

## HOW MOOCs CAN DEVELOP TEACHER COGNITION: THE CASE OF IN-SERVICE ENGLISH LANGUAGE TEACHERS

Shahrazad Ardavani [r02sa15@abdn.ac.uk], Aberdeen University, MacRobert Building School of Education  
University of Aberdeen Kings College AB24 5UA, United Kingdom

### Abstract

Research reveals a rapid expansion of Open Educational Resources (OER) supporting global access to higher education for continued professional development (CPD) for in-service teachers. This offers interactive opportunities for participation and reflection to support the development of teacher cognition through a globally-oriented online community.

This paper will indicate whether the OER MOOCs designed for CPD of in-service English language teachers (ELT) have a role in developing teacher cognition. It also examines the in-service teacher experience of MOOC participants and proposes that teacher cognition and evaluation of cognitive change remain central to understanding teachers' experience of learning on MOOCs.

Brookfield's (1995) critical incident questionnaire (CIQ) captured the weekly experience of six in-service ELTs undertaking a CPD MOOC over four weeks. Thematic analysis and descriptive statistics were applied to CIQ data to examine changes in participant cognition. Teachers reflected on how MOOC developed their own knowledge, their learners' knowledge, and to a lesser extent, their colleagues' knowledge. The findings cast new light on the influence of MOOC which primarily shows that in terms of their own knowledge, teachers have a strong tendency to view MOOC participation as a pathway to their own development.

### Abstract in Farsi

چگونه دوره های آنلاین گسترده ای باز (MOOC) می تواند شناخت معلمان را توسعه دهد: مطالعه موردی معلمان زبان انگلیسی در حال خدمت

پژوهش ها نشان از گسترش سریع منابع آموزشی باز (OER) ، دارند. این منابع، از دسترسی عمومی به آموزش عالی که در جهت توسعه حرفه ای ادامه دار (CPD) برای معلمان است، پشتیبانی می کند و فرصت های تعامل را برای مشارکت و بازنگری فراهم می کند. به این ترتیب ارتقای شناخت معلمان را از طریق جامعه جهان محور آنلاین برآورده می کند .

این مقاله، نشان می دهد که آیا MOOC هایی با منابع آموزشی باز که برای توسعه حرفه ای ادامه دار (CPD) معلمان زبان انگلیسی طراحی شده اند، نقشی در شناخت و درک معلمان خواهند داشت یا خیر. در ضمن به بررسی تجربه معلمان شرکت کننده در MOOC می پردازد و اهمیت شناخت معلمان و ارزیابی تغییر در شناخت آنها در درک تجربه یادگیری معلمان در MOOC را مطرح می کند.

پرسشنامه رویداد مهم (CIQ) بروکفیلد (1995) تجربه هفتگی شش معلم زبان انگلیسی را در حین CPD MOOC به مدت چهار هفته مورد بررسی قرار داد. تجزیه و تحلیل موضوعی و آمار توصیفی در مورد داده های این پرسشنامه استفاده شد و تغییرات ایجاد شده بر شناخت شرکت کنندگان مورد بررسی قرار گرفت. معلمان اینگونه نتیجه را انعکاس دادند که چگونه MOOC معلومات آنها و شاگردانشان را بیشتر کرده و به نسبت کمتری در معلومات همکارانشان تاثیر داشته است. این یافته ها، دریافت تازه ای از تاثیر MOOC می باشند و عمدتاً گویای این امر است که معلمان از نظر معلومات شخصی، گرایش بالایی دارند که در MOOC به عنوان راهی برای پیشرفت شخصی خود شرکت داشته باشند .

**Keywords:** Teacher cognition, MOOC, Professional development, English Language Teaching.

## Introduction

Dillahunt, Wang, and Teasley (2014) argued that if access to a new generation of digital learning (e.g., Massive Open Online Courses: MOOCs) is available internationally, a greater level of educational opportunity for CPD will exist for in-service teachers (i.e., current classroom teachers). Moreover, MOOCs not only provide many features of traditional courses, they can also encourage learning and cooperation by using social media features such as a discussion forums where in-service teachers can post and receive comments (Lewin, 2012). Although Kiss (2012) argues, that teacher learning in teacher education courses is complex, non-linear, dependent on antecedent conditions, unpredictable and chaotic; MOOCs can provide supplementary opportunities which address these that traditional learning alone may miss. Therefore, MOOCs can play a significant role in teacher cognition (what teachers think, believe and do (Borg, 2015)) helping teachers to access resources to better understand and improve their learning and professional practice.

While MOOC offerings continue to grow, challenges persist in the context of professional development for in-service teachers. Differentiation is particularly important to address different levels of linguistic and teaching knowledge as well as differences in teaching and learning experience when dealing with participants on a global scale. In general, there is a difference in an in-service teacher's cognition on MOOC (the knowledge, belief, and idea that in-service teachers have in teaching), based on being a novice or experienced teacher (Borg, 2003; p.81). For example, some teachers lack awareness of key discourse in ELT, and require additional development and support in terms of their teaching cognition. Managing successful interaction through MOOC raises some complex issues for all stakeholders. Therefore, a focus on how effective interaction within MOOCs can be achieved to develop teacher cognition is explored.

## Research aims and objectives

The aim of this study is to understand the role MOOCs that are designed for the purposes of CPD of in-service teachers may play in developing and shaping teacher cognition. Therefore, two research questions underpin the investigation:

- How do in-service teachers experience learning within a MOOC?
- Does engagement with a MOOC, designed for the professional development of in-service teachers, assist in developing teacher cognition?

## Theoretical Framework

Language teacher cognition research is a growing field that has received considerable attention in teacher education (Borg, 2003; 2015; Burns, Freeman, & Edwards, 2015; Freeman, 1996; 2016; Woods, 1996). Borg's (2003) seminal work brought together the sequential ideas of decision making from the discipline of cognitive psychology in Shavelson's (1973) and borrows the contextual factors, and the classroom practice from Clark and Peterson's framework (1986). Woods' (1996) work of decision making was the beginning of conceptualization of mind in language teaching. Borg later on redefined the construct of thought process as cognition. However, since teacher cognition remains a largely unobservable dimension of teaching residual to the educator's mind it can be challenging to research and convey (Borg, 2003). Thus, Borg (2003) suggests that exploration of teacher cognition is a process of making the invisible visible and tangible. Teacher cognition should thus bring us "toward better understanding the fullness of the work of teaching" (Burns et al., 2015; p.586). Nonetheless, as it has rightly been pointed out, this "fullness that has proved complex and problematic" (ibid). In terms of how teacher cognition has been studied, researchers have examined lesson plans or written coursework, observation, think-aloud protocols or Critical Incident Questionnaires (CIQs).

Burns et al. (2015), examining the complexity of teacher cognition, substantiated four ontological generations. Early generation ontological views on cognition were individualistic in which decision-making processes undertaken by critical and reflective teachers were investigated. However, this individualistic perspective was criticized for not providing a “comprehensive characterization of the complex conceptual process of second language” (Johnson, 1992; p.590), and this complexity cannot be studied in isolation. This critique led to a move away from the early individualistic view to a more robust social ontological perspective. For example; Kubanyiova’s (2006) research considered the impact of sociocultural context on the development of English language teachers. Although, Burns et al. (2015) categorized Borg’s work under the individualistic cognitive perspective, it is argued here that the different ontological generations are complementary and that Borg’s work falls within a social ontological perspective since it encompasses the social (contextual factors), the socio-historical aspect (prior experience) and complexity of teacher cognition.

### ***The significance of language teacher cognition***

In recent years, several features of language teacher cognition have been examined in areas such as; prior learning experiences (Hayes, 2005), and language teaching practices (Basturkmen, Loewen, & Ellis, 2004). However, Feryok (2010) and Burns et al. (2015) point out that the dynamic nature of language teacher cognition is another key feature that requires investigation. However, whilst it has been argued that MOOCs can be influential for cognitive change in in-service teachers while they are involved in lifelong learning, there is little research in this area in the literature on MOOCs. Bozkurt, Akgün-Özbek, and Zawacki-Richter (2017), for instance, provide a comprehensive review of the literature on research and practice in MOOCs between 2008 and 2015 which can offer insights on fruitful research agendas. They identify learners’ characteristics and incorporation of pedagogical theories and models (such as connectivism and self-directed learning) as the most commonly focused on areas of research. In terms of language teacher education, teacher cognition offers both an examination of learner characteristics (the teachers themselves and their learners) and can provide an integrated theory and model for language teacher education to potentially incorporate for MOOC practice.

To understand how such ideas can be integrated within a MOOC, it is necessary to reappraise existing models of language teacher cognition in light of the possible affordances and limitations of an online teacher education programme. Borg’s (2003) devised a model to succinctly summarize and unify key elements of teacher cognition relating to prior language learning experience, teacher education and classroom practice. Considering the socio-cultural perspective of teacher cognition, Borg added contextual factors to complete the model. Borg’s initial classification of contextual factors as pre-determined factors has been extended in this paper to include the further influence of dynamic factors. The adapted model also illustrates the obscure nature of teacher cognition via the metaphor of the ‘black box’ (Black & William, 2010).

In this model (Figure 1), prior experience of education and contextual factors inform teacher cognition. The model emphasizes that professional coursework and classroom practice are involved in mutual exchange. They both shape and are shaped by teacher cognition. Prior educational experience is considered as a predetermined influential factor. Contextual factors, consisting of predetermined (e.g., set features of rules and curricula) as well as dynamic influences, such as: collegiality and departmental collaboration and culture. Professional coursework and classroom practice are both considered as dynamic factors to developing teacher cognition.

The black box is useful as a metaphor for teacher cognition, because what can be viewed are the input (content of the professional coursework) and output (applicability of knowledge acquired),

but not what teachers believe and think (Black & William, 2010). As Freeman (2002) espouses, teachers' mental lives are the hidden side of teaching. Through consideration of the processes involved in teacher cognition, these hidden aspects can be shown more explicitly.

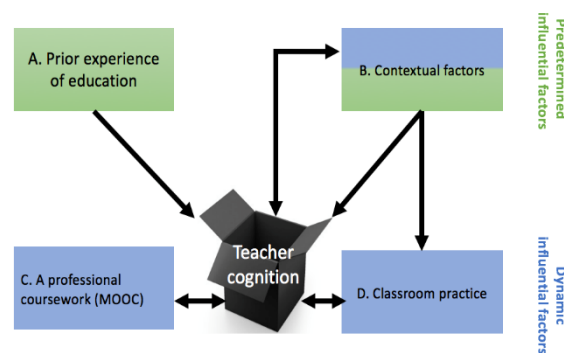


Figure 1. Adapted from Borg's framework (2003) for teacher cognition

### *Predetermined influential factors*

#### **A. Prior experience of education and experience in English language teaching**

An abundance of evidence showing that teachers' experiences as learners inform cognition about teaching and learning continues to exert influence on teachers throughout their career (e.g., Numrich, 1996). Lortie (1975) called it "apprenticeship of observation". Borg (2003), in a similar vein, draws the conclusion that teachers' prior language experience forms their initial conceptualization of teaching and cognition about language learning.

This prior experience is partially embedded into each in-service teachers' context and learning culture. The heterogeneity of in-service teachers in terms of prior experience in learning will mean that although there may be some shared experience, there is also likely to be significant divergence in how they experienced ELT. According to Weaver's (1986) Iceberg model, we can only see the aspects of culture that are above the water and visible. However, 90% of culture remains out of sight, including; values, thought, and beliefs. This research associates prior experience of the in-service teachers as a hidden part to the view of designers, under the surface, and will impact learning and these prior experiences may be negative if not brought to the surface and critically examined.

#### **B. Contextual factors**

Contextual factors such as institutional expectations on teachers have been noticed as a source of conflict between teacher cognition and teacher practice (Dornyei & Ushioda, 2009). Thus, context plays a significant role in determining the extent to which teachers are able to implement instruction congruent with their cognition. Through the influence of context upon cognition we see whether the cognition of teachers is effectively enacted in practice and whether cognition is in line with teacher actions (Borg, 2006). Although it is expected that teacher cognition and practices align, some inconsistencies have been observed (Ellis, 2006). Borg (2003) drew on several studies to show that social, psychological and environmental features of classroom and school form teachers' practices.

Contextual factors include society, colleagues, availability of resources and curriculum mandates (Borg, 2003). Such factors imply the need to shape teacher cognition to adopt practices aligned to their beliefs while balancing diverse needs. Farrel (2003) explored the theme of support that teachers received from school and colleagues in the early phase of their career. He found that some schools have individualistic cultures where teachers had less communication with colleagues, highlighting a major challenge for novice teachers and the need for collegiate and

supportive networks in the context as well as the need to deal with contextual challenges through professional coursework. Knowledge gained through external MOOCs by in-service teachers may have impact on the cognition of colleagues. Thus, although some formal contextual factors may be considered as predetermined (e.g., rules, and educational policy), teacher agency may not only constitute a dynamic influential factor for classroom practice but additionally may allow teachers to shape their context informally (e.g., collegiality, shared understandings).

### *Dynamic influential factors*

#### **C. MOOC as professional coursework**

The impact of teacher education on teacher cognition has been widely disputed with a call for stronger evidence to be presented (Dunkin, 1996). Nonetheless, Freeman and Richards (2010) in their study refer to the development of professional discourse or metalanguage as one dimension of positive change in five trainees' cognition. It has also been largely accepted that teacher cognition can be developed when teachers engage appropriately and teacher education programmes are well designed and effectively delivered (Flores, 2001).

MOOCs have encountered some success, particularly in providing free universal education for CPD, and in enhancing the availability of learning materials by offering free content and pre-recorded videos from selected university professors (Glance, Forsey, & Riley, 2013). For instance, the participation of 370,000 students from 153 countries within a six-week course, "Understanding IELTS: techniques for English Language tests" (provided by the British Council) was an unprecedented success – not only in terms of volume but also in terms of world coverage (Coughlan, 2015).

A systematic review of MOOC literature (Liyanagunawardena, Adams, & Williams, 2013), found initial research focused mainly on learner perspectives, behaviours, and participation patterns. However, as the scope of MOOCs continue to develop, it appears important to investigate the contribution that MOOC's may play in developing participant cognition.

#### **D. Classroom practice**

A number of works have studied practicing teachers' cognition in isolation of classroom practices, while the others have studied cognition and classroom practice as linked (Borg, 2006). This paper investigates whether or not in-service teachers, who are MOOC participants, reflect on how their acquired knowledge has an effect on classroom practice.

#### ***Borg's framework as a set of three lenses***

The predetermined influential factor of in-service teachers' prior learning and teaching experience – which constitute factor A in the Borg model – are often a hidden yet influential aspect of teacher cognition and will have an impact on the way the benefits of the course are perceived. Indeed, prior experiences can inhibit or enable cognition change during professional development courses (Lortie, 1975). In-service teachers' comments regarding their cognition are linked to the following lenses, which have congruence with the adapted Borg framework factors, see figure 1, and emerged from their perspectives:

- Lens A: The lens of teacher-self: teachers look at the MOOC from the perspective of how it can develop them as a teacher, and they focus on their own role. This lens is congruent with factor C, (professional coursework) in Borg's Model (2003).
- Lens B: Classroom/students. The focus is on enhancing student learning and reflecting upon what they have seen in the MOOC and how it can be directly applied in practice. This lens is congruent with factor D (classroom practice).

- Lens C: The perspective of their colleagues/department. In service-teachers who have a responsibility for other teachers or have a very close team dynamic are interested in how the knowledge can be shared with colleagues so that implementation can be achieved at a department level. This lens is linked to factor B (contextual factors).

The theoretical framework discussed above was applied to this study to develop a robust understanding of the role MOOCs play in shaping teacher cognition.

## Materials and Methods

### Participants

The six ( $n = 6$ ) in-service teachers who participated came from diverse educational backgrounds, and varying levels of experience teaching a wide range of language levels and age groups (see Table 1). Participants enrolled voluntarily in this MOOC which was offered free of charge. Purposive sampling was applied for the selection of information-rich cases to shed light on how individuals experience and develop teacher cognition. The chosen participants are experienced with the phenomenon of interest, so they were actively engaged in ELT and were undertaking the MOOC for professional development. In addition to experience, the availability and willingness to participate and articulate experience was important. The sample comprised five non-native and one native speaker English teacher.

A small sample is chosen, because this paper is a part of a PhD research project applying phenomenology; thus, the interest is in the detailed experience of a few participants.

Table 1 presents participants' prior experience in ELT in terms of length of experience, and different domain of language teaching which they have in teaching English.

Table 1: Participants' teaching background

Participant	Length of experience as an in-service teacher	Different domains of language teaching
R, Brazil	one year	Private University
I, Brazil	11 years	not mentioned
M, Japan	two years	Teaching preparation course, teaching primary in Cram school and some older students
N, England	40 years	Teaching English to foreigners at school, (13 years), An English Language/literature teacher in a secondary school (5 years), A teacher trainer for teacher trainees in Burma (2 years).
P, Mexico	20 years	University (teaching translation, linguistics, and Spanish Grammar)
Z, Syria	five years	Kindergarten Elementary Head of English department supervising English language teachers

### Materials

The data from this study were collected (with permission) from the chosen MOOC entitled "Teaching for success: Learning and Learners", which was run by the British Council on the FutureLearn platform as one of four aspects of professional practice (<https://www.futurelearn.com/courses/english-language-teaching>). This course was designed to

provide CPD for individuals who are teaching English as a foreign or second language. The course ran for four weeks from March to April 2017 with approximately 1,500 participants registered for six weeks of access to the course materials from the day they enrolled.

### **Procedure**

A Pre-MOOC survey of this CPD course was undertaken in ELT. The survey was available electronically (Google forms). The link to the survey was sent to all participants who enrolled for the course in a week one welcome email, together with contact details of the researcher and a brief description of the research.

The survey elicited a detailed description of the participants' background in terms of their country-specific education was obtained. It also ascertained the participants' prior experience of e-learning or MOOCs. After this initial survey, participants were asked to complete a weekly Brookfield CIQ (Brookfield, 1995) for four weeks (sent via e-mail at the end of each week). The CIQ presented five questions to discover how the teachers experienced particular teaching sessions and engaged in the process. It was also a means for further development of their own teacher cognition, supporting participants' self-reflection and metacognition through systematic inquiry and active thinking (Borg, 2013). Each participant answered five questions four times over the four-week MOOC. Participant responses ( $n = 120$ ) were recorded in sequence and analysed on a weekly basis. As Kubanyiova and Feryok (2015) propose, "teachers' cognition is assumed to be acquired as a result of their professional and personal experiences, readily accessed and articulated in self-reports, and applied (or not) in teaching practices" (p.437). CIQs are therefore a well-established method to elicit teacher cognition so that what is tacit may be made explicit to both the participants and researchers.

### **Data Analysis**

From a priori standpoint, qualitative thematic analysis (Braun & Clarke, 2006) was applied and then descriptive statistics were utilized in order to understand the significance of the themes. Thus, descriptive statistics enabled the characterizations of the themes and identified the most important. Creswell and Plano Clark (2007), highlights that the statistical data might "enhance a description of results or the identification of salient themes" (p.33). Therefore, in the first instance, the data from open-ended CIQs provided evidence of particular perspectives on professional development whilst the participants noticed a change in their expanding knowledge during the course. This knowledge was associated with three types of development or themes (see three lenses above). This is considered in relation to Borg's model, which is grounded in the analysis of mainstream educational research and draws on the relationships between teacher cognition and teacher learning through prior educational background, professional education and classroom practice. Contextual factors also determined the extent to which teachers were able to act in congruence to their cognitions. The corresponding quotes for each questionnaire were allocated to the appropriate lens. The quotes were cross-referenced with the name of the participants. Data were then imported into Microsoft Excel with the percentage of responses relating to these lenses obtained for each participant. This was done individually in order to explain the importance of each for them and then used to compare overall trends observed on a weekly basis as well as for the duration of the study. The data thus recorded the predominance of these lenses among in-service teachers over the weeks. Alongside these three lenses, participants' references to metalanguage were also noted in terms of frequency and in regards to their contribution to professional development.

### Justification of the methodology

Methodological choices taken are invariably value-laden and should therefore be appropriately justified. Maxwell (1992) argues, with Guba and Lincoln (1989), for the need to replace positivist notions of validity in qualitative research with the notion of authenticity. This may be achieved through devising appropriate spaces for participants to express their “voice” (in this study this was through the MOOC for professional development and Brookfield CIQ) and documenting this in a manner which authentically represents the individuals and the issue concerned (Edge & Richards, 1998). Thus, Maxwell (1992), echoing Mishler (1990), suggests that “understanding” is a more suitable term than ‘validity’ in qualitative research. Thematic analysis was chosen as the most appropriate means to heighten my understandings of the data. Additionally, member checking was utilized before moving to interpretation as Guba and Lincoln (1989) regard these checks as “the single most critical technique for establishing credibility” (p.239). By the end of week 4, most themes in the data reached saturation point, which provided a greater degree of “trustworthiness” when presenting claims.

### Results

In the following section, the findings are presented based on participants’ responses in terms of the three lenses of teacher cognition: (a) teacher self, (b) classroom and students and (c) colleagues and departments. Findings on metalanguage as a key component of teacher cognition are then provided. Participants’ responses based on the three lenses are then analysed on a weekly basis over the four weeks to uncover any changes. Finally, their responses are analysed on a weekly basis to uncover any overall trends as a result of teacher cognition development.

#### Example for Teacher self (lens A)

Prior experience of schooling and current experience from the professional coursework will have an influence on the way teachers look at themselves and their professional development. Some novice teachers tend to look at the MOOC (professional coursework) in terms of how it can develop them as language teachers. At the early stage of a career, the teacher may be preoccupied with their own image or concerns as teachers (their teacher knowledge). So, they appear to focus on their own practice, think about themselves as teachers, and feel less responsible for other teachers.

In Figure 2 the data show the teacher cognition through different lenses for all participants.

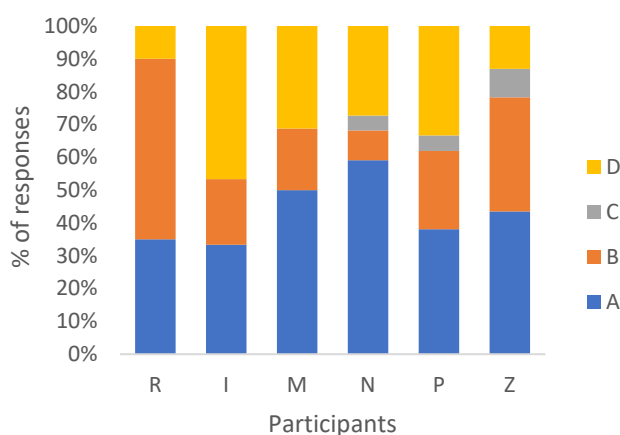


Figure 2. Teacher cognition through the different lenses for all participants (see Table 1): total percentage of responses over four weeks (A = teachers themselves, B = classroom/student, C = colleagues and department, D = no information)



For participant N the data indicates that she has dedicated a significant proportion of her responses to the lens of teacher themselves (lens A). She reflects on the significance of the course as a refresher for her own knowledge and remaining the expert:

*“ – all [activities were] useful and stimulating – yes a lot known to me, but it felt v[ery] useful to refresh knowledge/previous practice – and I learnt lots too from links educators were posting – at one point Joshua posted a technique on assessing writing, which is innovative and experimental, and I felt that the educators are madly engaged too and not just being mechanical – it’s inspiring 😊”*

Some participants stop at the lens of teacher themselves and they do not proceed to look at their classroom practice (B), and contextual factors (C). Therefore, their teacher cognition development may not develop beyond the lens of teacher themselves.

### **Example for Classroom and students (lens B)**

However, some other participants’ cognition development will proceeded to classroom practice. When teachers gain more experience, data suggest that the focus of learning goals is related to enhancing student learning and what they have seen on the MOOC that can be directly applied in practice.

Participant R looks at this CPD course through multiple lenses to consider classroom practice:

*“Differentiation: how to make sure that all students benefit from the lesson: start with easy questions and move to more difficult ones. Create mixed abilities groups.”*

*“Differentiating by process: as a starter, I ask students general questions to introduce the topic of the following 3 to 4 lessons. Based on the answers I elicit, I highlight the main points that will become part of their interests in their future professional career. That is how I elicit students’ interest.”*

*“Observing a class: the teacher had so many good activities despite lack of resources and the large number of students! Great!!!!”*

R is bringing his professional history and experiences into his learning on differentiation as well as being engaged in a substantial way with metalanguage.

### **Example for Colleagues and departments (lens C)**

Some teachers reached beyond both the lens of teacher themselves towards development and classroom practice. There was evidence that they took into account the contextual factors, and collegiality development.

Participant Z provides an example:

*“Step 1.10 had a video for a teacher doing a speaking activity which I never thought of, so my reaction was ‘I really want to make my colleagues to see this’ as I did not expect the activity to go on the way it did.”*

Z is looking at a specific activity, and thinking about colleagues, and teacher educators. This suggests that teachers considering colleagues and departments, apart from adapting to changes on the MOOC, also contribute to further changes within their context.

### **Example for the consideration of two or three lenses as a matter of better development in teacher cognition (A, B, & C)**

Participant Z demonstrates teacher cognition that integrates the three lenses. She considers herself and the classroom and other teachers at the same time whereas other participants may solely focus on their own role. The multiple consideration of three lenses in her teaching career also tends to be associated with the different domains of language teaching (see Table 1), as she had prior experience of teaching in Kindergarten, elementary and as the head of English department supervising the English language teachers. For instance, in the following quote she focuses on how techniques on building rapport, seen on a MOOC video post, can be used for her classroom and also shared with other colleagues:

*“Step 1.6 Rapport in action, we saw a video how a teacher build a rapport in her classroom, I felt that I wanted to try that, and share what I do in my classroom with others.”*

She wants to implement this strategy and she considers what she can take from this course and what she can immediately apply.

Another example is participant P who looks at the course through the lens of classroom and colleagues:

*“I was very grateful to find out that some of the things I’ve started to apply in my classroom have been structured, studied and used by others around the world. For example, the use of alternative media or the importance of the differentiation of contents and interests.”*

P identifies with the professional community as her colleagues; reinforcing her professional identity. It seems that she perceives that what reinforces her sense of professional identity also reinforces her teacher identity.

On the whole, the data obtained suggest that teacher cognition was enhanced when there were opportunities to consider the three lenses.

### **The level of their involvement in metalanguage or enhancing one’s metalanguage**

Encouragingly, some findings on metalanguage, as a key dimension of teacher cognition, were seen. Two out of six participants were positive in terms of enhancing their knowledge of the language through the course; the knowledge that language users do not possess and only English teachers have. Participant Z (2 responses) affirms this:

*“The most helpful part was Assessment terminology with types of assessment with their definitions and examples, mostly when we assess we don’t focus on the type of assessment used, but this is a more professional way to know what we’re doing.  
Step 4.11 Assessment criteria and feedback on speaking had the band concept explained with examples – a new concept for me – I never knew the standard in International tests, I kept the file for my usage later in speaking assessments.”*

Participant N also commented on developing awareness of metalanguage for organization into categories after reviewing a video on the MOOC:

*“The first vid[eo]: types of knowledge in categories. I was aware of all, but hadn’t seen them categorised before. Whilst I enjoyed week 1, it felt like review – but week 2 started with something that properly engaged me. Thought: should first lessons be comfortable, then with a challenge to grab Lessons?”*

Novice teachers may enter the discourse of the ELT through MOOC, and may not be aware of terminology such as *summative* and *formative assessment*. However, throughout the MOOC they become increasingly familiar with such discourse. For instance, regarding motivation terminology, teachers might know that is good to observe students and based on that observation help the students. If they know the terms they can develop ways of embedded thinking (e.g., linking getting gratification (e.g., candy) to extrinsic motivation). This professional discourse then provides a shared discourse to communicate and develop ideas within the profession.

### **The frequency of the three lenses considered on a weekly basis**

A second analysis of weekly responses was conducted in order to identify any overall trends observed regarding teacher cognition development.

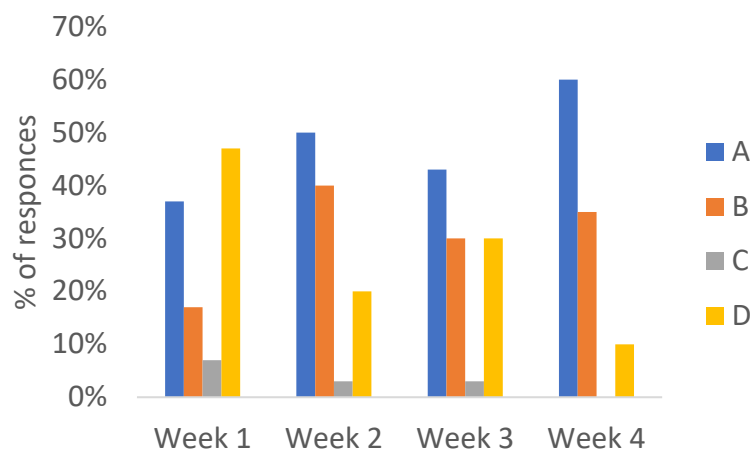


Figure 3. Lenses A, B, C and D (A = teachers themselves, B = classroom practice/student, C = colleagues and department, D = no information) vs number of answers per week 1 to 4

In Figure 3, the lens of teachers themselves (A) is dominant in relation to the other lenses throughout the four weeks. This can be associated with the student-centred characteristic of e-learning. The data suggests there is more individual rather than collective advancement. This individual aspect of learning is also observed by having a relatively small number of answers within the colleagues and department lens (C), which may indicate that CPD at the level of collegiality and the departmental in ELT has been neglected. Furthermore, in week 4, lens A is dominant over the rest of the categories across the four weeks. This relates to the nature of the course when it reaches the end, focusing on the learners' reflection on their learning. The classroom practice lens (B) is the second prevalent lens: By the end of week four, data showed the influence of the professional coursework on their existing cognition. One quarter of participants' comments of show a positive attitude towards the applicability of what has been learned on the course and whether the new knowledge can be implemented in practice, an indication of teacher cognition.

## **Discussion**

### **Three circles model of teacher cognition development**

Based on the findings obtained in this research the model shown in Figure 4 is proposed. The model depicts the three lenses of development in teacher cognition. It allocates the development of teacher cognition into three concentric circles:

- In stage one (lens A = teacher self) teacher development focuses on educating oneself and developing a greater understanding of theories and models.
- In stage two (lens B = classroom/students) knowledge is applied to the classroom and students, developing understandings of how teacher knowledge affects students and their learning experience. This could be seen, for instance with participant R who used teacher cognition and their work on the MOOC to develop understandings of differentiation in their context. Such findings mirror what has been proposed by Feryok (2010), relating to how teachers have cognitions in different areas such as supporting pupils with their language learning processes.
- In stage three (lens C = Colleagues/departments) focus moves to departmental level where teachers consider how to educate and develop their colleagues based on their refined experience from stage A and B combined. This was seen when participant Z contemplated how to present a teaching technique to her colleague to enhance their professionalism. The experience shows a willingness to exert agency by extending colleagues' cognitive development through consideration of how contextual factors can be dynamic. This finding chimes with Feryok who concludes that "individuals and their environment 'are' interconnected and co-adapting to each other" (Feryok, 2010; p.276).

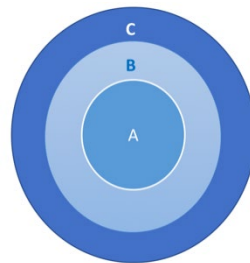


Figure 4. Three circles model of teacher cognition development: Inner circle A = teacher self, middle circle B = classroom/students, outer circle C = Colleagues/departments

These lenses are not exclusive. Participants who initially look at A, might expand their perspectives as their confidence and knowledge grows in a particular aspect of their professional practice. For example, a highly-experienced teacher who learns new information and communication technology (ICT) technique may first need to focus on A to later transfer these benefits to lenses B and C. The teacher might have realized that although their knowledge of language teaching is well-developed, they are novice with ICT techniques and they need to become familiar, so they start adapting to changes in the environment or context (Feryok, 2010). Indeed, these are not static categories; they are dynamic and may evolve through professional development or as responsibilities increase. The findings support Feryok's (2010) argument, that the dynamics of language teacher cognition is associated with development. New cognitions can add to, modify, and replace cognitions. MOOCs based CPD can lead to changes in cognitions and practices, while others only change cognitions and others have no effect on cognition or practice.

The findings in this study resonate with Freeman and Richards (2010) regarding how novice teachers in particular can benefit from MOOCs by learning the language of subject matter. For instance, this occurred when participants (e.g. participant Z) learned about assessment. The embedded professional discourse then provided a shared discourse to communicate and develop ideas through the MOOC. This suggests that there is a strong probability that in-service teachers can examine what they know about language and enhance it through the MOOC while they are positioned in one or more of the above circles – starting from themselves as learners, being cognizant of the learners they (will) teach and also their fellow professionals. Overall, linking back to Borg's adapted frame work, the findings suggest that MOOC as a professional

coursework has an impact on the in-service teacher cognition about language learning and teaching, though the nature of this impact varies among different teachers. This is in congruent with the study of Freeman and Richards (2010) who note the heterogeneous ways of change as each interprets the course differently on the basis of their prior experience. Borg's model not only relates to the participants and how they think, but also to the activities that they are asked to do on the MOOC. If participants can link this coursework to develop their knowledge of classroom practice in their context, this can enhance their teacher cognition and expertise. In this way, we can see how MOOCs may be successful in reaching different aspects of teacher cognition development. Indeed, the study has shown that all participants, albeit to different degrees, consider how to manage the process of applying some of the knowledge from the MOOC to their own classrooms. Group C, collegiality, was less emphasized on this MOOC but could be enhanced if subsequent MOOCs were developed with this in mind.

## **Conclusion**

This study highlights the influence MOOC-based CPD may provide to English Language teacher's cognition development. Through the investigation of their comments gathered using CIQs, three lenses of development in teacher cognition were observed – lenses of teacher self, classroom/students and colleagues/department. It has been noted that such reflections may constitute a hidden aspect to the view of MOOC designers. This aspect of the research suggested the dynamic nature of language teacher cognition, as teachers could proceed from a focus on themselves as teacher learners towards a focus on their own practice and learners and ultimately consideration of colleagues and the wider context.

The present findings suggest that professional development MOOCs can be successful in providing a space for teachers – in particular novice teachers – to enhance their metalanguage and acquire and use the discourse of ELT. By looking at the frequency of three lenses on a weekly basis, an understanding of the overall trend regarding teacher cognition development was offered. The result casts a new light on the dominance of the lens of teachers themselves which show learners have a strong preference towards individual aspects of learning development in the context of CPD in English language teaching online.

Each learning journey is unique however the study revealed shared experiences that each participant experiences through the lens of their own teacher cognition. MOOCs should provide differentiated learning journeys whilst individuals navigate through them with support of peers to develop their learning agenda and consequently develop their teacher cognition.

## **The limitations of the study**

The study was nonetheless subject to limitations. The nature of the course, online, was a barrier to track these in-service teachers to their classroom and context to research what they do and identify ecologies of their practice and the role of their context in their practice in depth. This may point to the need for future partnerships with teacher educators who can work directly with the teacher learners in the context as well as participating with the MOOC for a blended learning approach. A further limitation can be considered in terms of sample group. It might be argued that the sample group were culturally attuned to the UK-based learning approach. Participants in this research were self-selecting and self-motivated. They were generally willing to adapt to the prevailing pedagogy of the course, and motivated to learn using techniques that were embedded in the MOOC course. Thus, the group who participated are not necessarily representative of all participants taking this MOOC-based course. Due to the limited number of participants, follow-up studies which incorporate a broader sample size would be beneficial to offer confirmation and elaborate further on the key issues.

It would be very interesting to investigate participants' perceptions of the MOOC three months after the end of the course. This is because change is not always quick and needs time to be fully developed. Participants might not comprehend the full impact of the MOOC until they remember what they have done when they return to their classroom. It can be seen that some of the participants are able to identify the benefits of the MOOC immediately upon completing the course, but a repeat study would allow the researcher to go back and ask them if they remember anything about the MOOC, or if they have developed further. As a novice teacher, they might not be very precise about their assumptions, and they might think that they learned something new and can apply it, whereas appropriate application of knowledge is more developmental and it takes time to later reflect on what they have learnt. Therefore, a robust follow-up investigation to determine if the change in cognition is enduring and leads to improvement in practice would be valuable.

## References

1. Black, P., & Wiliam, D. (2010). Inside the Black Box: Raising Standards through Classroom Assessment. *Phi Delta Kappan*, 92(1), 81-90. doi: 10.1177/003172171009200119
2. Borg, S. (2003). Teacher Cognition in Language Teaching: A review of research on what language teachers think, know, believe and do. *Language Teaching*, 36(2), 81-109. doi: 10.1017/S0261444803001903
3. Borg, S. (2006). *Teacher Cognition and Language Education: Research and Practice*. London: Continuum.
4. Borg, S. (2013). *Teacher Research in Language Teaching: A Critical Analysis*. Cambridge: Cambridge University Press.
5. Borg, S. (2015). *Teacher Cognition and Language Education* (1<sup>st</sup> ed.). London: Bloomsbury Academic.
6. Bozkurt, A., Akgün-Özbek, E., & Zawacki-Richter, O. (2017). Trends and Patterns in Massive Open Online Courses: Review and Content Analysis of Research on MOOCs (2008-2015). *The International Review of Research in Open and Distributed Learning*, 18(5). doi: 10.19173/irrodl.v18i5.3080
7. Braun, V., & Clarke, V. (2006) Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, 3(2). pp. 77-101. doi: 10.1191/1478088706qp063oa
8. Breen, M., Hird, B., Milton, M., Oliver, R., & Thwaite, A. (2001). Making sense of language teaching: teachers' principles and classroom practices. *Applied Linguistics*, 22(4), 470-501. doi: 10.1093/applin/22.4.470
9. Brookfield, S. D. (1995). *Becoming a Critically Reflective Teacher*. San Francisco: Jossey Bass.
10. Burns, A., Freeman, D., & Edwards, E. (2015). Theorizing and Studying the Language-Teaching Mind: Mapping Research on Language Teacher Cognition. *The Modern Language Journal*, 99(3), 585-601. doi: 10.1111/modl.12245
11. Clark, C., & Peterson, P. (1986). Teachers' thought processes. In M.C. Wittrock (Ed.), *Handbook of research on teaching* (pp. 255-296, 3<sup>rd</sup> ed.). New York: Macmillan.
12. Coughlan, S. (2015, May 13). UK 'Biggest Online University Course'. BBC News [Blog post]. Retrieved from <https://www.bbc.co.uk/news/education-32721056>
13. Creswell, J., & Plano Clark, V. (2007). *Designing and conducting mixed methods research* (1<sup>st</sup> ed.). Thousand Oaks, CA: SAGE Publications.

14. Dillahunt, T., Wang, B., & Teasley, S. (2014). Democratizing higher education: Exploring MOOC use among those who cannot afford a formal education. *The International Review of Research in Open and Distributed Learning*, 15(5). doi: 10.19173/irrodl.v15i5.1841
15. Dornyei, Z., & Ushioda, E. (2009). *Motivation, Language Identity and the L2 Self*. Second Language Acquisition. Bristol: Multilingual Matters.
16. Dunkin, M. J. (1996). Types of Errors in Synthesizing Research in Education. *Review of Educational Research*, 66(2), 87–97. doi: 10.3102/00346543066002087
17. Edge, J., & Richards, K. (1998). May I See Your Warrant, Please? Justifying Outcomes in Qualitative Research. *Applied Linguistics*, 19(3), 334–356. doi: 10.1093/applin/19.3.334
18. Ellis, E. (2006). Language Learning Experience as a Contributor to ESOL Teacher Cognition. *TESL-EJ*, 10(1), A-3.
19. Farrel, T. S. C (2003). Learning to teach English language during the first year: personal influences and challenges. *Teaching and Teacher Education*, 19, 95-111. doi: 10.1016/S0742-051X(02)00088-4
20. Feryok, A. (2010). Language teacher cognitions: Complex dynamic systems. *System*, 38(2), 272-279. doi: 10.1016/j.system.2010.02.001
21. Flores, B. B. (2001). Bilingual education teachers' beliefs and their relation to self-reported practices. *Bilingual Research Journal*, 25, 251-75. doi: 10.1080/15235882.2001.10162795
22. Freeman, D. (1996). Redefining the relationship between research and what teachers know. In K. Bailey & D. Nunan (Eds.), *Voices from the language classroom: Qualitative research in second language education* (pp.88-115). Cambridge: Cambridge Press.
23. Freeman, D. (2002). The hidden side of the work: Teacher knowledge and learning to teach. A perspective from North American educational research on teacher education in English language teaching. *Language Teaching*, 35(01). doi: 10.1017/s0261444801001720
24. Freeman, D. (2016). *Educating second language teachers: 'The same things done differently'* Oxford: Oxford University Press.
25. Freeman, D., & Richards, J. (2010). *Teacher learning in language teaching* (2<sup>nd</sup> ed.). Cambridge: Cambridge Univ. Press.
26. Gance, D., Forsey, M., & Riley, M. (2013). The pedagogical foundations of massive open online courses. *First Monday*, 18(5). doi: 10.5210/fm.v18i5.4350
27. Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Beverly Hills, CA: Sage Publications.
28. Hayes, D., (2005). Exploring the lives of non-native speaking English educators in Sri Lanka. *Teachers and Teaching*, 11(2), 169-194. doi: 10.1080/13450600500083964
29. Johnson, K. E. (1992). Learning to teach: Instructional actions and decisions of preservice ESL teachers. *TESOL Quarterly*, 26, 507-535. doi: 10.2307/3587176
30. Kiss, T. (2012). The Complexity of Teacher Learning: Reflection as a complex Dynamic System. *Journal of Interdisciplinary Research in Education*, 2(1), 17-35.
31. Kubanyiova, M. (2006). Developing a motivational teaching practice in EFL teachers in Slovakia: Challenges of promoting teacher change in EFL contexts. *TESL-EJ*, 10, 1–17.
32. Kubanyiova, M., & Feryok, A. (2015). Language Teacher Cognition in Applied Linguistics Research: Revisiting the Territory, Redrawing the Boundaries, Reclaiming the Relevance. *Modern Language Journal*, 99(3), 435–449. doi: 10.1111/modl.12239

33. Liyanagunawardena, T. R., Adams, A. A., & Williams, S. A. (2013). MOOCs: A systematic study of the published literature 2008–2012. *International Review of Research in Open and Distance Learning*, 14(3), 202–227. doi: 10.19173/irrodl.v14i3.1455
34. Lewin, T. (2012, July 24). One course, 150,000 students: Questions and answers with Anant Agarwal. The New York Times [blog post]. Retrieved from <https://cacm.acm.org/opinion/interviews/153724-one-course-150000-students/fulltext>
35. Lortie, D. C. (1975). *Schoolteacher*. Chicago: University of Chicago Press.
36. Maxwell, J. (1992). Understanding and Validity in Qualitative Research. *Harvard Educational Review*, 62(3), 279–301. doi: 10.17763/haer.62.3.8323320856251826
37. Moe, R. (2015). The brief & expansive history (and future) of the MOOC: Why two divergent models share the same name. *Current Issues in Emerging eLearning*, 2(1), 2.
38. Numrich, C. (1996). On becoming a language teacher: Insights from diary studies. *TESOL Quarterly*, 30(1), 131–53. doi: 10.2307/3587610
39. Shavelson, R. (1973). What is the basic teaching skill? *Journal of Teacher Education*, 24, 114–151. doi: 10.1177/002248717302400213
40. Weaver, G. R. (1986). Understanding and coping with cross-cultural adjustment Stress. In R.M. Paige (Ed.), *Cross-cultural orientation. New conceptualizations and applications*. Lanham MD: University Press of America.
41. Woods, D. (1996). *Teacher cognition in language teaching*. Cambridge: Cambridge University Press.
42. Wyatt, M., & Borg, S. (2011). Development in the practical knowledge of language teachers: A comparative study of three teachers designing and using communicative tasks on an in-service BA TESOL programme in the Middle East. *Innovation in Language Learning and Teaching*, 5(3), 233–252. doi: 10.1080/17501229.2010.537340

## **Acknowledgement**

I wish to extend my sincere gratitude to Professor Mike Sharples (Academic Lead for FutureLearn) and Chris Cavey (Open learning manager for the British Council) for putting me in contact with the learners on the course. My supervisors, Sarah Cornelius and Aileen Ackland and with particular thanks to Matthew Lawrence who supported editing this manuscript.