrates that it is created and recreated in sociocultural relations, which are subverted with peer-review

activities, as they require self-regulation.

> Self-regulation creates a learner and assessment centered focus where the teacher becomes a facilitator as opposed to an expert, and learners assume a more active role. This can foster shared purpose and responsibilities among learners and the teacher in ongoing monitoring, assessment and provision of feedback to their peers. These are critical requirements particularly in online learning environments where learners are expected to assume primary responsibility for their learning. (Gikandi, Morrow & Davis, 2011, p. 2346)

However, "these enactments which are core to online pedagogy will essentially depend on teachers' beliefs" (Gikandi, Morrow & Davis, 2011, p. 2347). Therefore, online peer-review activities in teacher education programs are activities by which prospective teachers can start perceiving their beliefs and acting upon them and, consequently, changing pedagogical decisions. Therefore, this section postulates a philosophical justification for collaborative learning technologies and provides pedagogical implications for teacher professional learning. To start with, it is relevant to have a broad understanding of the context.

Since 2006, the Brazilian Open University (UAB[1]) has offered a variety of undergraduate and graduate degree programs via agreements with other universities with the goal of promoting the following[2]: 1) universal access to college; 2) strengthening of the countryside schools; 3) deconcentration of courses from major centers, thus preventing migration to big cities; 4) teacher education; and 5) (re)qualification of human resources. Given these objectives, the Brazilian Federal Government has increased funding and public policies aiming at expanding online distance education in the country (UAB, 2016).

Regarding the goals of UAB listed above, our interest lies in teacher education, as a considerable number of teachers in Brazilian public schools do not hold an undergraduate degree or act in areas other than those for which they have been educated. To exemplify, in Brazil, in 2000, 47.3% of the teachers teaching primary or secondary school[3] held an undergraduate degree (Scheibe, 2006). The Brazilian Government, through the CAPES[4] Foundation, has been developing a program for primary and secondary school teacher education[5] since 2009. It seems that this effort has already impacted education as this percentage increased to 79%[6], in 2013. Despite this visible improvement, there is still a long path to be travelled, as we still have to embrace the professional development of 21% of teachers that are already in-service, based on data from 2013. Moreover, we also have to devote special importance to the education of teachers to be and address the quality of these in-service and pre-service programs.

In this scenario, online language teaching undergraduate programs have occupied a privileged position in the Brazilian's Government as they are meant to fulfill this gap of lack of professionalization,

[1] It is the acronym for Brazilian Open University in Portuguese: *Universidade Aberta do Brasil*. I will employ the acronym UAB because it is already widely used in Brazil.

[2] http://www.uab.capes.gov.br/index.php?option=com_content&view=article&id=9&Itemid=21. Access in February 20, 2013.

[3] Primary + Middle School is the equivalent to *Ensino Fundamental* in Brazilian's educational system.

[4] CAPES, in Portuguese, is the acronym for *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (Coordination for the Improvement of Higher Education Personnel).

[5] "Plano Nacional de Formação de Professores da Educação Básica-PARFOR. http://www.capes.gov.br/educacao-basica/parfor

[6] Source: http://portal.inep.gov.br/indicadores-educacionais

especially in regions far from industrial centers and state capitals. Concerning specifically English language teaching, in the first semester of 2013, there were 25 undergraduate programs in teaching English offered in Brazil, according to a search conducted on the website of the Ministry of Education and Culture – MEC (MEC, 2013). Thirteen of these programs form teachers to teach English and Portuguese, i.e., teachers get a degree to teach both languages. The other 12 undergraduate programs focus on the education of English teachers, with a total of six of these being public. It is relevant to highlight that the Brazilian foreign language teaching programs have two objectives: to teach students (prospective teachers) a foreign language and to teach them how to teach this foreign language. The implementation of UAB in a country with the territorial proportions of Brazil is a challenge and, certainly, a work in progress and with continuous change and adaptations to diverse contexts.

In this line of thought, it is undeniable that to increase the number of teachers with a teaching degree is an urgent task. However, after fifteen years of the implementation of the Brazilian Open University (UAB) program, it is equally relevant to test new systems of improving students' experiences on online foreign language teacher education programs in order to provide opportunities to develop meta-cognition during real social interaction activities such as peer-reviewing. The advances of technology have made this task not only possible but also enabled a task design that diminishes the burden on facilitators and empowers students.

These public programs have been run through a blended system of education, having most of the interaction conducted online and employing the Modular Object-Oriented Dynamic Learning Environment (Moodle) as Learning Management System (LMS). This online interaction is centered on an e-tutor system, where each e-tutor is responsible for providing assistance and feedback to a certain group of students. This system highlights the practice of having the e-tutor as the holder of knowledge and, therefore, being the person that transmits the knowledge to the students. However, if we conceive knowledge to be co-constructed within society, this one-way process of knowledge flow requires revision. With the affordances of the new educational technologies that allow an extensive connection among participants in online educational environments, it is possible to apply a pedagogical approach in which, for instance, formative assessment and recursive feedback, from different sources such as peer-review, can be introduced.

The system of having e-tutors evaluating the students' productions prevents the students from having the same experience of reading and providing feedback for several peers and, consequently, precluding them from all the benefits that this activity could afford. Moreover, students received feedback only from one source: the e-tutor. Understandably, conducting a peer-review activity with several files, for example, of lesson plans (and several versions) would be even more demanding, if the activity had to be manually managed and organized. Kern et al. (2002) and Kern et al. (2003) already pointed out this amount of work as a serious limitation for peer-review activity. According to Kern et al. (2002, p. unnumbered page), some of the functional requirements of a software interface for peer review application in learning are the following: website configuration, CFP [call for papers] and review form publication, student data input, paper submission, referee allocation support, authorship omission, acknowledgment of reception, and author notification. Fortunately, the advances in technology have already provided us with all these requirements, as demonstrated by Muck and Sadki (2015) and Muck (2015).

These new technological affordances enable us to change paradigms in education both in online and

in face-to-face settings and, therefore, "pedagogical practices and social structures are transformed" (Dabbasgh, 2005, p. 32). Besides the benefits of peer-to-peer learning, modifying students' social role in the educational process seems to be the ultimate goal of this activity in education. As social identities and social relationships are constructed (Fairclough, 1992), it is time to rebuild the social identity of professors, tutors, and students and develop new relationships among them. In this new educational paradigm professors and tutors renounce their institutionalized current position of knowledge holders and transmitters and become mediators of interactions and guiding students to sources or pathways to obtain knowledge. This innovative relation with knowledge demands an innovative approach to the online teaching-learning social practice.

This educational shift also changes the students' social role. This role demands action and responsibility from students towards their own process of learning and they are embedded with agency to also be autonomous knowledge mediators. Students become responsible for their construction and consumption of knowledge. "Autonomy is an important premise of adult learning. Nevertheless, this premise is at times contradicted in adult learning processes by resistance to change" (Kern et al., 2007, p. 60). And confronting beliefs and facing resistance to change are central aspects of pre-service teacher education as teachers' practices follow their beliefs.

Consequently, the peer-reviewing activity *per se* already challenges this setting because it transfers the learning accountability to the teachers to be, disrupting the common belief that the professor is the only beholder of knowledge. Moreover, by engaging in online peer- review activity, for example on lesson plans, prospective teachers would benefit from reading and providing feedback to other peers and receiving feedback from different peers. Thus, they would be exposed to other beliefs by considering other ways of developing activities and applying theories in a foreign language classroom, and they would be challenged by reviewers when they provide feedback questioning some developments in the lesson plan or provide comments that make students (prospective teachers) question themselves. "Students usually recognize that they can benefit from studying the work of colleagues and reflecting about their own work. This seems to be a strong contribution of peer review: to make students exercise high- level cognitive skills" (Kern et al., 2007, p. 54).

This is the dialectic relationship between the *spontaneous concept* (Vygotsky, 1986) or *everyday concept* (Johnson, 2009) and the *scientific concept* (Johnson, 2009; Vygotsky, 1986) that allows the possible reconceptualization and recontextualization of knowledge. Cope and Kalantzis (2013)'s seven openings for educational transformation (ubiquitous learning, active knowledge production, multimodal knowledge representation, recursive feedback, collaborative intelligence, and differentiated learning) are instruments in online peer-review activities that can enhance prospective teachers' cognition and metacognition, as they promote real, multiple, and contextualized social interactions. The development of metacognition is an important outcome in teacher education.

Another implication of peer-to-peer learning in online environments for teacher professional learning and second language academic literacy regards the learning of language itself. As foreign language teacher education programs in Brazil teach both the language itself and ways of teaching the language, peer review activity exposes students to different uses of the language besides receiving feedback on his or her own work, such as profiting from reading their peers' works, as demonstrated in this research. Additionally,

according to Topping (1998, p. 261), "peer assessment of writing has been used in English-as-a-second language (ESL) contexts in several countries, especially in composition classes". Reviewers, rubrics and the reviewed texts act as mediation tools to foster learning. They act on the *potential developmental level* (Vygotsky, 1978) helping the prospective teachers to move from point A to point B in their writing and to use the foreign language, as well as to understand and apply concepts.

6. Final Considerations

This essay has provided a grounded discussion on sociocultural perspective within L2 teacher education, teachers' beliefs, and mediation in the sociocultural perspective in order to arrive at some implications of peer-to-peer learning in online environments for language teacher professional learning and second language academic literacy. It highlights the importance of peer-activities (peer-observation and peer-feedback) to foster a teacher development process. Furthermore, it recommends guided peer-activities, such as employing the use of carefully elaborated rubrics, to enhance this process.

Finally, it encourages the use of the affordances of technology to enhance prospective teachers' cognition and metacognition skills and to foster their language learning. This is particularly relevant in e-education due to teachers' incessant need for reconceptualization, as we "cannot learn how to get smart if we do not first understand what makes us stupid and how we can reverse it" (Gee, 2013, p. 8). And the first step to act on this stupidity is to face our beliefs. The shift from teacher-centered education to ubiquitous education demands that teachers become knowledge mediators as opposed to knowledge holders in e-education.

7. References

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