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University of Southampton

Faculty of Engineering and Physical Sciences

School of Electronics & Computer Science

**Transcultural Approach in Multicultural MOOCs:
A Pathway to Enhanced Global Learning**

by

Rana Saud Shahini

ORCID ID 0000-0002-7998-2304

Thesis for the degree of Doctor of Philosophy in Web Science

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Abstract

Faculty of Engineering and Physical Sciences

School of Electronics & Computer Science

Doctor of Philosophy

Transcultural Approach in Multicultural MOOCs:

A Pathway to Enhanced Global Learning

by

Rana Saud Shahini

In a complex and globalised era, Massive Open Online Courses (MOOCs) have emerged as a truly multicultural spaces, attracting worldwide learners from diverse backgrounds and cultures on a massive scale. MOOC learners expect to access the best learning quality without any particular previous requirements.

While MOOCs typically offer fixed content, they can be designed so that learners can interact and learn from each other. When learners communicate and interact, there is the potential for cultural forms and practices to be articulated, negotiated, rejected, or transcended into a new form of knowledge that blurs cultural boundaries within online discussions. This can enrich the learning materials and the overall learning experience.

However, limited empirical research explored the transcultural dimension in MOOCs, particularly for understanding cultural and social elements in relation to the learning process and outcomes. This research investigates whether learners' discussions in MOOCs might be affected by the transcultural dimension, leading to enhanced learning.

To explore the role of transcultural interactions, this research analyses comments of two cycles of an existing FutureLearn MOOC. Learners' comments are coded for level of cultural awareness (cross-cultural, intercultural, or transcultural) and correlated with the extent of knowledge co-construction evident in the comments. In addition, ten MOOC learners are interviewed in depth to evaluate their learning experiences, with a particular focus on their impressions regarding the transcultural contribution to learning. That was supplemented with a survey to reach a diverse group of MOOC learners.

The findings of this work reveal the presence of a small but measurable amount of transcultural elements represented in these MOOCs, originating from learners' previous diverse experiences. In addition, a significant positive correlation is observed between the level of transcultural awareness and the knowledge that is collectively constructed. The results suggest that the benefits of discussions were not only confined to the learners who participated.

The outcomes of this research recommend considering MOOC discussions a unique global and rich resource of knowledge and highlight the importance of incorporating transcultural interactions in learning design. This research contributes to understanding the potential of

transculturality in MOOCs, paving the way for the creation of inclusive and empowering learning environment.

By embracing and leveraging cultural diversity, MOOCs can provide transcend learning experiences for learners worldwide. Further exploration and development of learning design strategies are recommended to encourage and guide transcultural interactions within MOOCs, promoting enriched learning outcomes and fostering global understanding.

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Research Thesis: Declaration of Authorship

Print name: Rana Saud Shahini

Title of thesis: Transcultural Approach in Multicultural MOOCs: A Pathway to Enhanced Global Learning.

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

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2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
3. Where I have consulted the published work of others, this is always clearly attributed.
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Definitions and Abbreviations

MOOC.....Massive Open Online Course.

xMOOC.....eXtended Massive Open Online Course (content-centric).

cMOOC.....Connectivist Massive Open Online Course (learner-centric).

FL.....FutureLearn is a MOOC platform.

MOOC runthe same MOOC course is offered online multiple times on different dates, each offering is called a run or a cycle.

MOOC step.....A webpage presents a learning object or a unit of a MOOC content.

Lurkera person who watches activity online but who does not participate.

CKConstruction of Knowledge.

IAM.....Interaction Analysis Model.

Lingua FrancaA common language among people with diverse first language.

ICCIntercultural communicative competence.

ICAIntercultural Awareness.

TCA.....Transcultural Awareness.

Chapter 1 Introduction

A decade after they first emerged, Massive Open Online Courses (MOOCs) have experienced significant growth, with 220 million learners enrolled in 2021 (Shah, 2021). The COVID pandemic further boosted MOOCs, providing a flow of new learners, and benefiting from free marketing (Shah, 2023). Due to their openness, ease of access, and affordability, MOOCs have attracted a diverse range of learners from various educational, social, and cultural backgrounds on a massive scale. These courses have been associated with the potential to enhance the accessibility, scalability, and global reach of education. However, these potentials have not been fully fulfilled, as evidenced by high dropout rates (Davis et al., 2017), low participation (AlQaidoom and Shah, 2020), and failure to meet the expectations and understanding of culturally diverse learners (Bayeck and Choi, 2018; Dennen and Bong, 2018; Gallagher and Savage, 2016).

Culture both influences and is influenced by learners' behaviours and interactions, significantly impacting the learning process, outcomes, and the overall learning experience (Baker, 2018; Bozkurt et al., 2018; Loizzo and Ertmer, 2016). Research in various learning contexts, including studies in MOOCs, has addressed cultural impacts, taking various directions and approaches over the years and around the world. While research on MOOCs has explored the role of distinct and predefined cultural characteristics of participants in online discussions (Bozkurt and Aydin, 2015; Liu et al., 2016; Ogan et al., 2015), other studies investigated cultural differences based on contextual interactions referenced to categorised groupings or communities (Andersen et al., 2018; Buholzer et al., 2018; Huang, 2022). However, it often overlooks the dynamic nature of these cultural differences, influenced by previous and current experiences during discussions, and specifically in global open online spaces.

With the rapid advancement of digital communication technology, online cultural frames, and practices have become inherently complex, flexible, and fluid. Culturally diverse learners need to communicate effectively to negotiate meaning and achieve mutual understanding in global open learning spaces (Baker, 2011) such as MOOCs. Additionally, learners' virtual and real-life experiences affect them to different degrees, resulting in a unique identity that incorporates a fluid mixture of different cultures (Andersen et al., 2018). Cultural practices of MOOC participants may constantly change during discussions, influenced by what Pennycook (2007) identified as tensions between local and global contexts.

From a social constructivist viewpoint that emphasises learning as an ongoing social process through interaction and dialogue (Lev Vygotsky, 1978), diverse MOOC learners are considered a crucial part of this process, sharing different perspectives, experiences, and knowledge through

Chapter 1

discussions. This allows for the creation of innovative co-constructed knowledge (Laurillard, 1993; Baker and Hanamachi, 2019). Additionally, within these discussions, cultural forms and practices may be articulated, negotiated, or rejected, transcending, and blurring cultural boundaries, and potentially representing what is known as transculturality in such an online environment (Baker and Sangiamchit, 2019; Zaidi and Rowsell, 2017). However, actively seeking and appreciating diverse contributions beyond cultural references poses a common challenge MOOCs face (Andersen et al., 2014). In this thesis, both transculturality and knowledge construction are fundamentally driven by learners' online discussions in multicultural MOOCs.

This research aims to address a gap in the literature by emphasising the importance of culture and its role as a dynamic and fluid perspective when designing and running MOOCs. This study takes a holistic approach, proposing transculturality as an extended model to investigate and promote a path for effective and meaningful interactions that transcend cultural boundaries, thus generating valuable collective data to support inclusiveness in a global MOOC.

This study contributes to the literature by investigating how transcultural practices and knowledge are reflected, represented, and constructed in MOOC discussions generated by diverse learners. It expands understanding of learning outcomes to include all forms of collective participation and engagement within a global context.

Furthermore, this research fills a gap by examining the role of transcultural awareness in supporting diverse peer interaction and negotiation in the process of knowledge co-construction. By adopting a transcultural approach, valuable insights can be gained into how cultural dimensions support an inclusive and effective learning environment, promoting the production of updated, diverse knowledge that integrates theory and practice from around the world.

The present study explores a heterogenous population enrolled in an open multicultural MOOC chosen based on specific criteria described later in detail (3.4). It establishes new links between learner transcultural awareness and the quality of collective participant-generated knowledge by analysing the data generated by culturally diverse participants in text-based asynchronous discussions within a MOOC course. The main (probably the only) channel for social learning and peer interaction in this MOOC is the discussion forum (the comment section), which provides a natural and promising source to observe a complex and fluid phenomenon as transculturality.

This MOOC context is significant in the study for several reasons. First, it is flexible, attracting diverse learners worldwide without requirements to join the course, participate, or pass, and no graded assignments too. Second, it encourages discussions beyond individual reflections, making it a potentially rich space for flexible and negotiated contributions. Third, the dynamic nature of

the MOOC is emphasised through diverse inputs and various levels of population heterogeneity in every cycle of the MOOC, facilitating the exploration of the complex transculturality phenomenon within this complex setting. Discussion and comparison for each MOOC cycle (run) will be presented in later in Chapter 7.

Moreover, this research acknowledges the importance of incorporating the voices of MOOC learners to gain a deeper understanding and support the transcultural approach for promoting an inclusive learning environment that assures effective communication between diverse learners and provides rich and global knowledge beyond theorisation. The overall analysis of MOOC discussions, alongside the interviews will provide a comprehensive view of how transculturality appears in learners' discussions and its relationship knowledge co-construction. Additionally, this analysis helps evaluate the quality of social learning and allows for the exploration of cultural factors that might affect participant contributions and participation. Adopting a transcultural perspective aims to promote learner-generated content and enhance the inclusiveness and richness of the MOOC learning environment.

While scholars have called for more empirical approaches to understand transculturality and its impacts in our interconnected world (Baker, 2016, 2015a; Kim, 2016; Ryan, 2011), few studies have explored transcultural communication in virtual spaces, such as those by Baker and Sangiamchit (2019), Kim (2016), Jurkova and Guo (2021), and Schachtner (2015), and limited studies have directly examined transculturality in MOOCs (Ersoy and Kumtepe, 2021; Jurkova and Guo, 2021).

Moreover, MOOC discussions have not been directly analysed for their potential for transculturality, the benefits it brings, or how it is reflected in participants' discussions. Furthermore, the study establishes a new connection between transcultural awareness and knowledge co-construction in MOOC discussions, for promoting the quality of participants' contributions in MOOCs. This study demonstrates that an overall analysis of the data can mask the transcultural awareness of the relationship between learning, learner interactions, and learner outcomes.

1.1 The Cultural Approach

The concept of transculturality is complex and key to this study. It is essential to demonstrate a working definition of the term to evaluate its appearance in learners' posts in comparison with other approaches in this context.

Chapter 1

Culture is a very complicated concept to define. Generally, in academic literature within various disciplines, it has been agreed that establishing a universal definition of culture that can be applicable in all contexts is not possible (Risager, 2006).

For a holistic view, five perspectives on culture are summarised below (Baker and Ishikawa, 2021) and discussed further in section 2.1.1.1:

- 1- The product approach: Culture is static and visible container of predefined pattern.
- 2- The semiotic or symbolic approach: Culture is contextual interpreting meaning through language.
- 3- The discourse approach: Culture is always changing depending on power and control.
People belong to multiple groupings.
- 4- The practice approach: Culture is a process constructed in interactions. It is dynamic, and fluid, which depends on continuous negotiation of meanings and practices.
- 5- Ideological approach: Culture is not taken for granted neither it is neutral, it is constructed where contested and power relationships are recognised.

For the purposes of this thesis a defined approach to culture is necessary to make extensive references and understand online diverse discussions and interactions, which is neither simplistic nor static, but rather a flexible definitory model that describes its characteristics, and encompasses any possible innovative forms of culture produced, and diversity of online communications.

To this end, culture in this thesis and from a social constructivist perspective, is seen as an individual practice. It is complex, dynamic, fluid, negotiated through interaction with diverse participants in the online learning environment. Therefore, a broad and adaptable definition of transcultural approach is adopted from Baker and Sangiamchit (2019, p. 473):

“Where interactants are seen moving through and across, rather than in-between, cultural and linguistic boundaries in which those very borders become blurred and transcended. Furthermore, boundary-crossing and blurring, whether as an unconscious part of everyday communicative practices or as a deliberate transgressive act, highlights the transformative nature of such interactions whereby ‘named’ languages and cultures can no longer be taken for granted”.

The rationale for selecting this definition over others is explained in chapter 2.

1.2 Researcher Positionality

My interest in pursuing this study came from realising the crucial role and the depth of cultural communication between diverse learners through interaction and discussions, forming new and creative collective knowledge that enriches learning and extends the learning experience.

As a teacher assistant and then a lecturer of educational technologies for more than seven years, I have been involved in different types of eLearning strategies and educational technologies in teaching. My subjective observations of how learners communicated differently according to the virtual/physical learning environments and their experiences from one side and with different cultural groups from the other were the inspiration for my study.

Additionally, my experience as an international student in the UK, communicating and collaborating with multicultural students offline and online, affected me and is continuously changing my and others' cultural practices and perspectives, specifically in learning and teaching. This was another influence on my choice of study.

Coming from a background with an increased emphasis on global and international learning and teaching experiences to achieve faster and more comprehensive advancement and development, MOOCs were an appropriate target and avenue for accessible and affordable formal and informal learning. This has been further supported and boosted by the COVID-19 pandemic, where MOOCs reached their peak, as learners have become increasingly accustomed to online learning environments and more engaged in participating in virtual communities, especially with the reality of social distancing at that time (Shah, 2023). As a result, I became more passionate about supporting the creation of learning experiences that address and scaffold the needs of diverse learners through approaches that value and appreciate diversity.

1.3 Research Questions

The motivation behind this research is to explore the potential pedagogical benefits of transcultural elements in MOOCs. It aims to investigate how these elements in participants' discussions can enhance meaningful and effective peer interaction, collaboration, and communication in MOOCs. Additionally, the research seeks to determine how transcultural elements can support the collective knowledge generated by learners in MOOCs. It is believed that transculturality can promote a more inclusive learning environment.

Chapter 1

RQ1- To what extent does transculturality appear in a multicultural MOOC?

- a) What are the levels of learners' transcultural awareness that appear in the MOOC discussions?
- b) In what way do diverse learners in a multicultural MOOC represent and construct transcultural awareness through their discussions?

RQ2- Is there any association between learners' level of transcultural awareness and their knowledge co-construction in a multicultural MOOC?

- a) To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC?

RQ3- How did learners in a multicultural MOOC perceive their learning experience in terms of cultural communication and co-constructing knowledge?

It has been doubted that a complex type of cultural awareness and communication could appear in a short course like a MOOC, where massive number of participants do not know each other well enough to contribute at that level, and the variation of previous cultural and transcultural experiences and knowledge of MOOC participants (Abdzadeh and Baker, 2020; Baker, 2013; Yu and Maele, 2018).

However, multicultural MOOCs with an embedded pedagogy that integrates conversational design by encouraging social interaction and discussion are more likely to produce these advanced levels of transcultural elements. Hence, the first research question aims to explore the appearance of this phenomenon in MOOC participants' comments. This fundamental research question includes two sub questions (RQ1a, RQ1b), that contribute to answering RQ1 by examining different aspects of transculturality in a multicultural MOOC.

RQ1a identifies and evaluate the levels of transcultural awareness that appear in participants' discussions. It demonstrates the overall depth of engaging with and understanding the nature of diverse cultural perspectives within their discussions in the MOOC. Additionally, it intends to validate empirically the transcultural awareness model (TCA) that is used for measuring the levels of participants comments.

RQ1b: This sub-question goes beyond measuring awareness levels to explore the specific modes in which learners express, (maybe) construct, and engage with culturally diverse perspectives and knowledge. It investigates the strategies of transcultural awareness that emerge in their discussions, emphasising the dynamic and complex nature of transculturality in the MOOC.

Together, these sub questions contribute to answering the main RQ1, providing a comprehensive understanding and a holistic view of transculturality in the multicultural MOOC context. Thus, throughout the thesis, they will be addressed and answered first, then the main RQ1 will follow.

Similarly, to address RQ2, that seeks to investigate the association between the transcultural awareness level of learners and their co-construction of knowledge, it is crucial to first examine the extent to which their discussions reflect markers of knowledge co-construction in the MOOC. This is the purpose of sub-question RQ2a as it sets the foundation for understanding the collective processes and the quality of the knowledge constructed by learners in the multicultural MOOC. Understanding the presence and depth of knowledge co-construction in discussions contributes to exploring the connection between learners' transcultural awareness and their engagement in knowledge co-construction within the multicultural MOOC.

Finally, RQ3 examines how learners in a multicultural MOOC perceive the influence of cultural diversity within their discussions. It includes peer interaction, the impact of cultural communication on knowledge construction, and the overall engagement with the multicultural learning environment. As a result, a deeper understanding and a holistic view are gained of how transculturality may benefit MOOC learners and their overall learning experience.

1.4 Research Phases

There were three distinct phases to this research. The first phase included an analysis of all the comments posted by MOOC participants for capturing the level of transcultural elements that is reflected in them. The second phase involved three layers of analysis. The first layer replicated the analysis of phase one, with another dataset taken from another cycle of the same MOOC course to confirm findings and enrich the analysis. Whereas the second layer evaluated the quality of the comments for their contribution to collective knowledge construction. The third layer runs a statistical analysis from the previous results to test the relation between transcultural and knowledge co-construction elements in the MOOC comments. Finally, the third phase of the research involved a survey offered to all participants of this MOOC, and post MOOC interviews with a diverse sample of MOOC participants recruited from the results of the survey. These interviews were seeking the overall learners' reflections, perceptions, and interpretations of the first and second phase findings.

1.5 Thesis Structure

This thesis is organised in eight chapters as follows: following this introduction chapter, Chapter 2 consists of the Literature Review which is comprised of literature that supported understanding the transcultural approach to Culture in this thesis, its crucial role in enriching learning especially in online learning environment, how it is empirically approached and why. Then, it addresses the complexity and the importance of the MOOC context, discussing different pedagogies and stressed social learning and peer interaction.

It reviews literature investigating co-constructing knowledge as a way to analyse and evaluate learning in online learning environments, discussing different methods. Finally, it points out why Transcultural communication and knowledge construction should be correlated for an investigation, leading to the research objectives and questions.

Chapter 3 provides a comprehensive overview and the rationale of the case study mixed methods approach adopted. It describes how the different study methods complement each other and interrelate through the three research phases. It demonstrates the selection criteria for the research setting. Different approaches to data analysis for each data set are also discussed. Additionally, it highlights researcher's role regarding ethical considerations and validity.

Chapters 4, 5 and 6 present and reflect on the results of the different methods applied in each of the three phases. Chapter 7 is a discussion of the key research findings integrated from different analytical approaches and methods applied with respect to the research questions.

Chapter 8 consists of a summary and conclusion for this thesis. It reviews contributions to knowledge along with limitations of the research, and provides recommendations, future work, and final remarks.

1.6 Key Terms

This study draws on research from different learning contexts and approaches to learning, where a range of different terms are used to refer to the knowledge that is resulted from learners' interaction and discussions. For clarity, this study will use the terms, co-construction of knowledge, knowledge co-construction, collective knowledge building and collective knowledge construction interchangeably wherever possible to refer to the knowledge that is resulted from learners' discussions and comments and would sometimes use the abbreviation (CK) to avoid repetition and make it easier to read. A detailed discussion on these and other concepts is presented later (section 2.3.1). It has to be noted that Transcultural awareness term as well the

abbreviation (TCA) is used to refer to the concept as well as to refer to the analytical framework adopted where it is going to be explained further in Chapter 2.

Chapter 2 Literature Review

Online environments have recently become the focus of several types of learning, including formal, informal, lifelong learning, and professional development. It has been widely agreed in the literature that culture is an important factor that influences all aspects of learning (Bozkurt et al., 2018). Its effects are more likely to be observed in open, globalised, and diverse learning environments such as MOOCs, and it influence the quality of learning (Affouneh et al., 2018). Cultural impacts have been investigated through a variety of approaches, as it may have direct implications for the learning process, content, methods, and outcomes. Various cultural approaches to enhance learning have evolved around the globe over time, suggesting different learning designs, analytical methods, and validated knowledge (Winschiers-Theophilus et al., 2019). This literature review provides the background to the context, motivations for the research questions, and support the methodological and analytical approach of this study.

The chapter begins by presenting the core theoretical discussions of this thesis, centred around two streams of academic research. One of these aims to examine how culture is conceptualised and approached and considers the increasing influence of globalisation via interconnectivity and information technologies, especially in complex online learning contexts such as multicultural MOOCs. Concepts connected to emerging transcultural awareness are discussed with a view to understanding cultural forms and practices that are expressed online, followed by an exploration of a range of practical approaches to evaluate online cultural communication. A possible alternative approach to assessing transcultural awareness is brought into the discussion, with its potential for encouraging successful peer interaction and communication. Then an adoption of an integrated version of this framework is discussed to analyse MOOC learners' contributions and interactions.

The second stream of literature discusses the flexibility and dynamic nature of MOOCs, and their capacity to welcome diverse participants without the limitations of location, time, and language, and without the usual educational, financial, cultural, or age requirements. The discussion then moves on to emphasise how discussion forums produce user-generated data and incorporate an additional means of delivering content as a result of diverse participants' interaction and communication. It then focuses on how measuring and evaluating the quality of these discussions as markers for co-construction of knowledge (CK), and how fundamentally that contributes to a rich learning experience within MOOCs. This section reviews various concepts and applications used to evaluate CK and measure the quality of participants' contributions and interaction in asynchronous online discussions.

Finally, this chapter concludes by identifying the need to investigate the relationship between transcultural communication and knowledge construction and formulates the research objectives and questions accordingly.

2.1 Towards Transcultural Approach

In this globalised era, MOOCs are facing cultural challenges regarding learning (Shahini et al., 2019), since learners' interactions and behaviours are influenced by their diverse backgrounds and culture (Loizzo and Ertmer, 2016). In order to improve the quality of knowledge generated by learners as an beneficial and global content, it is essential to look at the communicative processes whereby they achieve and maintain an efficacious cultural communication between learners and thus enrich their MOOC learning experience and promote the knowledge gained from the course, where the discussion forum is the main channel for learners who do not know each other to communicate, exchange viewpoints, and ask questions.

This section looks at the complexity and fluidity of culture as a concept to investigate. It briefly demonstrates the different approaches to investigate cultural communication. It reviews how transculturality and transcultural communication are understood and approached in different contexts in the literature. Then, it follows a shift in pedagogic focus from investigating learners' cultural communicative competences (CCC) to exploring intercultural awareness (ICA) in learning contexts, that are both virtual and multicultural settings as the MOOC in this study. Finally, it presents the researcher's adoption and integration of the ICA Model for analysing learners' discussions to explore their representation of transcultural awareness.

2.1.1 The Complexity of Culture

Culture is considered part of a complex adaptive system (Baird et al., 2014), that goes beyond mere conceptualisation. It is not isolated, but rather interconnected and closely linked to the language and the context in which interactions take place (Baker and Ishikawa, 2021). It is important here to discuss different concepts surrounding culture and its relationship to language, as well as the context of this study.

2.1.1.1 Conceptualising Culture

Despite the fact that culture is a simple word, it is subject to ongoing debate about its definition (Risager, 2006). However, it is agreed that culture is complex (Holliday, 2010). As Williams states (2015, p.86) "Culture is one of the two or three most complicated words in the English Language". He links its complexity to its formation and development stating: "culture", which, through

variation and complication, embodies not only the issues but the contradictions through which it has developed. The concept at once fuses and confuses the radically different experiences and tendencies of its formation" (Williams and Williams, 1977, p. 11). Moreover, one of the earliest critical reviews of culture was by Kroeber and Kluckhohn's (1952), who assembled and classified more than 200 different definitions of culture. Therefore, it can be said that culture holds many perspectives and can be interpreted in many ways, since it is defined according to the context that is explored and is also attributed to the person who defines it (Jung and Gunawardena, 2014).

Mainly and most often in academic contexts, there are two primary approaches to theorising culture. The first is the 'container-model- perspective' (Abu-Er-Rub et al., 2019). This approach is equivalent to nationalism and associated with the prefixes 'Multi' or 'Cross' cultural, which from the meaning of multi- refer to fixed bands and separate entities, whereby named cultures can be distinct and compared (Baker, 2021). The Hofstede approach (2011) is one such presenting predefined national cultural dimensions. Here, culture is treated as plural with static features.

This view of shared beliefs, attitudes, and values was pointed by Hofstede describing culture as "the collective programming of the mind which distinguishes the members of one group or category of people from another" (Hofstede, 2011, p.3). This approach conceptualises culture as cognitive patterns which reside within individuals and can be measured and have a value on a national scale (Gabelica and Popov, 2020). It has a limited view of communication (Baker, 2020). Several studies investigated cultural differences from these perspectives in online learning environments (Bayeck and Choi, 2018; Gabelica and Popov, 2020; Mittelmeier et al., 2018; Morales-Martinez et al., 2020). For example, Bozkurt et al. (2018, p.56) defined culture as "the collective identity of a society, systems of shared knowledge that are socially transmitted".

An alternative approach to the static 'container' definition views culture as complex and constructed through a continuous process of interaction, circulation, and reconfiguration (Abu-Er-Rub et al., 2019; Ortiz, 1995; Pratt, 2007). Culture is seen as constantly changing, moving, adapting and always "in the making" through contact and exchange beyond borders (Abu-Er-Rub et al., 2019; Brightman, 1995).

Baker and Ishikawa (2021) considered five approaches to culture; culture as a product; culture as an interpretive semiotic approach, culture as a discourse, culture as a practice, and culture as an ideology. In this thesis, a working definition and approach to culture has been already established earlier in 1.1, expanding the conceptualisation and operationalisation of culture, and providing more comprehensive and inclusive view to capture the complexity of culture as it best suits the

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research objectives. From a social constructivist perspective, culture as a practice is considered the approach of how this study investigates culture for several reasons:

First, culture is a process (Pennycook, 2007) with a dynamic flow that moves and changes within the global virtual and dynamic MOOC environment, where it is the result of individuals' interactions and negotiation as they construct, negotiate, deconstruct, and reconstruct knowledge without fixed and clear boundaries (Risager, 2006).

Second, culture is contextual in the MOOC where sociocultural practices in learning are constantly changing since individuals adopt various cultures that influence them to different degrees according to their online and real-world experiences (Frechette et al., 2014; Shahini et al., 2019).

Third, culture is constructed and collective. It resides outside individuals' minds where individuals react to it (Schwartz, 2014) through interconnectivity. The construction of shared knowledge, beliefs, attitudes, and behaviours are cultural practices that are not the result of a single individual, but the result of participation in interaction (Taylor, 2001).

From this perspective, learners execute their cultures while discovering and understanding others, and are possibly influenced through interaction. The representation of different levels and groupings of cultures may be explored and examined without contradiction (Baker, 2015a). This approach is holistic, exploring cultural communicative practices in pedagogy and considering the whole learning process as affective (attitude), behaviour (skills), and cognitive (knowledge) (Baker, 2020).

Finally, it is the approach that align and intersect with theorising learning as a social process that is also socially constructed through interaction (Vygotsky and Cole, 1978). Social constructivism is the learning theory that this study adopts to explore the quality of learners' discussions in MOOC. Social constructivism will be discussed in detail later in section 2.3.2.

2.1.1.2 Culture and Language

Culture is understood and represented through Language, yet the relationship between the two remains complex. Culture and language are considered both interactive, complex, and adaptive systems, where they continuously influence and adapt to each other, but are not synonymous (Baker and Ishikawa, 2021).

According to Risager (2006), the way language representations and cultural practices are connected varies depending on the specific communicative event and context. Therefore, it has to be noted that in a global and diverse learning environment such as the research setting (multicultural MOOC), language is used as a medium to communicate between diverse

participants with no fixed or obvious cultural links and has more flexibility and fluidity. Moreover, language can be linked to several distinct cultural scales, that vary in relevance to learners depending on each teaching context (Baker, 2020).

In global and open courses such as MOOCs, English is commonly used as the official language of education (Bozkurt et al., 2018; Colas et al., 2016). However, it is used as a bridging language or a medium to deliver educational content as well as a medium of communication. English is used as a global language or as a 'lingua franca', where it is not necessarily linked to a particular culture. Baker and Ishikawa (2021, p.48) defined English as a lingua franca (ELF) as: "A common language among people with diverse L1" (first language), including English".

Pennycook (2007) describes English as a fluid language that changes depending on the local context it is used in, and as part of the process of the continuous change and reconstruction of cultures. Therefore, although this research does not take a linguistic perspective nor concentrates on linguistic analysis, language is still of significant relevance in the analysis of cultural practices in the virtual learning context.

2.1.1.3 Culture and Globalisation

Understanding the relationship between globalisation and culture is crucial for increasing the benefits of MOOCs as global and multicultural learning environments, in making them accessible and relevant to learners from diverse cultural backgrounds from all over the globe. Globalisation and the evolution of technologies have facilitated the travel and the spread of cultural practices and perspectives across borders, leading to increased cultural exchange, interaction, and creation of new cultures, and thus, reconsidering cultural impacts within the teaching and learning processes (Jung and Gunawardena, 2014; Zawacki-Richter and Anderson, 2014).

Globalisation is communicated through culture (Gunawardena, 2014). It is a complex and disrupted concept that is hard to define, but generally it refers to "global interconnectedness and interdependence" (Gunawardena, 2014). It is a concern and a challenge to all disciplines to investigate the concept and relevance of globalisation (Crozet, 2017). It has been argued that globalisation is homogenising culture, although it is affected by different local cultural practices and stimulating them (Crozet, 2017), and facilitate the creation of new cultural identities (Pennycook, 2007). There are always a dynamic and complicated relationship between the local and the global (Baker, 2018; Pennycook, 2007). According to Scholte (2014, p.508) globalisation is "where social relations unfold through and across domains of multiple proportions.". Thus, the interaction between globalisation and culture will always be unpredictable and dynamic because

of the influence of both the global and local contexts, and virtual and real life contexts (Shahini et al., 2019).

Globalisation can diminish interactions and connectivity as much as it can boost them, since successful communication and the negotiation of cultural meaning is down to the efforts of the diverse individuals. Therefore, to increase the positive effects of globalisation, calls are made to deliberately choose to understand how to collaborate in investigating and engaging with cultural and language differences, and to reconstruct patterns of collective connectivity (Crozet, 2017) for a successful global learning experience.

2.1.2 Cultural communication: from cross-culture to trans-culture

“Culture is communication and communication is culture” (Hall, 1959 “as cited in” Jung and Gunawardena, 2014, p.186). Here, Hall described culture holistically as the complete “communication framework”, that includes words, practices, attitudes, and behaviours within a context. As a result of interactions among people, cultural systems emerge, but cannot be reduced to these individuals (Baker and Sangiamchit, 2019). The flexible and dynamic nature of culture is presented clearly through meaning negotiation and co-construction of knowledge in socio-cultural spaces (Jung and Gunawardena, 2014) such as MOOCs. In order to investigate culture within the context of MOOCs, it is crucial to examine the communication patterns among participants, taking into account that these learners’ interactions are widely acknowledged as instrumental in promoting the learning process and outcomes in MOOCs as well (Tawfik et al., 2017).

Research practices of information and communication technologies (ICT) have varied when investigating and exploring cultural communication around the world and over time, influencing research processes, findings and working agendas. Generally, three different methods have been followed: cross-cultural, intercultural, and recently transcultural methods. Research on cross-, multi-, inter-, and trans- culturality requires a true interdisciplinarity (Monceri, 2019). It is necessary, as a preliminary step, to understand the relationship between multi-, inter-, and transculturality in the communication process.

This section aims to differentiate various approaches that address cultural communication and identify the most suitable one for investigating cultural communication in MOOCs, which are complex and diverse contexts. The distinction between these approaches will be made on both a conceptual and operational level. Furthermore, a better understanding of how they relate to each other is also developed. Based on an initial differentiation of the pre-fixes Cross-, Multi-, Inter-, and Trans- (Frame, 2009; Monceri, 2019, 2012), a metaphor of fruit mixes has been borrowed

from Winschiers-Theophilus et al.'s (2019) study and illustration (the images are all creative commons) to clarify the conceptual differences between these terms in communication see Figure 2.1.

Cross -cultural	Multi -cultural	Inter -cultural	Trans -cultural
Different whole fruits	Mixed Fruits Plate	Creative Fruit Platter	Smoothies
Categories – concentrates on differences – static –reference to nations.	Distinguishable entities shared one context or one purpose.	Collaboration based on interactions, negotiation and mediation between specific entities results in something new.	Dynamic interactions, blurring and blurring boundaries. Construction, deconstruction, and reconstruction of cultural practices and knowledge.

Figure 2.1 Cultural Communication Approaches

First, cross-cultural communication can be viewed as a set of clearly distinct fruits, each one of them is distinct and has its own different characteristics. Cultural differences between communities are deliberately exposed in cross-cultural research studies (Winschiers-Theophilus et al., 2019), with a limited and static view of communication (Baker, 2020). Here, named cultures are distinct and compared referring to separate entities, fixed bands, and dimensions. For example, the cultural dimensions model of Hofstede (2011) is one of the most famous cultural models and presented predefined national cultural dimensions based on national comparisons. Hall's (1990) high and low contexts communication styles as well, analysed and categorised cultural differences. The limitation of this approach is that it links fixed patterns of behaviours and characteristics of individuals and categorise them according to national cultures, without taking into account interactional communications (Baker, 2015b; Scollon et al., 2011), it is also built upon the false assumption of nations being homogenous.

Similarly, multi-cultural views culture as static, neglecting how it constantly changes as a result of contextual interaction. Culture here can be presented as a fruit platter, where fruits are mixed, cut, and arranged on a single plate, yet are distinguishable and different from each other. Multi-cultural studies assume the coexistence of several cultures, adjusting to sharing one environment or community and working together towards a goal or an output. They appreciate cultural differences as static, ignoring the influence of interactions for some differences to be changed or dissolved (Monceri, 2012).

Opposed to previous approaches is the inter-cultural approach. Inter-cultural is illustrated by a group of processed fruits that are mixed, cut, and arranged in a certain pattern to create something new and different each time they are sorted. This approach explores communication

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as it happens through different instances of interaction (Holliday, 2010), taking into account that people can be part of multiple cultures and subcultures, well as acknowledging variations within the same culture (Baker, 2020). Communication behaviours and common references are negotiated and shaped simultaneously by different cultures (Frame, 2009).

This approach is contextual, and more flexible, that considers hybrid cultures and blurred boundaries, where people located in between specific cultures while interacting (Baker, 2018). It focuses on exploring the negotiation, construction, and mediation of culture for each incident of interaction with no prior assumptions (Baker and Sangiamchit, 2019). It is more recognisable nowadays. It focuses on participants' experiences and meaning making. It can be used for describing hybridity and practices in between cultural boundaries or shaped by named cultures, such as Kramsch's (1993) 'third place', referring to interaction between specific cultures (Monceri, 2019; Smith and Segbers, 2018).

Using the prefix "inter" as described above is problematic because first, people are not necessarily positioned between cultures as they may present multiple cultures at once or moving through several cultural scales at the same time without being in or between cultures (Baker, 2015a; Holliday, 2010). Second, in some interactional practices it is impossible to identify or assign these cultural practices to specific named cultures (Baker, 2015a).

The final and evolving approach is the trans-cultural perspective, which concentrates on the construction, deconstruction, and reconstruction of cultural practices and knowledge. It can be visualised as a smoothie, which has a unique taste from the blend of flavours from each type of fruit. All the different fruits contribute their individual flavour, yet it is tasty beyond distinguishing clearly between the individual fruits. This approach observes participants moving through and across cultural boundaries, blurring and transcending them in the process of communication. Transcultural communication with its transformative nature looks at cultural practices and representations in interactions that are constructed and negotiated but not linked directly to any named or specific culture (Baker, 2018, 2015b; Baker and Sangiamchit, 2019).

Transcultural communication as an adopted approach by this research is an extension that adds to intercultural communication research and build on it. It takes a holistic view of culture that fits more dynamic globalised and interconnected learning environments. Accordingly, it does not reject, deny, or even contrast with other communication approaches (cross-cultural or intercultural), rather it stresses the importance of national identities to be considered in understanding how people perceive culture (Baker, 2021; Holliday, 2010). Yet, these approaches are considered as one of many factors and other scales of cultural communities (Baker and

Sangiamchit, 2019). Figure 2.2 below demonstrates how these different approaches to cultural communication are conceived by this study.

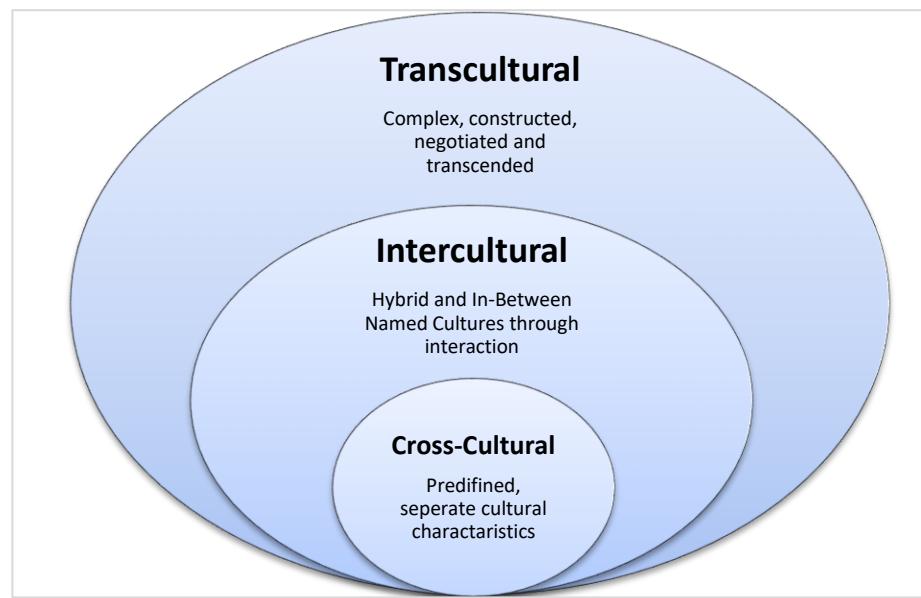


Figure 2.2 Approaches to Cultural Communication: A Relational Framework

The approaches to operationalise culture outlined above have different (but sometimes overlapping) meanings and different applications over time and across disciplines and by different researchers, as Guilherme and Dietz have stressed, concluding that "it is impossible to establish fixed and stable lines between them" (2015, p.1). Yet, it is feasible to attempt to clarify the relational meanings for the purpose of our research (Baker and Ishikawa, 2021).

Through the transcultural approach, the researcher's aim is not to investigate contradictions or identify differences between cultures or communities, rather to explore the complexity of cultural awareness forms in the interaction between individuals through global communication (Guilherme and Dietz, 2015). The researcher seeks to gain a deeper understanding of first, the capabilities of diverse learners to establish a positive and successful communication that would enrich their learning experience; second, the readiness of global learning environments to take a step forward to support it. It is useful at this point to demonstrates the roots of the concept transcultural and transculturality.

2.1.2.1 Transculturality

The terminology itself is not so recent and was first defined by Ortiz in 1940 as the "reinventing of a new common culture" as cited in [Zaidi and Rowsell \(2017\)](#). It was later defined by Welsch (1999) as a concept that suits more modern cultures of today since it emphasises the dynamics, fluidity, and complexity of culture. Transculturality as explored in this project is an extension to

interculturality that includes dynamic action of “going beyond culture” (Monceri, 2019). The prefix ‘Trans’ implies the rapid and continuous changes to culture through contextual interaction. Transculturality has been characterised in the literature as follows:

- decentred, context-dependent, and goes beyond categories and nation labels.
- appears in globalised, and international contexts.
- reflects negotiated, recreated, and reinterpreted collective image.
- is the continuous process of culture reformation and meaning making.

(Baker, 2021, 2020, 2018; Holliday and MacDonald, 2019; Monceri, 2019; Ryan, 2011; Welsch, 1999; Zaidi and Rowsell, 2017).

It is noted that there are no static cultural characteristics that can identify individuals who interact and communicate in different changeable settings, times, and spaces. The flow of cultural communication is always influenced by tension and power between local and global setting on one side, and virtual and physical context on the other side (Andersen et al., 2018; Baker, 2021; Pennycook, 2007; Risager, 2006; Shahini et al., 2019; Zaidi and Rowsell, 2017).

2.1.3 Transcultural approaches and digital communication

When people from around the globe meet in open virtual spaces, there is the promise that transculturality can appear and emerge (Baker and Sangiamchit, 2019; Zaidi and Rowsell, 2017).

First, there is an availability of self-expression and community. So, when participants communicate within those online spaces, they exchange perspectives, negotiate meanings, and co-create knowledge (Zaidi and Rowsell, 2017). For example, Facebook, Twitter, and blogs enable self-construction, where participants can simply and freely define themselves (profiles, tweets, posts) beyond categories, as they remix their identities and beliefs through multimedia representations.

Second, digital information and network technologies boost the movement of cultural flows beyond cultural or geographical boundaries (Kim, 2016), ensuring fluidity and circulation of transition, causing the possibility of transforming new and changeable cultural practices. As structured with hybridity, and fluidity, these spaces are amplifying transculturality as a global trend (Schachtner, 2015). Analysing the flow within these virtual spaces is a starting point to gain a deeper understanding of transcultural communication (Baker, 2018).

As an approach to explore cultural communicative practices, there have been calls for pedagogies to move beyond a superficial understanding of transculturality to an action-orientated agenda and empirically encourage these learning approaches in this connected world (Baker, 2016; Kim,

2016; Ryan, 2011). There have been several empirical efforts and approaches to address transculturality in virtual spaces. Therefore, to explore the possibility of the appearance of transcultural communication in MOOCs and how to approach transculturality, several studies related to learning and teaching in different disciplines and online environments were reviewed below.

In the field of education, the transcultural approach has been used as a framework to promote communication and collaboration between people from diverse backgrounds. In Smith and Segber's study (2018), pedagogical approaches of transcultural learning were explored through students' engagement in three diverse cultural settings as a learning field experience. Students were enabled to experience these transcultural practices successfully through observation and reflection. The study evaluated transcultural competencies (Slimbach, 2005), highlighting the importance of increasing global understanding by implementing active and reflective learning experiences as a transcultural approach for goals, content, context, and instructional strategies.

In another empirical study that explores transcultural practices, Soong et al. (2021) provide an interpretive view through reflective practices to evaluate the impact of field experiences on the process of 'learning to teach' in a teacher professional development program. Teachers as active learners were engaged in diverse cultural practices to build transcultural practices and participate in new knowledge creation creatively. The experience equipped teachers with a transcultural identity with more respect and understanding of others.

While analysing participants' engagement in an informal online discussion forum Kim (2016) coined the phrase 'transcultural digital literacies' with reference to using technology to learn and create knowledge that traverses national and cultural boundaries. She concluded that transcultural practices contributed by diverse participants on forums created complex self-representations and identities that are a mixture of languages, cultures, and places. The study concluded that transcultural digital literacies encourage active learning and innovative practices, facilitating connections and communication beyond cultural borders.

Similarly, Shafirova et al. (2020) conducted a study that explored transculturality in an online and informal collaboration fandom virtual space, which aimed to translate a novel from Russian and produce it in English for global readers. The study identified creative and transcultural meaning-making literacies through diverse participants' discussions. It is claimed that the level of appearance and frequency of transcultural communication was dependent on the type and the depth of those profound and reflective discussions. Although the emergence of these cultural forms was linked to named cultures (Russian and English), the process included complex cultural

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references and interactions between participants from different background who used Russian as their lingua franca to produce the novel in English as a lingua franca to the world.

In the same vein, Schachtner (2015) who analysed the communicative practices and discussions in a social cyberspace, found that opportunities for transculturality rose only when participants from various cultural backgrounds interacted with each other, when they were bounded by their common interests and similar goals to find their own approach, differences were negotiated and foundations became apparent for creating new mixtures. She claimed that participants' differences are dealt with depending on the degree of diversity, homogeneity, and hybridity, where people combine and reform practices, values, and perspectives to construct new ones that cannot be associated with their own or others' cultural practices. Schachtner keeps the idea of in between and hybrid culture but stresses the flexibility and complexity as well the changeable nature of these transcultural contributions.

Baker and Sangiamchit (2019) focused on communicative practices in a Facebook community, where this co-constructed space gave a degree of fluidity and creativity. The interactions observed as an online ethnographic perspective was adopted with a discourse-centre of written text on Facebook's wall, private messages with multimodal features and field notes. It was concluded that cultural practices were fluid and dynamic blurring cultural boundaries as participants moved forwards and backwards through and across cultural forms beyond borders. Factors that may have influenced the appearance of transculturality at an advanced level of transcultural communication, were that the participants already knew each other prior the formation of the Facebook group, and were also interacting offline in a physical environment (university), so the online communication was not the only channel of communication.

A transcultural design-based approach was conducted by Winschiers-Theophilus et al. (2022) to develop innovative and conductive virtual co-designed spaces in collaboration with children from diverse backgrounds. Their study expands the concept of transcultural competency through online diverse group co-designing to include adapting to various and global sociocultural settings; belonging to multiple connected transcultural communities; tolerance and openness; and cultural sensitivity using cultural cues, language, verbal, and non-verbal communication. They promoted awareness through a complex explorative mode, observing "the odd and the familiar, the close and the far, the past, present and future, the empirical and the abstract at the same time" (Winschiers-Theophilus et al., 2019, p. 423). Authors claimed that transculturality maintains recreational validity only in multicultural settings with diverse participants, where all contributions are encouraged, and transcultural dialogue can appear.

To sum up, previous research, despite being multidisciplinary and diverse in terms of context (including formal/informal, public/private, and online/offline), supports a transcultural approach as an appropriate method for exploring culture in open online environments where globalised networks and flows influence cultural exchange. These studies highlight the dynamic, complex, and critical nature of cultural practices.

It has been argued that in virtual spaces, the connection of experiences and perspectives from various cultural backgrounds renders predefined cultural classifications obsolete. These studies have led the researcher to choose the MOOC as a suitable context for a case study to investigate transculturality and identify where it is more likely to be reflected. The literature suggests that MOOC context includes participants from diverse cultural backgrounds, encourages them to engage and interact, and allows them to express their own perspectives and experiences, while being bound by a common learning interest.

Despite the recognition that people learn by participating in online discussions, there is still a lack of understanding of how this occurs in diverse and global learning contexts that transcend traditional cultural and national boundaries.

2.1.4 Pedagogic approaches to transcultural communication in learning environments

This section examines different empirical approaches to investigate and analyse cultural communication, with the aim of ascertaining the most productive method by which to unpack MOOC participants' discussions. Transcultural approach was produced using various terminologies across different disciplines and studies. For example, "transculture" (Epstein, 2009); "transculturality" (Abu-Er-Rub et al., 2019), "transcultural communication" (Baker and Ishikawa, 2021; Hepp, 2015), "transculturalism" (Welsch, 1999). Despite slight differences of expressions, they all share the view of complexity, dynamics, and communication beyond cultural borders and boundaries and reformation of cultural practices.

For the purpose of the study, a working definition of transculturality needs to include several attributes. First, to describe transculturality it must be situated in a specific context, which is here the MOOC diverse virtual environment. The MOOC is open to a continually changing set of participants, whose experiences and contributions are rooted in individual backgrounds and sociocultural attributes. Second, it is a virtual learning space where participants communicate, but with some anonymity where interactions may be happened apart from associating them with specific cultures or communities. Third, communication in the context is done using written global language (English) or English as a lingua franca. In the context of the MOOC, the connections

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between language and culture constantly change according to the diversity of the people involved.

For the purposes of this research transcultural communication is conceptualised and addressed as an extension of intercultural communication. Therefore, to explore transcultural communication empirically, it needs to refer to intercultural communication first. A vast range of models have been proposed to address intercultural competencies (Spitzberg and Changnon, 2009), with many of these models being problematic with regard to how they process the relationship between self and the others (Ferri, 2018). Einfalt (2020) critically viewed intercultural competence as having an ongoing relational nature with a continuous process of negotiation and meaning making. Several intercultural experts agreed on looking at the whole person which includes “attitude”, “knowledge”, and “skill” (Baker, 2011; Byram, 1997; Deardorff, 2006) as requisite elements to develop cultural competence.

In exploring communicative practices in pedagogy, the focus was on these three dimensions of learning, known as affective (attitude), behaviour (skills) and cognitive (knowledge). Byram's highly influential model (1997) of intercultural communicative competence (ICC) was applied in pedagogy to evaluate the development of ICC and investigate communication using these three dimensions. This model consists of five main components (Byram, 1997), attitudes, knowledge, skills of interpreting and relating, skills of discovery and interaction, and critical cultural awareness as the last but vital component.

This model is distinctive from other models in having several crucial features:

- It is pedagogical, as it focuses on the whole learning process as a combination of attitudinal, behavioural, and cognitive practices and considers all type of communication not only discourse.
- It evaluates and clusters all the elements of the model as interdependent in a learner-centred context.
- The model succeeded in developing ICC by enhancing and maintaining decentred relationships, without a reference to a “correct” or “native” norms and rules.
- It stresses the crucial role of negotiation in participants' intercultural interaction with no prior judgement.
- It focuses on collective meaning making and shared understanding, in a contextual and relational manner.
- It promotes the ability to bring critical perspective to cultural practices of one's own and other cultures.

(Avgousti, 2018; Baker, 2016; Fornara, 2018; Kusumaningputri and Widodo, 2018; Reid, 2013; Young and Sachdev, 2011).

However, there are several significant limitations regarding cultural complexity that are found in transcultural online learning environments:

- The focus on the national scale as the main association between culture and countries as separated entities.
- The formulation of teaching and learning objectives is on an abstract level and complex to measure and observe behaviour in the learning environment.
- Byram's model does not consider online contexts and the engagement of social practices within them today, as it was developed before the internet network age.

(Baker, 2016; Fornara, 2018; Avgousti, 2018).

A more flexible and fluid conceptualisation of communicative competency was taken by Baker (2011), developing the Intercultural Awareness model (ICA), which extends, and builds directly on Byram's ICC model. The ICA model replaced the ICC's fixed competencies with a range of dynamic and ongoing processes of learners' knowledge, skills, and attitudes (awareness). Baker (2015a, p.163) defined the ICA as "a conscious understanding of the role culturally based forms, practices and frames of reference can have in intercultural communication, and an ability to put these conceptions into practice in a flexible and context specific manner in communication".

The ICA model provides a holistic view in dealing with knowledge, skills, and attitudes as continuous evolving and incomplete set of elements. It has important characteristics that fit with the nature of MOOC environments where transcultural communication may be found:

- Context-dependent.
- Flexible and dynamic knowledge, skills and attitudes are adaptable and responsive to the specific communicative context.
- Constantly ongoing and emerging process.
- Critical - reflective and relational interpretation is considered to recognise and follow transcended boundaries.
- Creative - new communicative practices and resources emerge from communication.

The model focuses on the application of cultural practices as a relational set of knowledge, skills, and behaviour in interactional instances within a specific context (Sangiamchit, 2017). Table 2-1 below illustrated the components of the ICA model (Baker, 2011).

Table 2-1 Components of Baker's (2015b) Intercultural Awareness Model (ICA)

ICA Level	Conceptual ICA
Level 1 Basic Cultural Awareness An awareness of:	1- culture as a set of shared behaviours, beliefs, and values. 2- the role of culture and context in interpretation of meaning. 3- one's culturally behaviour, values and beliefs and the ability to articulate this. 4- others' culturally behaviour, values and beliefs and the ability to compare this with their own.
Level 2 Advanced Cultural Awareness An awareness of:	5- the relative nature of cultural norms, identifying similarities between cultures. 6- cultural understanding as provisional and open to revision. 7- multiple voices or perspectives within any cultural grouping. 8- individuals as members of many social groupings including cultural ones (hybrid). 9- common ground between specific cultures and an awareness of possibilities for mismatch and miscommunication between specific cultures
Level 3 Intercultural Awareness An awareness of:	10- culturally based frames of reference, forms and communicative practices as being related both to specific cultures and as emergent and hybrid in IC setting. 11- The ability to move beyond initial interaction in intercultural communication where possibly based on cultural stereotypes or generalisations. 12- ability to negotiate and mediate between different emergent communicative practices and frames of reference based on the above understanding of culture in intercultural communication.

In the first level of the model, cultural forms are simple and bounded by national references where understandings rely on generalisation and stereotypes. Moving to the second level, there is an identification of cultural complexity, containing many distinct types of cultures and communities where national culture is one of them. It is the understanding of how contextual interactions are drawn from previous experience, and comparison between cultures here is more specific with the ability to mediate and identify common ground. The third level moves interaction to a more complex, dynamic nature, where cultural practices have the possibility of not being tied to a certain culture. These cultural forms are fluid moving through and across many cultural scales, blurring the boundaries and may change or transcend to something new during interaction (Baker and Ishikawa, 2021).

In adopting the ICA model, Baker (2012) pointed out the following:

- Learners may not develop these elements in this exact order. For example, learners may be unconsciously or consciously aware of some later components of the model.
- Components of ICA are general in nature since the details are contextual, depending on particular interactions within the learning environments.
- Exploring IT/technological media through asynchronous or synchronous communication is useful to explore cultural representations, and it enables learners to develop ICA by engaging them in actual instances of IC, then reflecting on its relevance to their own experiences.

However, as for any other model, it has its limitations which Baker (2015b) listed:

- The ICA model explores intercultural communication in (ELF) settings, but it is not a representation of reality. It simplifies and distinguishes things for analytical purposes that may not be so clear-cut in real-life communicative practices.
- The ICA model outlines the necessary knowledge, skills, and attitudes for intercultural communication, but not the specific resources needed.
- The ICA model cannot account for all the complex systems involved in intercultural communication, such as the interconnected language, communication, and culture which cannot be easily separated for analysis, so a holistic view was the approach.
- The ICA model only addresses interactional competence at a general level. For a full understanding of intercultural competence, an awareness of interactional strategies needs to be additionally included. The specific details of what constitutes communication will depend on individual situation.
- The ICA model may not be suitable for situations with clearly defined groups and normative communication practices, as it was designed to explore ELF communication.

The ICA model was adopted and validated empirically by Baker in collaboration with other researchers in several different educational settings targeting different populations, (Abdzadeh and Baker, 2020; Baker, 2015b, 2013, 2012; Humphreys and Baker, 2021; Kusumaningputri and Widodo, 2018; Yu and Maele, 2018). All these studies aimed to develop and promote intercultural awareness in formal educational settings although participating in their research was optional. All used pedagogical interventions except for Humphreys and Baker's (2021) which investigated ICA before and after an international experience. Interventions in the research by Abdzadeh and Baker (2020), and Yu and Maele (2018) excluded the third level of the model, as they saw it was not feasible for short courses to develop this advanced and complex level of ICA.

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In contrast, Kusumaningputri and Widodo (2018) found their intervention significant to promote the ICA level3. However, all the studies claimed the significance of level1 and 2 to some extent, where it is more apparent in some cases than others. It has to be noted that level3 appeared in Baker (2015a), Humphreys and Baker (2021), and Kusumaningputri and Widodo (2018) in a few instances in their research but was only significantly evident in Kusumaningputri and Widodo's.

This study, therefore, aims to contribute to findings on intercultural awareness by applying the model to a multicultural MOOC to explore transculturality. This research is distinct from previous studies in that they were targeting students of the same national background, whereas this study explores transcultural awareness in MOOC participants from different backgrounds, in a multicultural learning setting. Also, previous studies have aimed to promote intercultural awareness, whereas here, this study aims to identify to what extent this higher level of awareness occurs naturally without interference in this complex context.

2.1.5 Transcultural Awareness Model (TCA): The Integrated Version

There is a need to explore, understand and adapt MOOC spaces constructively according to the ongoing dynamic differences in the participants' life worlds (real and virtual), beyond what cultural contrast can explore in intercultural communication (Andersen et al., 2018). Transcultural approaches have much to offer for this study to understand the connection between the co-construction of knowledge and cultural interaction in the process of meaning making, negotiation, and learning in this online context. The growth in transcultural approaches to research is an indication of how important it is to maintain effective, flexible, and open communication and awareness when interacting with diverse people in physical and virtual communities and contexts.

For the past decade transcultural perspective have revolved around different models and frameworks of communication (e.g. Deardorff, 2006; Slimbach, 2005; Ting-Toomey and Dorjee, 2018) as recipes for sufficient communication, assessment, or investigation it in relation to other approaches or theories in pedagogy, such as the "dialogic approach" (Einfalt, 2020), "Transformative learning" (Jurkova and Guo, 2021), "English as a lingua franca ELF- aware model" (Hori, 2018), "Content- and task-based teaching" (Juan-Garau and Jacob, 2015), and "connectivism theory" (Ersoy and Kumtepe, 2021). Unfortunately, there is little research exploring transcultural practices in massive open online learning (Ersoy and Kumtepe, 2021), and a gap correlating transcultural awareness of learners with meaningful and collective knowledge construction in MOOCs.

The current research found that Baker's ICA model for analysing learners' MOOC contributions and discussions is the most relevant and appropriate model for several reasons. First, the model

considers the global, fluid context and the diversity of participants' contextual contributions. Second, it treats discussions in an abstract and holistic way, taking into account knowledge, skills, and attitudes. Third, it supports the interpretation of interactions and engagements as they happen in interactional instances in that specific context. Finally, the model does not deny the existence of national or named cultures or contradict them. Rather, it builds and extends this approach to capture the whole picture of dynamic, fluid, and complex culture as a process and communicational practice.

This study takes a step forward in updating the model's name to be more expressive of what it does and in line with its role in investigating fluid online communicative practices. The researcher specifies the adaptation of Baker's (2011) ICA model, renaming it the "Transcultural Awareness Model (TCA)" to explore diverse learners' dynamic interactions in the virtual and complex setting. Baker and Ishikawa support this development, stating that "Transcultural Awareness might be a more accurate term, since 'trans-' is a more appropriate prefix and spatial metaphor than 'inter-' for much communication through Global Englishes" (2021, p.282), as is the case with multicultural MOOCs using English as a medium of learning, teaching, and communication.

The term awareness is used in this study as it is in Baker and Ishikawa (2021) and Ishikawa (2021) to present a holistic reference to the whole set of knowledge, skills, and behaviour avoiding the distinction between competence and performance, and emphasising the flexibility of emergent communicative practices with the focus on contextual peer interaction.

Moreover, the three levels of the original ICA were reviewed and updated, referring each level name to the cultural approach its perspectives and practices represent. In this way, the relationship between the different levels and their overlapping and non-linearity becomes clearer as follows:

- Level1: Basic Cultural Awareness is changed to Cross-Cultural Awareness, where the national scale and countries are the main reference in communication.
- Level2: Advanced Cultural Awareness is named to Intercultural Awareness, where this level contains more complex way of communicating through interaction (comparing, mismatch, misunderstanding situation, negotiation, and mediating) but still maintaining the separate and named cultures.
- Level3: Intercultural Awareness here is altered to Transcultural Awareness for more accuracy, looking into the fluidity and complexity of cultural practices and how they transcended through communicative experiences.

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The development of these concepts has been evolved and shaped overtime to better present the current globalised and technologically connected era.

Furthermore, the holistic view of the ICA model that is based on a mixture of empirical and theoretical investigations (Baker, 2015b) allows the researcher to reconsider and rearrange the components of each level to suit the purpose of the study observing transcultural awareness as it is presented naturally through contextual discussions. Baker's (2015b) illustration of the dynamic relationship between the elements of the model (attached in Appendix A) supports the adoption of conceptual and practical components combined, as participants in the MOOC may draw on their previous knowledge and skills to communicate, leading to a renewal and adaptation of their knowledge, skills, and behaviours. The integrated TCA model is applied as illustrated below:

Table 2-2 The integrated Transcultural Awareness Model TCA

TCA levels	Description
Level1: Cross-cultural Awareness	<ul style="list-style-type: none">• Articulate one's cultural perspective.• Compare cultures at a general level.
Level2: Intercultural Awareness	<ul style="list-style-type: none">• Move beyond cultural generalisations and stereotypes in interaction.• Comparing between cultures at a specific level.• Mediate and find common ground between specific cultures.• Awareness of possibilities for mismatch and miscommunication between specific cultures.• Awareness of multiple subcultures and groupings within one culture.
Level3: Transcultural Awareness	<ul style="list-style-type: none">• Negotiate and mediate between different emergent and dynamic cultural and contextual communication modes and frames of reference.

The study aims to investigate the extent to which learners' discussions in a MOOC reflect markers of transcultural awareness and adopting this integrated model will help achieving this goal and address the first research question of this research. In the next section, literature on the context of the study 'multicultural MOOC' is discussed in detail demonstrating its unique features and functions, and setting the criteria for choosing the case which will be explored for testing the association between transcultural awareness level and presenting a MOOC comment that shows collective knowledge construction.

2.2 Making sense of the context: Multicultural MOOCs

The term MOOC stands for Massive Open Online Courses. MOOCs are popular "Courses" that provide access to knowledge and informal learning "Online" from high reputation institutions

with the potential to serve a “Massive” number of learners, in an inclusive “Open” way (Tawfik et al., 2017). With reference to the previous section 2.1.5, it can be stated that transcultural awareness provides the ideal framework for analysing online interactions in MOOCs.

Transculturality may be more likely to appear in the context of a MOOC, as many of the factors and characteristics which facilitate the appearance of transculturality can be identified or produced in MOOCs.

That leads us to the discussion of which type of MOOC should be explored and investigated. Although MOOCs are now known for their flexible multimodality beyond the popular binary classification of extended and connectivist (xMOOCs and cMOOCs respectively) (Sallam et al., 2022), the literature has intensively reported and distinguished between these two main types or models (Andersen et al., 2014; DeWaard et al., 2011; Ebben and Murphy, 2014; Knox, 2018; Nordin et al., 2016; Siemens, 2013; Stahl, 2017; Zhu et al., 2021). Generally, the main difference between the two types is that cMOOCs are learner-centric where knowledge is distributed via various social networking platforms, while xMOOCs uses centralised platform with structured content. More details of the differences and challenges of each MOOC type have been extracted from the literature, summarised, and are illustrated in a table attached in Appendix B.

However, both forms of MOOC share main common elements; they both offer learning and connect substantial number of learners across geographical boundaries (Rolfe, 2015); they both provide outlines of course general structure (Veletsianos and Shepherdson, 2016); and facilitate learner engagement and communication through discussion forums, to complete a task or create new knowledge around a topic (Mcminn, 2014).

Going beyond the simple distinction, MOOC pedagogy attempts to balance between the disruptive elements of cMOOCs and xMOOCs for ease of management to overcome these challenges, especially where several forms of hybrid MOOCs have arisen (Bozkurt and Keefer, 2018; García-Peña et al., 2018; Osuna-Acedo et al., 2017). This emergent integrated aspects of network-based cMOOCs, where learners are collaborative, with content-based xMOOCs (Krasny et al., 2018), to form a dynamic flexible model.

Nowadays however, the difference between the cMOOCs and xMOOCs is unclear, since many features such as interactions, technological tools, and approaches as well as openness are applied to both to some extent which make the terminology more blurred (Rolfe, 2015). Veletsianos and Shepherdson (2016) described MOOCs as evolving environments that stand on a design spectrum between cMOOCs and xMOOCs characteristics. Although MOOC platforms are pedagogically designed for certain goals, MOOCs cannot be considered as independent from social interactions or their affect. Although MOOC pedagogy is embedded in some MOOC platforms, according to

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Bayne and Ross (2014) it should be revised and negotiated as multiple social, contextual, and material factors influence them.

Major xMOOC platforms like Coursera, EdX and FutureLearn have been inspired by the connectivist pedagogical approach, adding more social features and functions to their courses other than discussion forums, such as peer reviews, connecting to other social platforms such as Facebook, Twitter, and Hangout (Håklev et al., 2017). Additionally, platforms are attempting to boost social learning and learner-centred discussions, such as ‘study groups’ in FutureLearn, ‘Meet up’ by Coursera, and ‘Cohorts’ on edX (Manathunga et al., 2017).

To conclude, a MOOC model must support scalability, heterogeneity, and communication to ensure a better learning experience for learners (García-Peña et al., 2018). For the purpose of the research, the FutureLearn MOOC platform was chosen for their strong pedagogical approach embedded in its design that is based on dialogic learning and conversational framework (Laurillard, 1993). The research aims to follow and analyse participants’ interactions and communication which can be achieved in a contained way, as the only channel for peer interaction in the chosen course was within the platform learning environment. More details on the specific context will be given in Chapter 3, section 3.4.

2.2.1 MOOC Discussion Forums

Discussion forums are the primary and sometimes the only venue for peer interaction and social learning through asynchronous communication in xMOOC environments.

Asynchronous online discussion refers to a text-based online learning activity in which learners interact with each other or the instructor, and participate in discussions about a specific topic through posting and/or replying (Darabi et al., 2013; Wu, 2021). Therefore, MOOC discussion forums can be considered as a primary space and a beneficial tool to support collaborative knowledge construction (De Wever et al., 2010), where learners can reply, ask questions, interact with others, and elaborate on others’ posts or replies (Wu, 2021). As such, the “textual dialogue” provides unique MOOC learners-generated data (Ezen-Can et al., 2015). Alario-Hoyos et al. (2014) considered using data from different social tools that can be applied in MOOCs, such as the discussion forum, Facebook, or Twitter, among others. They concluded that the forum was the preferred tool for MOOCs.

With interactional tasks in discussion forums, learners have the time and space to think and engage with each other with deliberate thought. Moreover, learners have the benefit of being free beyond time and space, to think, read peers’ responses critically, analyse the shared

information and insights, evaluate different perspectives, and consider their position before responding to others (Boud et al., 2001; Griffin, 2019; Paul and Elder, 2012). Many studies on MOOC discussion forums have suggested that forum activities are associated with better learning performance (Chiu and Hew, 2018; He et al., 2018; Swinnerton et al., 2017), promoting communication skills and enhancing problem solving and collaborative learning (Al-Ibrahim and Al-Khalifa, 2014).

There are many challenges encountered in relation to asynchronous communication that influence learner participation in discussions, such as response-time delay, absence of shared context, and lack of immediate feedback (Oeberst and Moskaliuk, 2016). In addition, learners may not be motivated to participate or value participation in discussion forums, when learning goals are not clearly stated (Mettiäinen and Vähämaa, 2013; Petal, 2021). Additionally, some learners are not competent writers, while others do not know how to engage in a discussion, or respond to others (Hancock, 2016). Moreover, asynchronous discussion forums may cause stress, or elevate frustrations and anxieties, leading to missed learning opportunities (Yeh, 2010).

In reviewing the literature, two issues have been raised and observed. First, research has mainly focused on discussions within formal learning environments, where participants are usually from the same institution and share similar educational levels and/or background (Hew et al., 2010), rather than on informal settings such as those provided by MOOCs (Wise and Paulus, 2016).

In contrast, the nature of MOOCs and their learners are different. MOOC participants are voluntary (Alraimi et al., 2015), autonomous learners (Mısır et al., 2018), and do not know the majority of their peers (Gillani and Eynon, 2014). They are selective about what is beneficial to them when it comes to participation or engagement (Onah et al., 2014). Hew et al. (2010) concluded in their systematic review of asynchronous online discussions that selective participation and learning process preferences, present challenges to measure or evaluate learning experiences in MOOCs, as opposed to the clear-cut situation of formal and conventional online courses. Learners in MOOCs are diverse in their goals, backgrounds, cultures, and experiences.

Second, analysis of asynchronous discussions has been dominated by assessing the quantity of interaction rather than the quality (Wise and Paulus, 2016). For example, MOOC research by Coetzee et al. (2014) have interpreted learner engagement as number of comments viewed and posted in discussion forums, and correlated forum engagement with high grades and retention. As well, Tubman et al. (2016) explored quantitatively the depth of learning and knowledge construction through linking forum participation with length of conversations and number of

replies. Moreover, Liu et al. (2022) used machine learning and automatic quantitative analysis to associate social interaction and cognitive processing with learning achievements in MOOC forums.

Although discussion forums have been identified as rich resource of interaction data to explore levels of participation and engagement, they can as well provide significant aspects to observe and investigate the quality of interaction through conducting content analysis techniques (Joksimovic et al., 2014). The content of learner contributions through posts were examined and found correlated significantly with learners' activities and learning outcomes (e.g. (Wang et al., 2016). Learners' interactions in MOOC discussion forums are also valuable to explain learning behaviours and predict learning outputs (Lu et al., 2020), as well identifying social and cognitive presence (Barbosa et al., 2021).

Almatrafi and Johri (2019) reviewed research on MOOC discussion forums from a content analysis perspective. They identified three major areas of interest; the association between participation activity, performance, retention and learning outcomes; content organising and learners contributions' monitoring; and participants' interactions and how they influence learning. Their study suggests continuing to explore learning processes in forums and understanding how to foster meaningful conversations and investigate what factors contribute to the appearance of deep learning in MOOCs.

Therefore, considering multicultural MOOC learners' contributions qualitatively and quantitatively with different perspectives, experiences and cultures might indicate the overall quality of collective knowledge presented in discussions and highlight the enrichment of the learning experience.

2.3 The Co-Construction Knowledge (CK)

The UK Institute of Directors has commented that communication and collaboration are crucial skills for the future of education environments across the globe (Cukurova et al., 2017). MOOCs' openness and multicultural context, facilitate global knowledge sharing and creativity by enhancing socialisation and collaboration, as well as preparing learners to have 'open' minds and behaviours (Collazos et al., 2014; Osuna-Acedo et al., 2017; Stahl, 2020). There is an increasing demand towards MOOCs pedagogical approaches to encourage social interactions and promote collective knowledge (Håklev et al., 2017).

However, MOOCs unique features such as massiveness, openness, learner diversity in terms of education, culture, goals, and experience, and their informal setting represent complex challenges to measure learning. Previous research has explored many ways to evaluate learning outcomes in

MOOCs through grades, certification, and completion rates (Baker et al., 2016; Crossley et al., 2016; El Said, 2017). Yet these do not necessarily reflect the learning outcomes (Joksimović et al., 2018) of voluntary learners (Alraimi et al., 2015) or highly autonomous learners (Shearer et al., 2014), who have their own unique combination of motivations and goals that may not assign importance to grades, certificates or even the need to finish a course.

Later, research shifted to understanding learning as an ongoing process through investigating different log data or clickstream data (Maldonado-Mahauad et al., 2018; Saman et al., 2020), and looking into learners' engagement and participation with the course or with other learners (e.g., Bereiter and Scardamalia, 2014; Wu, 2021) either by manual coding (Tubman et al., 2016), or automatic content analysis (O'Riordan et al., 2016).

The quality of learning is problematic and complex to measure because many considerations and factors contribute to it. It is beneficial to concentrate on major factors that affect learners and are linked directly to them (Martín-Monje and Borthwick, 2021). The quality of the knowledge that learners produce collectively, and how it is produced are considered influential factors in the overall quality of the MOOC (Khalil and Ebner, 2013; Luo and Ye, 2021).

Social peer interaction as an ongoing process and a productive output within discussion forums in MOOCs, is considered a primary factor that is associated with learning. These social interaction platforms facilitate peer support and feedback where learners share, reflect and construct knowledge collaboratively. The asynchronous nature of communication helps learners to articulate concepts, share different perspectives, evaluate practices, and support the process of co-construction of knowledge (Wu and Hiltz, 2004).

Therefore, meaningful peer discussions and knowledge co-constructed are considered rich learning resources for diverse global learners (Hmedna et al., 2019), whether they are active learners who participate in discussions to extend their learning experience (Kellogg et al., 2014), or are passive learners who prefer to read simply these discussions. Either way, dynamic online discussions serve to clarify and add value to the static course content (Macfadyen and Dawson, 2012). MOOCs are considered to be an ideal environment for knowledge co-construction since they allow openness, scalability and diversity of learners and provide spaces for interaction for participants to articulate perspectives, as well as negotiate, elaborate and contribute make meaning (Chen and Yeh, 2021).

In multicultural MOOCs, well crowdsourced evidence showed that participants are willing to share their experience and knowledge with peers (Darras, 2018). Vygotsky asserted that individual learning is modified and adapted by social interaction with others (Vygotsky and Cole, 1978). It is

the result of negotiation and meaning making discourse. Sharing multiple perspectives of knowledge and building intersubjective meaning is a crucial process that happens during collaboration (Håklev and Slotta, 2017; Stahl, 2017).

2.3.1 CK Conceptualisation

In the literature, there are many associated and overlapping terms that are related to co-construction of knowledge. First, knowledge sharing which refers to the transmission theory of communication (Pea, 1994). It is defined by Dubovi and Tabak (2020) as: “The activities in which individuals make their own internally stored knowledge and/or external knowledge sources that they have at their disposal accessible to others”. Research show that knowledge sharing is a common online practice among learners (Fu et al., 2016). However, it does not necessarily lead to knowledge construction or involve interpretation, evaluation, or development (van Aalst, 2009). Knowledge sharing in socio-learning environments such MOOC forums is not enough. To gain a deeper understanding and expand knowledge around a topic, information needs to be elaborated through comments, questions, and summaries (Arvaja et al., 2007).

In the literature reviewed, it was found that the terms ‘knowledge building’ and ‘knowledge construction’ were sometimes used interchangeably. According to Paavola et al. (2002) the concept of knowledge building refers to “collective work for the advancement and elaboration of conceptual artifacts, such as theories, ideas, and models”. However, van Aalst (2009) differentiates between knowledge construction and knowledge creation. According to van Aalst (2009, p.261), knowledge construction refers to “the processes by which students solve problems and construct understanding of concepts, phenomena, and situations, rooted in cognitive psychology, and focused on individual cognitive changes. It is effortful, situated, and reflective, and can be individual or social.” Van Aalst associated knowledge construction with deep and constructivist learning, where learners’ engagement ranges from “simple information processing to deeper processing with reflection leading to knowledge restructuring and on to metacognitive processing.”

On the other hand, van Aalst (2009) suggests that knowledge creation involves more than the creation of new ideas. It requires participation (talk, writing, and other actions) to determine limitation of knowledge, set goals, investigate problems, promote the impact of new ideas, and evaluate the advancement of knowledge. Aalst, (2009) differentiated between learning as the acquisition of mental representations (knowledge construction) and learning as participation (knowledge creation), where ideas exist in the discourse rather than in people’s minds yet, supported the importance of both in understanding learning.

Bereiter and Scardamalia (2014) disagree with van Aalst, suggesting that idea improvement is a core knowledge building principle, and in practice, the problem space for knowledge building is larger and more complex than the limited scope of problem space for knowledge creation. Knowledge building is a popular term in educational contexts and well known as a learning and educational approach that focuses on the advancement of community knowledge, whereas knowledge creation is an established term in businesses research and is “carried out in adult knowledge work” in the short term. A clear conceptualisation of these similar terms and acknowledgment of different perspectives is important and helpful when dealing with and interpreting them.

For the purpose of the study, the terms collaborative knowledge construction (CKC), co-construction of knowledge, and collaborative knowledge building are used interchangeably in relation to “collective responsibility” and referring to the social process in which participants engage in collective modification and examination of each other’s ideas, leading to their improvement through productive social interactions. The different and distinct voices identify dissonances and adopt differential positions; they negotiate, and provide justified arguments in the process of building and co-constructing new knowledge (Bereiter and Scardamalia, 2014; Gutiérrez-Braojos et al., 2019; Stahl, 2006).

The current study refers to these terms to present them in a multicultural learning environment as an educational context. And with the word ‘collaborative’ or the prefix ‘co’ added to these terms, it is made clear that they are rooted in a collective and social constructivism, where the collective result in the MOOC discussion forum will be “greater than the sum of individual contributions and part of broader cultural efforts” (Scardamalia and Bereiter, 2003). Furthermore, knowledge creation is considered not to be occurring, as the goal and scope of these threaded activities as discussions do not provide artifacts or produce a final unified output rather, they produce collective insights and a broader view of knowledge.

2.3.2 CK Theorisation

Theoretical support for knowledge co-construction in the MOOC context of this study lies in social constructivism as a learning theory underpinning this research. It focuses on how learning and knowledge is constructed directly from social interaction in a social setting (Bozkurt, 2017; Vygotsky and Cole, 1978). Social constructivism was developed by the influential Russian psychologist Lev Vygotsky, who emphasised the role of culture in cognitive development and the learning collaborative nature of learning that is inseparable from the social context.

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To better understand social constructivism, concepts related to social learning and the development of knowledge were reviewed. It is important to differentiate between knowledge and learning. According to the theory, knowledge is generated in collaboration with others in the environment (Vygotsky and Cole, 1978). Although learning takes place through collaboration, it remains an internal process. Therefore, individual learning is the output of the iterative process of knowledge construction (Shaikh et al., 2017), and an advanced level of social knowledge building is acquired through the dynamic relationship between individual cognition and social interaction (Littleton and Mercer, 2013; Tubman et al., 2016).

Vygotsky's assertion that peer interaction facilitates knowledge building by bringing diverse views and perspectives to the learning space is taken a step further to investigate the possible association between the depth of knowledge co-construction and transcultural awareness, and to identify linked approaches to enriching learning the experience and promote the quality of MOOCs.

The conversational framework of Laurillard (1993) is considered influential to the current study, since on MOOC platforms, conversations are positioned and directed towards immediate interpretation of the content. The 'discussion in context' approach taken by the FutureLearn MOOC platform allows designing each activity 'step' of learning to support self-reflection and conversations with others by building on participants' previous experience and existing knowledge (Tubman et al., 2019).

The conversational framework determines learning as an iterative process between reflecting within oneself and conversing with others. Based on this, clarifying concepts, sharing experience, evaluating content, and debating with peers are all important (Laurillard, 1993). Therefore, this approach may be warranted to achieve the cycle of the conversational framework (Tubman, 2019) that is compliant with social constructivism and its bases, and thus it is more suitable to examine how this design may invoke distinct levels of cultural communication and examine the quality of knowledge co-construction.

2.3.3 CK Operationalisation (empirical studies)

From a social constructivist perspective, learning is a dynamic and complex social process. Therefore, recently online learning and teaching have gradually shifted more towards social learning and collective knowledge building, whether in formal (Vuopala et al., 2019) or non-formal settings (Beltrán Hernández de Galindo et al., 2019). As a result, the focus of research has also moved toward exploring the quality of co-construction of knowledge and understanding the interactive processes to build this knowledge.

There are many studies that have investigated knowledge co-construction (De Wever et al., 2006; Dubovi and Tabak, 2020; Floren et al., 2021; Zhang et al., 2021). Factors that are associated with knowledge construction have been noted by many researchers, such as shared understanding and group cognition (Stahl, 2006); deep learning (Garrison and Cleveland-Innes, 2005); high-quality outcomes (e.g. (Barron, 2003); concept mapping to foster knowledge co-construction (Farrokhnia et al., 2019); response time delay (Huntley and Thatcher, 2008); and learners postings characteristics (Goh, 2019).

In relation to MOOC context, Almatrafi and Johri (2019) have systematically reviewed studies on discussion forums in MOOCs from 2013–2017. They found that sixty four percent of the studies investigate interaction and knowledge creation. This indicates the importance and power of collective knowledge in these settings. It has been claimed that participation in discussion forums especially topic related ones, have increased and reflected learning more than in previous similar courses (Dowell et al., 2017).

Peer interaction in MOOCs plays a critical role in developing knowledge construction, as it fosters meaning-making through collective discussions (Castellanos-Reyes, 2021). Pahl-Wostl and Hare (2004) assert that learning is an iterative process includes feedback between learners and the learning environment. Thus, knowledge construction through learner interaction not only affect peers' behaviour but also change the context, which in turn influences participants (Sol et al., 2013). Previous research has shown that peer interaction (posts, replies) in MOOCs (Tawfik et al., 2017) is essential for learner retention and course completion. Also, effective, and open communication promote engagement when participants respond to their peers' comments (Goggins et al., 2016)

Literature has identified why the MOOCs might be a rich learning environment and an ideal context for collective knowledge construction. First, the diverse backgrounds of MOOC learners (Chen and Yeh, 2021) encourages peer scaffolding in building new knowledge (Almatrafi and Johri, 2019), where participants assist each other in understanding new knowledge based on their prior knowledge and experience (Sharif and Magrill, 2015). Using discussions as a communication channel, participants reflect, read, elaborate, negotiate, and suggest solutions to presented problems, thus, co-constructing knowledge (Stacey, 1999).

Second, MOOCs as lifelong and informal learning environments may go beyond knowledge sharing to knowledge co-construction, since they enable each participant to benefit from a wide variety of perspectives and experiences, by interacting with others and discussing the content, thus benefit from the potential to knowledge construction (Dubovi and Tabak, 2020; Galikyan et al., 2021).

To conclude, this study intends to investigate the quality of MOOC participants' discussions through analysing their comments to evaluate the extent to which they reflect markers of knowledge co-construction and promote learning. In the next section, several analytical models are reviewed critically, leading to the discussion of the most suitable framework for the purpose and the context of this study.

2.3.4 **Analysing the Co-Construction of knowledge**

It is important to understand the dynamics of knowledge construction in MOOCs given their potential to encourage successful communication between highly diverse learners, and enriching the learning experience, as it serves to promote the quality of MOOC courses. Knowledge co-construction frameworks provides structures for observing and characterising learning behaviours and help to shed light on the quality of learner interactional discussions (Floren et al., 2021). Several analytical tools have been produced to assess the quality of learners' discussions (i.e., (Lucas et al., 2014)), and to capture interaction dynamics (Tawfik et al., 2017) to promote collective learning online. Content analysis (quantitative and/or qualitative) is the most used analytical method to examine asynchronous online discussion forums (Ahmad et al., 2022) and evaluate the nature of learners' interactions (Cohen et al., 2019).

To start with, Gunawardena et al. (1997) reviewed the available interaction analysis models for the purpose of transcription analysis of a computer conference. They considered several models such as that of Henri (1992), with its social, interactive, cognitive, and metacognitive dimensions; Garrison (1992) who featured critical thinking; and Newman et al. (1995) who combined critical thinking stages with the cognitive skills dimension. Gunawardena et al. asserted that these models were less specific and unclear in their ability to assess the knowledge-building process that takes place through social negotiations in a discussion (De Wever et al., 2006).

The tested models were found to be insufficient for analysing computer-mediated communication due to several limitations: focus on teacher-centric environments (Hall, 2010), lack of clarity or relevance of theoretical concepts of interaction, problematic units of analysis due to focus on mechanistic relationships rather than the whole learning experience, difficulty distinguishing between cognitive and metacognitive dimensions, and, most importantly, models lacked information on testing for reliability (De Wever et al., 2006; Gunawardena et al., 1997).

Therefore, Gunawardena et al. (1997) established their own analytical tool (the Interaction Analysis Model, IAM) to study the co-construction of knowledge in asynchronous online discussions by participants. Supporting this approach, Marra et al. (2004) concluded that the IAM model provides a holistic view of discussion forum flow and knowledge construction, although

researchers need to create coding guidelines and procedures in advance to aim for concrete operation of knowledge building.

Later, De Wever et al. (2006) reviewed fifteen content analysis tools in relation to asynchronous computer mediated discussions in learning environments. The study evaluates those instruments according to three important considerations (Ahmad et al., 2022; De Wever et al., 2006; Lucas et al., 2014):

- 1- The model theoretical background (e.g., critical thinking - theories of cognitive - social constructivism – social network theory - community of inquiry – social presence).
- 2- The choice of the unit of analysis (message, paragraph, Krippendorff's alpha, sentence, and theme).
- 3- The model inter-rater reliability (not reported, Holst's coefficient, percent agreement, Cohen's kappa, code-recode and interrater procedures).

Any instrumental protocol of evaluation needs to be validated in research. Rourke and Anderson (2004) stated that researchers often do not provide adequate information to assess the effectiveness of content analysis protocols. Therefore, it is suggested that previously developed protocols be used, instead of creating new ones, as that will increase replicability and overall validity of existing models.

The popularity of the Interaction Analysis Model (IAM) (Gunawardena, et al. (1997), has resulted in the accumulation of validity in examining the process of the social construction of knowledge by observable interaction phases. The model has been one of the most frequently used and empirically validated instrument for examining knowledge construction in online discussion forums (Floren et al., 2021; Goggins et al., 2016; Hall, 2010). Thus, it is the most appropriate model to use as a framework for analysis in this study.

2.3.5 The Interaction Analysis Model (IAM)

Hall's (2010) study concluded that the IAM is an important instrument and a validated protocol for content analysis of virtual learning environment transcripts. In reviewing forty empirical publications that used the IAM from 1997 to 2010, Hall found that 22 of them showed levels of inter-rater reliability. Gunawardena et al. (1997) stressed that the social construction of knowledge is the result of interaction, meaning negotiation, and building of shared understanding. They defined interaction as “the totality of interconnected and mutually responsive messages” and “the entire gestalt formed by the online communications among the

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participants" (Gunawardena et al., 1997, p. 407). They characterise knowledge construction as a kind of patchwork quilt made by many unique messages sewn together.

The IAM model has been developed to facilitate the meaningful qualitative analysis of online discussion forums to detect co-creation of knowledge, through peer interaction and meaning negotiation process based on constructivist theorisation (Gunawardena et al., 1997; Lucas et al., 2014). Lally (2000) stressed that this analytical model contains key features in understanding learning in collaborative learning environments (i.e., straightforward schema, adaptable to a range of learning contexts).

The IAM consists of five successive (but not necessarily sequential) phases, where each comment is categorised under one and only one phase of the collaborative knowledge construction model as follows:

1. Sharing and comparing information (observation, opinion, statements of agreement, description, examples, identification of a problem).
2. Discovery of dissonance, disagreement, or inconsistency (ideas, concepts, or statements).
3. Negotiation of meaning resulting in co-construction of knowledge.
4. Testing and modification of the newly constructed knowledge against existing cognitive schema, experiences, and literature.
5. application of newly constructed meaning (summarising, agreements of new knowledge).

Figure 2.3 illustrates the IAM model and outlines more detail of the five phases of knowledge co-construction (Gunawardena et al., 1997):

PHASE I: SHARING/COMPARING OF INFORMATION. Stage one operations include:	
A. A statement of observation or opinion	[PhI/A]
B. A statement of agreement from one or more other participants	[PhI/B]
C. Corroborating examples provided by one or more participants	[PhI/C]
D. Asking and answering questions to clarify details of statements	[PhI/D]
E. Definition, description, or identification of a problem	[PhI/E]
PHASE II: THE DISCOVERY AND EXPLORATION OF DISSONANCE OR INCONSISTENCY AMONG IDEAS, CONCEPTS OR STATEMENTS. (This is the operation at the group level of what Festinger [20] calls cognitive dissonance, defined as an inconsistency between a new observation and the learner's existing framework of knowledge and thinking skills.) Operations which occur at this stage include:	
A. Identifying and stating areas of disagreement	[PhII/A]
B. Asking and answering questions to clarify the source and extent of disagreement	[PhII/B]
C. Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected, or proposal of relevant metaphor or analogy to illustrate point of view	[PhII/C]
PHASE III: NEGOTIATION OF MEANING/CO-CONSTRUCTION OF KNOWLEDGE	
A. Negotiation or clarification of the meaning of terms	[PhIII/A]
B. Negotiation of the relative weight to be assigned to types of argument	[PhIII/B]
C. Identification of areas of agreement or overlap among conflicting concepts	[PhIII/C]
D. Proposal and negotiation of new statements embodying compromise, co-construction	[PhIII/D]
E. Proposal of integrating or accommodating metaphors or analogies	[PhIII/E]
PHASE IV: TESTING AND MODIFICATION OF PROPOSED SYNTHESIS OR CO-CONSTRUCTION	
A. Testing the proposed synthesis against "received fact" as shared by the participants and/or their culture	[PhIV/A]
B. Testing against existing cognitive schema	[PhIV/B]
C. Testing against personal experience	[PhIV/C]
D. Testing against formal data collected	[PhIV/D]
E. Testing against contradictory testimony in the literature	[PhIV/E]
PHASE V: AGREEMENT STATEMENT(S)/APPLICATIONS OF NEWLY-CONSTRUCTED MEANING	
A. Summarization of agreement(s)	[PhV/A]
B. Applications of new knowledge	[PhV/B]
C. Metacognitive statements by the participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the conference interaction	[PhV/C]

Figure 2.3 Knowledge construction Phases of the IAM Model
(Gunawardena et al., 1997, p. 414)

2.3.5.1 Limitations

IAM's creators acknowledged that it has some limitations; first, it lacks understanding and measurement of interpersonal dynamics of social knowledge construction and interaction beyond this categorisation (Gunawardena et al., 2016; Lucas et al., 2014). To overcome this, context-aware and sequential analysis were taken into consideration while analysing, and interviews were combined as a method for support and integration of the findings.

Second, and according to De Wever (2006) the coding scheme of IAM does not differentiate between the lower cognitive processes, yet it discriminates more advanced levels of knowledge construction, such as testing and applying newly constructed knowledge. This study with its correlational nature, concentrates on these levels in general and not on their specific

components. Moreover, these higher levels of the model are the concern of the research to investigate. Additionally, the study scope is holistic in nature, investigating learners' comments upon attitude, behaviours and cognitive, the specific cognitive categories are out of the scope of this study.

Third, research has shown that most interactions occurred in phase 1 with few discussions moving beyond that phase (Lucas et al., 2014). According to Cheng et al. (2019) participants may find it hard to move to a higher level when reaching to agreement or disagreement. Possible explanations for this are: insufficient guidance, unclear goal, lack of motivation especially in the highly structured format of text-based discussions, lack of online communication skills, and lack of experience in managing interaction.

It has been suggested that high structured activities might limit higher levels of knowledge construction discussions (Lucas et al., 2014; Zhu et al., 2021). While moving from one level to another is not sequential and not a necessary condition for higher levels, as it is always a context specific interaction (Lucas et al., 2014), that makes it interesting to investigate in a multicultural learning environment.

2.3.5.2 Application of IAM

Since the development of the IAM, it has been applied widely, especially to analyse asynchronous text-based discussions online (e.g. Batarelo Kokic and Rukavina, 2017; Belcher et al., 2015; De Wever et al., 2006; Hew and Cheung, 2011; Huntley and Thatcher, 2008; Moore and Marra, 2005). It was famously adopted for analysis in formal educational settings and conventional online courses to explore or evaluate interaction and the level of the social construction of knowledge. For example, Moore and Marra (2005) investigated forum discussions to evaluate the level of knowledge construction, and found that less structured discussions reached a higher level of knowledge building. Yang et al. (2008) looked at knowledge building to evaluate critical thinking attitudes while using web-based discussion forums. Tan et al. (2008) investigated teachers' interaction in Knowledge Forum using the IAM model and found that students interaction lacked depth of discussions and was more oriented towards task completion.

Also, in higher education, De Wever et al. (2010) found that assigning roles to students at the beginning of a discussion enhanced knowledge construction processes. In a study that used IAM to explore the students' processes of co-creation of knowledge in an online learning environment, Cheng et al. (2019) identified crucial features such as type of tasks, and clarity of learning goals, that determined how knowledge was co-constructed and led to better learning achievements. In

addition, they concluded that IAM phases do not necessarily progress sequentially, nor do they move in a linear way.

Another path for research was concerned with promoting the co-construction of knowledge and peer interaction through integrating social media such as YouTube (Dubovi and Tabak, 2020); Facebook (Hou et al., 2015); and blogs (Lucas and Moreira, 2010). They demonstrated that phases do not necessarily progress or move in a sequential and linear way to support learning environments.

2.3.5.3 IAM in MOOCs

In the context of MOOC, studies used the IAM model as an analytical tool, combined with other methodologies to explore the quality of interaction and knowledge co-construction. In a mixed case study, Bonafini et al. (2017) suggests that the heterogeneous populations as well as their engagements in MOOCs discussions increases the probability of learning achievement. However, they found that the participants' posts serve to produce information acquisition more than critical thinking.

Beltrán Hernández de Galindo et al (2019) conducted another mixed method study that combined pre and post survey analysis with IAM qualitative analysis to identify dimensions of entrepreneurial skills and attributes and explored learners' generated opportunities directed toward entrepreneurship through interactions within MOOCs discussions. They claimed that most participants posts fell into either Phase1 category (information comparison) or Phase3 (negotiation or co-construction of knowledge). Combining methods of analysis with IAM was an observed theme in MOOCs. For example, Chen and Yeh (2021) analysed the social construction of knowledge and interactions in MOOC forums by conducting IAM content analysis and sequential analysis. They suggested that instructors need to assign roles to only a few of the participants to enhance the quality of discussions.

Reviewing the literature on the use of interaction analysis models in MOOCs resulted in two main themes. The first intends to investigate interaction and knowledge co-construction by using IAM as a qualitative method (the quality of the post) and social network analysis (SNA) as a quantitative method (dynamics of the post). For example, Kellogg et al. (2014) stated that more than half of the discussions moved beyond the first sharing phase but rarely exceeded the third negotiation and co-construction phase. They suggested that interaction must be intentionally designed by providing simple and clear guidelines for it, and by encouraging learners' curiosity through initiating discussions relevant to their real life or experience and background.

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Similarly, Goggins et al. (2016) in a small MOOC study, and Tawfik et al. (2017) in a more typical xMOOC used the same techniques, with the former reaching the third phase of IAM and the latter not exceeding phase 2. Moreover, Tawfik et al. (2017) emphasises that intermittent peer interaction over short period of time may hinder the communication necessary for co-construction and negotiation of meaning. They suggest structuring xMOOC activities to explicitly trigger generating questions and feedback, linking, and building on other learners' posts.

The other theme centres around taking advantage of the huge amount of data provided by MOOCs, with the intention to overcome MOOC scalability challenges to better evaluate and promote MOOCs as effective learning environments. Pillutla et al. (2020) built on their manual analysis of a MOOC course (Tawfik et al., 2017) and developed an automatic identifier based on machine learning algorithm to classify if a post belonged to the first phase of the (IAM) or not, reaching an accuracy of 80%. Similarly, Shah et al. (2021) represented an automatic classification of IAM using machine learning models in a MOOC based on the first three phases of IAM, as the remaining phases were not found in the manually analysed data, with only two categories labelled automatically (phase1 or beyond it) reaching an accuracy of 95% -97%.

Touimi et al. (2020) in their ongoing research developed an automatic framework based on machine learning algorithm to analyse discussions in MOOCs according to the five phases of IAM. They tested the classifier but did not validate it or compared it against other manual analysis or methods. They concluded that only a few learners in this MOOC course constructed new knowledge with a mere 1% of them reaching phase 5.

This study uses the IAM model for evaluating the quality of learners' discussions in the MOOC for reasons of its compatibility and validity and according to the following criteria:

- Discussions are online, text based, and use asynchronous communication.
- The setting is an informal online learning environment.
- The MOOC context consider social constructivism as a theoretical background with a learner-centric focus.
- There is a threaded discussion forum provided around each specific topic to support course activities.
- The unit of analysis is the whole learner's post (comment).
- Exploring co-construction of knowledge through interaction.

To conclude, recent studies have applied IAM combining many methods, either to validate the results, or to overcome MOOC scalability challenges to explore the quality of learners' discussions and interaction, but up to the best of the researcher's knowledge, none investigated the level of

knowledge co-construction through the IAM model in relation to transculturality and transcultural knowledge and awareness.

Although, literature reported the importance of learners' diversity and cultural aspects corresponding to the MOOC context, they hold different positions on culture, according to their individual results, which generally were produced as additional results that did not form the main core of the research. In this way, Tawfik et al. (2017) asserted that heterogeneity made interaction and learners' meaningful engagement more difficult. , Bonafini et al. (2017) found support for learners' achievement in the heterogeneity of MOOC participant populations, where most of the participants' posts were friendly and showed politeness towards meaning making with reduced situations of disagreement.

At this point it should be noted that learners' interaction and communication have been found to decrease throughout MOOCs (Aldowah et al., 2020; Cohen et al., 2019). Furthermore, peer interaction influences communication patterns over time (Tawfik et al., 2017). Considering this, there is a need to better understand the way learners communicate within MOOCs (Conole, 2015), and explore key aspects of interaction that can lead to improvements in online learning environment and knowledge construction behaviour (Zhang et al., 2021). The IAM model can be applied to detect the depth and progression of learning in MOOCs. It will supports providing the provision of pedagogical strategies, and course design recommendations to enrich collective learning through MOOCs.

Transcultural awareness is selected as a factor that promote learner's achievement and an important aspect of the online sociocultural environment. It is believed that focusing on scoring the social construction of knowledge of a posting, through applied analytics methods can shed light on whether transculturality is related to knowledge co-construction and thus the quality and power of collective learning.

2.4 Conclusion: The Linking Thread

After reviewing studies on both transculturality and knowledge co-construction through interaction of online discussions, a practical concern remains overlooked. It has been established that knowledge is co-created (Stahl, 2006), where meanings are jointly constructed from individuals' understandings and embedded in cultural values and practices (Camargo-Borges and Rasera, 2013). In this sense, social contexts and interpersonal relationships are constantly changing, and thus, socially constructed meanings via interaction with people in their different contexts will never be fixed or isolated, rather it is fluid and dynamic (Gergen, 2012; Wang and Sun, 2022).

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Social constructivism is better characterised by dialogue and co-creation through continuous shaping and reshaping of meanings. As such, communication has become the core process in creating an environment for co-construction, where new forms of interactions and relations are created among people in a globally networked society facilitated by technologies (Camargo-Borges & Rasera, 2013). This constructive participation approach is brought to the educational practice and known as “learner-centric” approach and “learner-as-partner” form of knowledge co-construction and educational co-creation (Bovill, 2019). A learner in such an approach is defined by Stahl et al. (2014, p. 366) as “an evolving actor, who changes through interaction with others and with new learning experiences”.

The common ground between a transcultural approach and the co-construction of knowledge is continuity; an on-going process of thinking, articulating, reflecting, and meaning negotiation. This is the interconnection of knowledge, attitudes, and skills with the intention to create a more social, effective, inclusive, and informative type of learning (Wang and Sun, 2022). Transcultural awareness as a perspective in learning, allows learners to be open to crossroads cultures switching, going through and across cultural boundaries by blurring them, and considering common values, oppositions, tensions, and negotiation in interactions (Baker and Ishikawa, 2021; Jurkova and Guo, 2018).

In reviewing the literature, it is clear that many studies investigated knowledge co-construction in MOOCs (e.g. (Chen and Yeh, 2021; Cohen et al., 2019)) in relation to many aspects of learning. Whereas other studies explored transculturality in educational setting in relation to; dialogic approach (Thompson, 2011), task-based learning (Juan-Garau and Jacob, 2015), transformative learning (Jurkova and Guo, 2018), and connectivist MOOCs (Ersoy and Kumtepe, 2021) but none have associated transcultural awareness to knowledge co-construction in MOOCs.

It is still unclear whether and how discussions which co-construct knowledge are related to a learner's transcultural awareness and their ability to go beyond cultural boundaries for successful communication, resulting in collective decentralised new knowledge. It is essential to understand how MOOC learners engage in knowledge co-construction activities and meaning-making processes, and how they utilise diverse perspectives and experiences to support their learning in these authentic learning contexts.

The IAM and TCA models, as discussed above, are similar in that they can both be used to explain interaction and equally relevant to analyse interaction patterns of independent relations as well as the total interconnected relationships among learners through discussions. Theoretically, transcultural awareness is compatible with co-construction of knowledge, as they are both dynamic in nature looking at:

- Participants' knowledge, attitude, and skills.
- The complexity of interaction and communication analysis.
- Each instance of interaction is unique in each specific context.
- Culture and knowledge change during interaction, and the fluid movement between the various levels of interaction.
- Continuous process and iterations of meaning making and negotiation.

Therefore, investigating the relationship between transcultural awareness and knowledge co-construction would support promoting the quality of learning and inclusiveness in MOOCs. It would validate the direction towards collective learners' generated knowledge, enriching the MOOC content with innovative perspectives and creative holistic ideas, and at the same time, provide an inclusive open learning space that welcome diversity, and maintain meaningful and positive communication, allowing MOOCs to provide a truly global learning experience that benefits everyone involved.

Chapter 3 Research Methodology

Successful communication and supportive peer-led discussion in online learning environments such as MOOCs do not happen naturally in a vacuum. It is influenced by external factors. It is context-specific, especially when this context is dynamic and diverse in nature. This research seeks to examine the complexity and the quality of diverse participants' collectively generated data in a multicultural MOOC to enrich and extend the MOOC static content and enhance the MOOC inclusive learning experience.

This chapter sets out the methodological approach and techniques used to conduct this research. Mixed methods design is carried out to gain an understanding of the phenomena of transculturality in online multicultural learning environments, and how it is associated with co-constructing knowledge through meaning-making and negotiation. To this end, multiple techniques of data collection and analysis were employed to obtain evidence regarding how participants represent transcultural awareness and construct knowledge online. As well, as how learners perceived and used discussions to learn and co-create knowledge through successful online transcultural communication.

The chapter commences by providing a brief outline of the various research methods, then discusses the rationale for the methodological approach, then presents a detailed review of the research analytical approach employed by this study to investigate the research problem. The study follows three phases. The structure of each phase and the rationale for using these methods is presented in sequence. This chapter ends by outlining the research context of data collection and discussing the rationale behind choosing this specific context.

3.1 Different research designs

There are three research methods for collecting and analysing data: quantitative, qualitative, and mixed methods. These approaches should not be presented always as distinct categories, rather they form an adjusted variables on a continuum (Creswell and Creswell, 2018). The continuum along with distinction between these approaches are framed and illustrated in Figure 3.1 below.



Quantitative	Mixed Methods	Qualitative
Objective in nature	integration	Subjective in nature
Large Sample Size	--	Small Sample Size
Instrument Base Questions	Both types of Questions	Open-ended Questions
Numeric, Performance, Attitude, Observational Data	Multiple Data Forms	Document, Observational, Interview data
Numerical and Statistical Analysis	Statistical and text analysis	Text and Image Analysis
Scientific Techniques and hypothesis	Integrated Approach	Development of theory driven by research questions related to the individuals' unique context
identify, predict and control a phenomenon empirically	Additional insights beyond both approaches to evaluate and understand complex situations	In-Depth Understanding of a phenomenon
Experiments, Surveys	Multiple different methods	Interviews, Observations
Statistical Interpretations	Integrating Data and Across Database interpretation	Themes, Patterns interpretations

Figure 3.1 Research Design spectrum

A qualitative approach is used to explore a social or human problem in their natural setting (Creswell, 2013). Adopting a qualitative research method would allow a deeper understanding of dynamic phenomenon that can change rapidly in unique situations, where social and human behaviours, attitudes and perceptions vary from situation to another and are seen and identified differently from researcher to researcher (Coe et al., 2017; Creswell and Clark, 2017).

A quantitative approach is adopted mainly to examine the observable phenomenon, by statistically investigating the association and connections between its hypothesised variables (Creswell, 2013). It can bring various and rich insights into investigation. According to Richards (2003) quantitative inquiry can be applied for specific purposes and as a part of a broader approach.

Finally, mixed-methods approach offers a holistic and comprehensive view to the investigated research problem, as well it enhances the accuracy of the research outcomes. In addition, triangulation in mixed methods empowers and confirms the findings by using various techniques. Third, it offers parallel results, as the findings of one approach can explain the results of the other method (Johnson and Onwuegbuzie, 2004). Furthermore, it was suggested that mixed methods approach allows the researcher to strengthen the evaluation and analysis of the gathered information (Creswell and Clark, 2017; Sandelowski, 2000).

Therefore, mixed methods approaches have become a suitable option for many researchers in many fields, and specifically for MOOC evaluation (Musoke et al., 2022). In this study, mixed methods design is conducted because of the nature of the research as interdisciplinary research,

and complexity of the MOOC producing various types and large amount of data influencing the research problem.

3.2 The rationale for mixed method approach

The collection and analysis of data was not an isolated procedure. It was influenced by topic questions and a logic closely linked to the chosen research methodology that would respond to and underpin the research aims. Klassen et al. (2012) stressed that mixed methods design focused on research questions related to; “real-life contextual understandings, multi-level perspectives, and cultural influences” (2011, p.387). The development of richer meaning was achieved by a large-scale quantitative analysis, then contextualised by qualitative methods. For this reason, this study employed mixed methods and benefits from combining these methods to address and answer the following research questions, which would be linked and explained later in the chapter, in section 3.3:

RQ1- To what extent does transculturality appear in a multicultural MOOC?

- a. What are the levels of learners’ transcultural awareness that appear in the MOOC discussions?
- b. In what way do diverse learners in a multicultural MOOC represent and construct transcultural awareness through their discussions?

RQ2- Is there any association between learners’ level of transcultural awareness and their knowledge co-construction in a multicultural MOOC?

- a. To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC?

RQ3- How did learners in a multicultural MOOC perceive their learning experience in terms of cultural communication and co-constructing knowledge?

3.2.1 The complexity

The first motivation for mixing methods is the steep complexity of the research situation and problem, as Virtanen and Lee (2022, p.3) stress “Methodological issues are especially challenging in the rapidly changing field of online discourse which consists of emergent or reconfigured pragmatic phenomena”. The challenge of evaluating and measuring MOOCs’ dynamic inputs, processes, and outcomes highlights the importance of approaching mixed methods design. The complexity of MOOCs includes participants’ demographics, geographic locations, languages and

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MOOC design (Poth, 2018). MOOCs generate a large amount of technical, quantitative data (e.g., demographics, number of comments, enrolments, etc) and also a large amount of personal, interactional data that is qualitative in its nature adding another layer of complexity (Musoke et al., 2022) and affect participants' current learning experience to a great extent.

Given that expressing cultures using English as a lingua franca through textual asynchronous online discussions may mean differently in each interactional instance (Baker, 2009; Herring, 2010), the mixed method approach is selected and conducted to deeply understand this nature of the phenomenon investigated, benefitting from investigating the surrounded impacts in the learning environment. The researcher can analyse peer-led discussions, and interpret and report communicative meanings and detailed views of learners, in order to gain a deeper insight into the investigated problem (Creswell, 2014), thus, creating a more holistic and richer interpretation than using either quantitative or qualitative method alone.

3.2.2 Interdisciplinary research

The complex nature of interdisciplinary research is another reason to conduct a mixed methods approach. Transculturality is investigated as an issue related to three disciplines: Web science, intercultural communication, and education. Although uncovering meanings from those different perspectives may result in the exploration of conflict or dissonance, it generates a holistic view of the problem and enhances the quality of the research by triangulating these results (Creswell and Clark, 2017).

From a web science perspective, transculturality is a phenomenon that can be observed on the web and explored to understand the social shaping of technology, "how we shape the web, and the web shapes us" (Edwards, 2014, p.18). The focus is to tackle the fluid relations between technology, society, and culture where these interactions conclude " mutual influence, substantial uncertainty, and historical ambiguity, eliciting resistance, accommodation, acceptance, and even enthusiasm" (Misa et al., 2003, p.3).

From the field of intercultural communication, Baker (2015a) emphasised the need to approach cultural communication critically and reflexively in teaching and learning to develop transcultural awareness and achieve successful communication. Furthermore, the diversity of cultures and communities online raises novel opportunities for transcultural communication. That suggested focusing on the different online social spaces "in which the observation of hybridity and fluidity is not the endpoint of the analysis, rather the starting point for a deeper understanding of transcultural" communication and awareness (Baker and Sangiamchit, 2019, p.4).

In relation to education, computer-supported collaborative learning CSCL “is adopted as a foundational form of learning in educational systems around the world” (Stahl, 2020, p.2), where learning is the result of an iterative process of interaction, meaning making, and negotiation (Stahl, 2006). In this research, all these fields are intersected by looking into the complexity and fluidity of interaction and communication in a socio-technical learning environment. This requires the application of both qualitative and quantitative methods to develop answers to the three research questions listed previously in 3.2.

3.3 The Research Design

This research can profit from integrating qualitative and quantitative methods by employing a mixed methods design (MMR). The present study is designed as a case study mixed methods research (MMR), comprising three phases: two using qualitative methods, and one using both qualitative and quantitative methods, where each of the three phases collects different data. Creswell and Clark (2017, p.186) suggested that “This complex mixed methods design is consistent with the basic idea of a case study that focuses on developing a detailed understanding of a case (or multiple cases) through gathering diverse sources of data”. The goal here is to develop an in-depth understanding, evidence, description, and interpretation of the complexity of both the context and the phenomena examined within two different cycles or offering of the same MOOC course iterations based on mixed methods data collection, analysis, and integration.

In this research, the interrelations between transcultural awareness, and co-construction of knowledge within learners’ generated comments and discussions were identified in a culturally diverse MOOC environment. The power of this technique in exploring the issues extensively (Jick, 1979), where each of the three phases was designed to provide insight and richness of the material, strengthens the credibility and adds value to the analyses (Creswell, 2014). The study is qualitative dominant, but the overall project would be considered MMR by most researchers because it meets the defining characteristics of MMR (Creswell and Clark, 2017).

This study involves two offerings of the same MOOC course (two runs of the same case and will refer to them as Run5 and Run10), to examine the emergence of transcultural awareness in a complex system. This emergence is a result of interactions and communication between participants in discussions. The case study design is based on the social construction of reality as described by Ridder (2017), to investigate "specific actions, in specific places, at specific times."

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To clarify more, this study comprises three phases as follows:

Phase 1:

Qualitative and quantitative content analysis of a MOOC discussion forum (participants' comments) according to the Transcultural Awareness Model. The aim of this phase was to validate empirically the TCA model in MOOCs and initially investigate to what extent MOOC comments represent transcultural awareness comments, and contribute to answering RQ1, RQ1a.

Phase 2:

- Qualitative and quantitative content analysis of the discussion forum (participants' comments) of another cycle of the same MOOC course according to two different frameworks:
 - a) TCA model to confirm findings of the first phase (replication) with different data and different diverse attributes, and to compare and contrast the level of transcultural awareness of comments between the two different MOOC cycles. Also, after transforming the data to quantitative categories, this replication prepares the data for testing the assumption of the association between TCA and knowledge construction to answer RQ2.
 - b) IAM model to explore the level of collective knowledge construction in learners' comments and transform the data to quantitative form to test the association too.
- Quantitative statistical analysis to examine the relation between the level of transcultural awareness found in the comments with the quality of this comment in regard to co-construction of knowledge (correlation) to answer RQ2.
- Collect survey data (quantitative) from participants as a supplementary tool (mainly for interview sampling and collecting demographics) to inform the 3rd phase.

By incorporating multiple iterations of the same case, theory evolution was discovered in a holistic view (Ridder, 2017), a deeper understanding and analysis of the exploratory subject was gained, and strong and reliable evidence would be provided (Gustafsson, 2017). In addition, it was important for the research to confirm the results in relation to transculturality identification with a different sample of diverse MOOC participants. Moreover, the latter iteration (Run10) provided extra credit to the findings where interrater reliability was measured to validate coding, and the researcher was trained and more familiar with the data and the coding scheme. Finally, this iteration (Run10) facilitated the production of the survey within the course to recruit participants for semi-structured interviews.

Phase 3:

The analysis of survey data will facilitate the selection of interview participants using selection criteria. Then, post MOOC qualitative semi-structured interviews are conducted with learners to reflect on their learning experience with diverse participants in the MOOC. The aim of this method first is to gain a deeper understanding of attitudes and perceptions towards diverse peer interaction in relation to knowledge co-construction, second, to support integrating with previous methods of analysis. Triangulating interview findings with other methods will help get a better interpretation of participants' comments and a holistic insight into how TCA is represented or constructed through comments. In addition, more insight will be available to support collective knowledge construction to enhance social learning. This method will contribute to answering RQ1b, RQ1, RQ2, and RQ3.

It is agreed that a diagram illustrating the various qualitative and quantitative research components and their application across a timescale helps understand mixed methods (MM) studies, especially complex ones where mixing occurs in more than one phase or one way (Sammons and Davis, 2016). The data collection and analysis sequential process is illustrated in Figure 3.2.

The purpose of this MMR design seeks development, where the results of the initial phase inform the next (Greene, 2007). For example, the results from the first qualitative phase validate the TCA model and identify the transculturality of the learners' comments within the MOOC. As a result, the following phase investigated the possible association between transcultural awareness and knowledge co-construction. Also, the quantitative data collected through the survey in the second phase has informed and helped to develop the sampling for the qualitative interview.

The other purpose is to corroborate, converge, and correlate the obtained results from different methods through triangulation (Greene 2007), where the use of triangulation improves the precision and assurance of empirical research (Runeson and Höst, 2008). Triangulation offers a new lens for grasping the research problem. It can capture a more holistic, and contextual representation of the units under the study. Moreover, it may lead to an integration of different theories or frameworks, which supports a comprehensive explanation of the research problem (Jick, 1979).

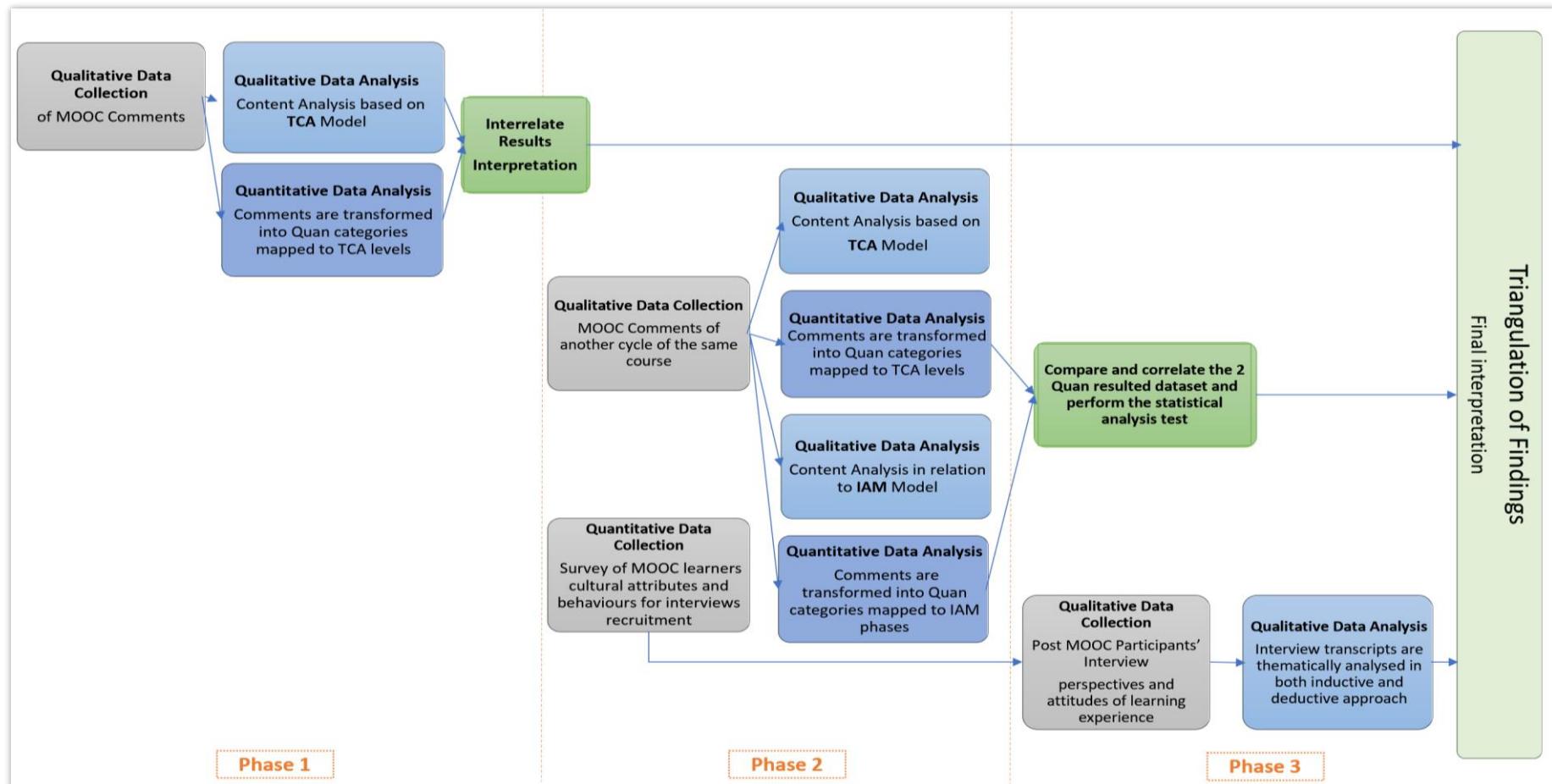


Figure 3.2 A timeline overview of the research MMR design

This study is qualitatively driven MMR design (Creswell and Clark, 2017) that appreciates the addition of quantitative data and approaches (Johnson et al., 2007). The study collected qualitative data in all three phases (MOOC learners' comments (Phase 1,2), interview data (Phase 3)). The quantitative data came from the survey data (phase 2) to support and facilitate the third phase (sampling, comparison). In Phase 2 also, qualitative comments were transformed into quantitative frequencies according to TCA and IAM frameworks to examine the association between transcultural awareness and knowledge construction through statistical analysis. Learners' comments were analysed qualitatively and quantitatively upon the TCA model in Phase 1,2 and upon the IAM model in Phase 2. In addition, survey data included learners' demographics, cultural markers, and views on their MOOC's behaviour, also as a sampling criterion for the post-course learners' interview.

Overall, the data was collected sequentially, except in Phase 2, learner's comments and survey data were obtained simultaneously. The aim was to take advantage of learners' availability during the course. Background information, consent, and responses to interview invitations were gained.

The design and execution of the phases were impacted by what data is available and when it is available. It required the researcher to manage investigations and procedures over a certain period of time, even with a limited time scale. As Creswell and Clark (2017) stressed, although researchers should decide whether to use the same participants for each or some phases or not, often it is out of their control.

Data from the three phases were reported separately first in the findings' chapters, as it is suggested by the mixed methods approach, that each phase influenced and was influenced by other phases. Integration of methods was performed through triangulation after the findings are developed through the analysis of each phase, then integrated and triangulated for the final interpretation. Based on the three research questions previously listed in section 3.2, methods were selected to contribute to the final conclusion after triangulating other phases' findings. Figure 3.3 maps research questions to the selected methods and the output of each phase.

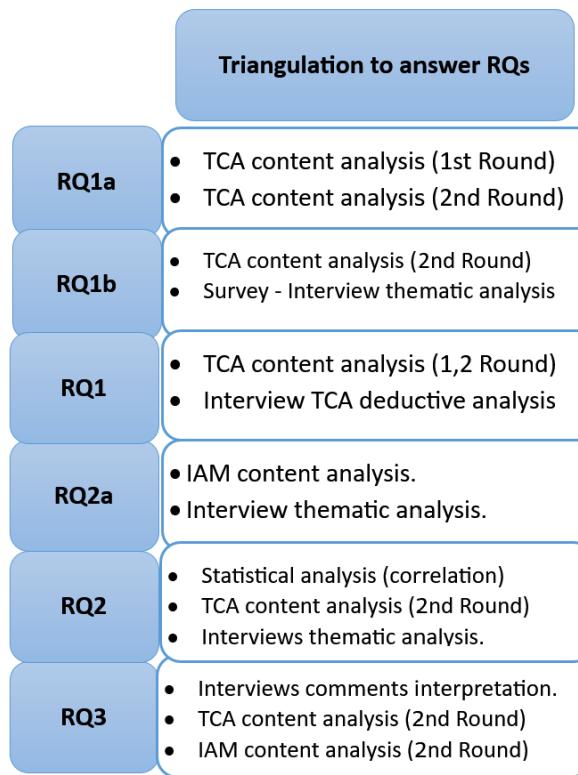


Figure 3.3 Research methods selected to answer research questions.

3.3.1 Changes from the original research plan

The original research plan for this study was altered in response to circumstances. These circumstances affected how my study progressed through the three phases, the first and the third phase remained the same, but the second phase was designed to implement an intervention. It was to design external collaborative activities to enhance diverse learners' communication (through Google Docs). The invitation to this activity came alive after the first week of the MOOC course, and the invitation to it was through the survey posted on the FutureLearn platform. Participants who accepted the invitation were allocated to random groups to discuss the activity using the chat feature, then contribute to the activity collaboratively. It was believed that these discussions upon a task will enhance communication and thus, promote both the co-construction of knowledge and transcultural awareness, evident through discussions within chats, activity contributions, and the later posts in the main MOOC comment section.

Unfortunately, only five participants out of 122 participants who accepted the invitation started to communicate, but none of them proceed to complete the activity or even had an in-depth discussion. There were many reasons for that. First, the intervention was introduced on October 2020, during the COVID pandemic, when many people started to feel frustrated, isolated, and pressured to use technology to do many essential tasks related to their daily routines. Some

participants felt like they do not have the time or the motivation for an extra and optional digital activity (as you will see later from the interview transcripts of the third phase (6.2.2.1). Second, the activity was designed to be entirely learner-led and centred without any interference from the instructors or the researcher. That may discourage participants to start, waiting for others, or confusing them. Third, the fact that this activity was a voluntary task with no rewards may be held back some learners too.

The second research question was changed, and accordingly, the research design, specifically the second phase, as not enough data was presented to answer the question. The intervention was replaced by looking at the learners' posts from two different perspectives and investigating the possible relation between learners' transcultural awareness and knowledge co-construction. These changes led to a richer and more holistic investigation and analysis, in looking at participants' communication from a transcultural perspective as well as representing new collective knowledge for a better learning process and outcome.

3.4 Research setting and case study

In this research, the setting refers to the MOOC platform and the specific MOOC course(s) where the researcher conducts the research. The case study in this research provides a method that looks at the context and the patterns, then connects and reflects on them holistically and in detail too (Atkins and Wallace, 2012). The setting chosen for the study was the FutureLearn MOOC platform (FL), where the emergent phenomena (of transculturality and knowledge construction) occur in a complex system as the result of MOOC participants communicating and interacting with each other in the discussion forum. The setting (MOOC platform) was chosen conveniently (Creswell, 2013) for the reasons listed below:

- The strong pedagogical approach embedded in its design based on dialogic learning and conversational framework (Laurillard, 1993), which is stemmed from social constructivist perspective.
- The MOOC model supports scalability, heterogeneity, and openness to ensure a better learning experience for learners (García-Peñalvo et al., 2018).
- Mainly because of the accessibility and familiarity of the researcher with the environment which facilitated the accessibility of online peer discussions and collection. Access to participants, and availability of resources with which to conduct the research project and the timing those data are available, are essential factors when designating a research setting (Berg and Lune, 2017). Additionally, as Almatrafi and Johri (2019) reported that

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lack of data accessibility was a common gap found in empirical studies of MOOC discussion forums.

In selecting the case study or the specific MOOC, two runs of the same MOOC course were involved in the study for comparison and a deeper understanding, it was based on the following criteria:

- The MOOC should target international and diverse audiences from all over the world.
- Open and accessible freely to anyone has internet.
- Designed in a learner-centric approach to encourage and ensure learners interactions and contributions.
- All the course content is delivered on the same learning management system.
- Participant engagement occurs only through FL the discussion forums (comment section), to ensure accessibility of data collection, and not to miss any possible channels of peer interactions and connections.
- Asynchronous discussions occur over the course period (6 weeks).
- Availability of participants demographics and platform learning statistics and interactions.
- Discussions are predefined according to learning objectives and tasks, to promote communication.
- The window timing of the course to be alive is within the research timeline.

As a result, the MOOC course “English as a Medium of Instruction for Academics (EMI MOOC)” was chosen for the study, satisfying all the criterion elements. The course was offered by the University of Southampton in partnership with FutureLearn MOOC provider. The course was open to everyone and attracted diverse global learners. Most of the content elements presented have no right or wrong, which encourages learners’ engagement and contribution about their own contexts and experience. So, the nature of this course was more likely to encourage in-depth discussions including different perspectives and contexts together.

The EMI MOOC course was marketed to participants with teaching experience or interest, which motivate contributions to support them with practical challenges. It encourages participants to share and build on each other’s opinions and views. So, engagement is built upon participants’ different experiences in their different contexts.

Almatrafi and Johri (2019) advised researchers to be specific in detailing the research setting and course (name of the course, level of staff engagement, voluntary or compulsory participation, type of forum under study, and how many), since the role of discussion is an influencer factor on learner participation behaviour, and to allow for future research comparison.

The next sections of the chapter describe in detail the different methods employed in this research, the context of this research, and ethical consideration.

3.5 Content analysis

The study has an overall analytical approach where content analysis is applied in all three phases; first, for analysing learners' comments from two cycles of a selected MOOC (Run5, Run10) in Phases 1,2. Second, it was applied to the analysis of MOOC learners' post interview transcripts in Phase3 as an additional analysis method.

The data gathered in the study's first and second phases is textual. Content analysis was utilised to ensure appropriate meaning extraction from the text. Whether it is quantitative and/or qualitative, content analysis is considered the most analytical method used to examine asynchronous online discussions (Ahmad et al., 2022), and to evaluate the nature of learners' interactions (Cohen et al., 2019). Peer interactions in MOOC discussions are valuable to explain learning behaviours and communication empirically (Conole, 2015; Lu et al., 2020). They are crucial to understanding how to foster meaningful conversations and determining what factors lead to deep learning in MOOCs (Almatrafi and Johri, 2019), through conducting content analysis techniques (Joksimovic et al., 2014).

Content analysis is defined as "a research technique for making replicable and valid inferences from texts (or image, recording) to the contexts of their use" (Krippendorff, 2018, p.18). This method has systematic procedures to extract meaning from texts and investigate the phenomena using specific coding schemes in text-based data. Content analysis aims to reveal information hidden beneath the surface of transcripts (De Wever et al., 2006). An in-depth understanding of online discussions is crucial to provide convincing evidence about learning, communication, and knowledge construction.

Since text is qualitative in nature, using content analysis data can be transformed into a quantitative category, to help describe trends in the content or patterns of communication (Cohen et al., 2017). According to (Riffe et al., 2019, p.25) content analysis is the "systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules, and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption".

Here, the text from learners' comments of the two MOOC runs, as well as the transcripts of participants' interviews were all subject to content analysis. A quantitative and critical qualitative

content analysis was applied on MOOC comments for a deeper understanding and interpretation, as well as finding trends and associations to integrate data.

3.5.1 Content analysis Considerations

Three essential considerations were reported when choosing and applying a content analysis model in relation to asynchronous computer mediated discussions in learning environments.

Stressed three important considerations (Ahmad et al., 2022; De Wever et al., 2006; Lucas et al., 2014):

- 1- The theoretical base of the instrument, which include validity and replicability.

In this study we perform the content analysis based on two models TCA, IAM for coding.

First, Transcultural Awareness Model (TCA) is an integrated version (see Table 2-2 The integrated Transcultural Awareness Model TCA of the original ICA which has been applied empirically in several studies and contexts mentioned previously in details (see section 2.1.4) Therefore, it has been validated externally by replication, and internally through the coherence between the theory of transcultural communication and the model.

Second, the Interaction Analysis Model (IAM) has been concluded an important and widely validated instrument for content analysis of virtual learning environment for asynchronous discussion (Hall, 2010), see section 2.3.5 for details.

- 2- The choice of the unit of analysis.

As an important aspect in coding content, researchers suggested using the entire message or a portion as the unit of analysis in coding for content of online discussion (Schellens and Valcke, 2006; Wise and Paulus, 2016). Moreover, Wise et al., (2014) argued that using the whole post was an explicit way to segment a unit of learner ideas and interaction with others. Accordingly, this study considered the entire post (comment) at a certain time as the unit of analysis using this same rationale, where the choice of the unit is dependent on the context (Gunawardena et al., 1997). The unit of analysis is the same for both runs of the MOOC.

- 3- The model inter-rater reliability.

Inter-rater reliability is considered the primary test of objectivity in content analysis.

Rourke et al. (2001, p. 7) articulate that: “the reliability of a coding scheme can be viewed as a continuum, beginning with coder stability (intra-rater reliability; one coder agreeing with themselves over time), to inter-rater reliability (two or more coders agreeing with each other), and ultimately to replicability (the ability of multiple and distinct groups of researchers to apply a coding scheme reliably).”

For the first phase of this study (1st Run5), the aim was to analyse the learners' comments

in the first cycle of the MOOC manually and qualitatively. It relied on relational, and interpretations of comments based on the adopted version Transcultural Awareness Model (TCA) coding scheme to validate it in the context of MOOC and measure the levels of TCA as it was shown in Table 2-2. Therefore, in this phase, after an initial round of coding by the researcher, inter-rater reliability of the coding was established through a discussion of the analysis with a senior researcher and expert in analysing the TCA model. codes were negotiated to 100%. Consensus had to be reached before the entire coding was reviewed for inconsistencies. An additional round of coding was conducted for the key extracts identified through initial analysis of the data.

For the second phase (2nd run), the aim is to test the association between knowledge co-construction and transcultural awareness, through quantifying and mapping the MOOC comments to the same coding scheme developed based on TCA, and according to the IAM code scheme adopted from the phases of IAM Figure 2.3 and implemented as shown in Table 5-2 The adopted IAM coding scheme. The analysis was performed enabling the transformation of these categories into numerical forms to apply statistical tests (correlation). Thus, in the second phase, all learners' comments were coded by the researcher upon each of the two methods (TCA, IAM) with a ten-day interval between the two methods. With a selected dataset of more than 20% of the total comments, two different senior and expert researchers for each of the models (TCA, IAM) were involved in rating the data according to the content analysis coding scheme independently. The insights gained from this process were used by the researcher. Any discrepancies in codes contained in these excerpts were discussed and resolved with the researcher until consensus was reached.

Inter-rater reliability (IRR) was calculated and reported using several methods (Cohen's kappa, Intraclass Correlation Coefficient (ICC), Krippendorff's Alpha) as suggested by De Wever (2006) because of the interdisciplinary nature of the study. The simplest and more popular test is percent agreement with a drawback that it does not account for chance agreement. Whereas Cohen's Kappa and Krippendorff's alpha are considered restrictive but more appropriate for nominal and ordinal data (Lombard et al., 2002; Rourke et al., 2001).

Because the data used from this content analysis can be considered ordinal, rather than nominal variables, ranking levels and phases in the models, Krippendorff's alpha, and ICC were more commonly used for ordinal variables (Hallgren, 2012; Krippendorff, 2004). However, values for different methods were typically reported in this multidisciplinary literature. Therefore, different reliability measures were reported in this thesis, and for more details see Chapter 5 section 5.1.3.

3.5.2 Content analysis Challenges

Content analysis has many advantages over other methodologies, such as avoiding interaction with the subjects and distortions in data, allowing individual differences by collecting unstructured data, and finally, subjects analysed are context specific with significant meanings compared to other methods (Harwood and Garry, 2003). Challenges have been acknowledged using content analysis in the literature, Ahmad et al. (2022) listed several issues such as the complexity of the instrument; an unsuitable unit of analysis; lack of reliability; time-consuming and labour-intensive task (Shah et al., 2021); and the coding process requires experienced and trained coders to interpret the data. For this study, many of the listed limitations were taken into consideration, by choosing a replicable and validated instrument, having many guides and empirical recommendations to build upon them.

3.5.3 Content analysis procedures

This study followed an established procedure conducting content analysis by Krippendorff (2018) who demonstrated six steps as follow:

- 1- Utilising: which is definition of units. This step has been mentioned earlier in 3.5.1 in details. The unit of analysis for the current research is the individual post or (comment) in the context of the MOOC comments section, to reveal the role of each participant in communicating culturally and negotiating meaning over the course with others.
- 2- Sampling: all learners' comments in both runs of a selected MOOC course were collected for analysis. The case study or the context (the specific MOOC course) was selected based on a criterion that was mentioned earlier in detail in section 3.4.
- 3- Recording: which is known as coding. Coding of the data was based on the updated TCA model for the Run5 of the MOOC, and according to both frameworks (TCA, IAM) in the Run10 of it. The aim of coding was to record, bridge the gap between the textual data and their situational interpretations, and prepare the transformation of data to an analysable representation.
- 4- Reducing data: it is the phase of cleaning data from duplications or non-representative data such as off-topic or non-conversational or languages other than English.
- 5- Abductively inferring contextual phenomena, is explaining, and relating the extracts to what do they mean, this step is discussed in the following chapters of findings.
- 6- Narrating: it is reporting and interpreting to answer the analytical questions supported by previous findings. This study addressed this step detailing how content analysis helped answering the research questions in the discussion Chapter 7.

The primary anonymous raw data was received in an Excel file. Therefore, the initial analysis was carried in excel, but later the coding was carried out in NVivo 12 after importing the files, where it is easier to code and handle qualitative data for analysis. Coding was done manually. Coding as part of the qualitative analysis is commonly used to categorise data according to the research subjects (Sharp et al., 2019).

The same process was applied when analysing interview transcripts in phase 3, where this time the researcher was involved in the interview and the transcription process. More details about the interview method process will be provided in section 3.7.2 and 3.7.3.

3.6 MOOC Participants Survey

This section incorporates the survey design, development, and procedures employed in detail. In order to gather data, the online survey was administered via the FutureLearn platform (the setting). It targeted all the MOOC participants in the second cycle (Run10) of the selected MOOC course. The survey was launched during the first week to reach out to participants earlier to increase the response rate, considering the MOOC pattern where a large number of participants join at the beginning and many drop out before completing the course (Davis et al., 2017).

Although the researcher was aware that the survey might have a slight influence on participants' behaviours during the course, the need to engage participants from the beginning was deemed more significant from a research perspective. The survey was available for the entire duration that the course was offered and accessible for all participants for free. (Typically, the course remains available for a specified number of weeks depending on the number of units, plus an additional two weeks).

This survey method was carried out for several reasons:

- to collect participants' demographics, cultural background information, and personal information (names, email addresses) to aid the selection of participants for the post MOOC interviews, using it as a sampling technique similar to work done by Sangiamchit (2017) to include a diverse sample. It also, facilitated analysing cultural aspects, and linking MOOC comments with survey and interview responses.
- to initially collect learner' perspectives on cultural communication and engagement within MOOCs.
- to collect participants' consent to quote their MOOC comments and activities directly.

But mainly, the survey method was conducted to overcome several ethical challenges, and to fully comply with both FL and University of Southampton research privacy policy, for the details see section 3.8.

3.6.1 Survey Design and development

Participants' responses quality and accuracy are always influenced by the development and design of the survey (Brace, 2018). A self-administered online survey was implemented. The survey information collected could be more reliable due to respondents' ability to complete the questionnaire privately (Cohen et al., 2017). It was important for this research to implement a web-based survey to have access to the globally distributed MOOC participants. GoogleForms was used as a more efficient and convenient way to collect the data. GoogleForms is a popular and user-friendly survey developing tool, and most importantly it fulfilled the FL MOOC platform research requirements to be introduced and distributed to participants through FL. For [FL research ethics](#) follow the link.

The validity of an instrument can be established through several methods. As part of the process, this research incorporated two of them: First, the online survey was based on previous studies on social peer interaction in MOOCs, and its dimensions were adopted from Sangiamchit's (2017) questionnaire which investigated intercultural communication based on a transcultural approach and included several questions that this research set out to explore, yet her study had a different scope and focus.

Secondly, reviewing and piloting of the survey were carried out as crucial steps prior its application (Sharp et al., 2019). This was achieved by sharing the questionnaire with three experts and senior interdisciplinary researchers from the University of Southampton who provided feedback. Then, a group of seven culturally diverse colleagues, for whom English language was their second language piloted the survey. Getting suggestions from peers enabled the instrument to be revised faster and more efficiently (Sharp et al., 2019). All these steps were taken in the development of this questionnaire.

The survey starts with a welcome page, inviting users to participate in the research, explaining the importance of providing name and email for the research and clarifying that there are compulsory fields to continue participating. After providing these fields, the next page provides the ethical terms and conditions concluding the participants information sheet of the research, going through research goals, benefits, risks, data collected, and confidentiality. A box needs to be ticked to show acknowledgment of this sheet.

That is followed by a window asking the respondents if they wish to continue or quit. In the case of agreement, another page will follow containing the participant consent statements in relation to the research. To begin the survey, the respondent must tick a box indicating their consent to participate, otherwise it would ask him/her if they wish to quit and exit the survey page. All related information about the ethical approval for this study is mentioned in section 3.8. A screenshot of the online survey is presented in Appendix C, which includes the participant information sheet, and the consent form as well.

The survey consists of three main sections: The first part covers demographics and background information. The second part covers questions on peer interaction and engagement within the MOOC. The last part covers cultural communication and application of collective new knowledge. All questions in this survey were closed-ended questions with the exception of two questions; the first is about collecting the reason for joining this specific MOOC (EMI, Run10); and the last question is an open-ended question, intending to create an opportunity to raise any issues that the survey did not include (Dörnyei and Dewaele, 2022). The design of each part is described next.

This first part constituted multiple choice questions to capture background information about the respondents including gender, age group, nationality and where to live which are provided in a drop-down list to minimise error rate (list of 257 countries taken from the official site (“List of countries of the world in alphabetical order,” 2018), with an additional field to choose ‘other’). These questions are followed by language related questions as part of identifying cultural aspects to include, asking about first language (drop down list of the most common 100 languages with the option to choose ‘other’), how many other languages spoken and what are them.

Then, two MOOC related questions were introduced: number of MOOC courses joined; and the main reason for joining this EMI course (open-ended short question) as supportive questions to help explain the learners MOOC behaviour and engagement with the course. This part of the survey ends with professional related questions, such as the highest level of qualification (Undergraduate-Master-PhD-Other), and profession. If the respondent is a teacher (school, college, university), then more questions will pop up regarding their years of teaching experience in the subject, and in EMI setting, otherwise they will move to the second part of the survey.

The second part investigated respondents’ MOOC engagement and peer interaction features (posting, reading, replying, and liking a comment) as they were the typical measures of communication within the MOOC. All items in this part were measured using a five-point Likert scale (Always, Often, Sometimes, Rarely, Never) to identify the depth of the respondents’ communicational practices in relation transcultural awareness and knowledge construction.

Finally, Likert scale questions were utilised using the format proposed ranging from 'Strongly agree' to 'Strongly disagree'. The purpose of this core part is to gain respondents' perspectives on cultural communicative practices with diverse learners through the process of learning within the MOOC. By the end, participants were asked if they were interested to have a post MOOC course interview and ask them for any additional comments or concerns in relation to the issues presented.

3.6.2 Survey procedures

The recruitment strategy of participants for this survey included all the MOOC participants enrolled (Run10) who; had access to the online survey and wished to participate (Fink, 2015); and provided their names and emails, in order to increase the possibility to get more diverse participants in regard to culture, behaviour, and communication. It was a convenience sample (self-selection) which involved time; population; and access (Savin-Baden and Major, 2012). Permission and practicality were needed to ensure access (Cohen et al., 2017; Creswell, 2013).

This strategy helped preparing for the next step (which is the interview participants selection as will be discussed later after presenting the survey findings see 6.1.4) to ensure a diverse sample with different backgrounds, behaviours, and perspectives to deliver their experience (interview). The overall method helped the researcher to access a total of 111 participants who all voluntarily completed the online questionnaire.

Regarding survey delivery, two distribution channels were conducted to reach all the MOOC learners (Run10) through the FutureLearn platform, and in full compliance with University of Southampton and FutureLearn ethics protocols (see section 3.8 for more details on ethical consideration). First, a link to the survey was posted by FutureLearn with an introduction to the research on the first week of the EMI course (Run10), to invite learners to participate in the study. Please follow the link to view the survey online, '[Taking Part in the Survey](#)'. Alternatively, a screenshot of the invitation posted on the FL platform, along with a screenshot of the survey itself can be found in Appendix C. The other channel for recruiting was through FutureLearn emailing system, as they distributed an invitational email, which included the same introduction to the survey, to all participants on the first week of the course to take part in the survey.

The data analysis procedure used for the data obtained from the survey was descriptive and frequency statistical analysis. The aim of using this analytical approach was to identify and point out the diversity of MOOC learners' cultural attributes. The frequency distribution could show the statistics of participants' personal information, experiences, and perceptions of culturally communicating online, which would support the data analysis obtained from content analysis and

later the interviews. The frequency distribution was calculated using SPSS one the most common statistical data analysis software for social sciences. Data from different questionnaire sections were firstly tabulated. Frequency distributions were then calculated. Moreover, due to the limited role of the questionnaire, in-depth statistical analysis (examining the relationship between variables, measuring statistical significance, comparing means) was not conducted.

3.7 Post MOOC Interview

In this final and key phase of the research, interviews were carried out and were designed to integrate the previous research methods which were data driven approach to be able to answer the research questions (see Figure 3.3 Research methods selected to answer research). A qualitative approach was followed through post MOOC interviews.

Since, online cultural communication is influenced by factors that are not easy to observe or measure directly, interviews may allow interpretation of cultural communication meanings that may not be immediately apparent (Sangiamchit, 2017). As well participants' comments along with survey answers may not offer an in-depth understanding of the issues investigated as they provide superficial data (Creswell, 2014; Dörnyei and Dewaele, 2022). Thus, interviews offered a richer and more holistic view, validating the issues investigated through other methods (content analysis, survey) as Cohen et al., (2017) advocate. Participants were given the opportunities to elaborate on their experience, motivations, and perspectives, which were not possible through the comments.

The interview participants were the result of the selection criteria that were built upon the survey results and mentioned briefly in the finding section of the survey. A brief bibliography was also provided later in the third phase findings 6.2.1.1. Participants were diverse culturally with different attributes, as well they had different level of education, and different years of experience. In that way, the researcher would get different perspectives on their learning as their experience affects their perspectives to various degrees. The following section provides details of the interview design and development, interview procedures, and data analysis.

3.7.1 Interview design and development

The key objectives of choosing semi structured interviews were: First, to obtain more in-depth understanding (Creswell, 2014) of how diverse people communicate culturally in an online learning context, and to get insights from their experiences, attitudes, and perceptions.

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Second, to integrate and triangulate the data-driven approach, especially to elaborate on the quantitative results of the relation between transcultural awareness and co-creation of knowledge. Creswell (2020, p.536) argues that triangulation meant that “investigators could improve their inquiries by collecting and converging (or integrating) different kinds of data bearing on the same phenomenon. The three points to the triangle are the two sources of the data and the phenomenon”. The third objective is to support interpretation of some of the learners’ comments which revealed either elements of knowledge building or cultural awareness.

Semi-structured interviews were carried out for their flexible structure. As open-ended questions with follow up questions allow the emergence of issues that were not identified before (Cairns and Cox, 2008). The choice of semi structured interviews ensured the coverage of the relevant aspects of transculturality in relation to knowledge building within MOOC interaction. They enable important and unanticipated issues to be raised by participants, which were not expressed freely by comments. When designing the semi structured interviews, follow up questions were changed according to the responses of the participants to create opportunities for interviewees to elaborate on their unique and critical perspectives on the topic (Cohen et al., 2017).

In the interview, the researcher avoided asking any demographic or cultural background questions that were collected previously by the survey. The reason was to open a free space for the participant to express their perspectives independently. The primary guideline questions were as follow:

The Opening Question:

Can you tell me about your overall EMI MOOC learning experience?

Questions:

- 1- Describe your EMI MOOC experience when communicating with other culturally diverse learners.
- 2- What motivated you at the first place to communicate with learners from diverse cultural backgrounds?
- 3- Can you express any benefits or problems you have faced in this multicultural course when communicating with other learners?
- 4- Do you think that this multicultural MOOC helped you to learn new values, practices, and new kinds of behaviours from international learners?
- 5- Do you think that discussions with culturally diverse learners reduce distance and misunderstandings, or they cause a greater difference between cultures?
- 6- According to your online international communication learning experience, what are the strengths and weaknesses of interacting with international learners?
- 7- Were you satisfied with your interaction?

- 8- What characteristics in your opinion contribute to the successful communication (what do you perceive as enhancing and hindering the interaction) in a multicultural MOOC?
- 9- Did you observe that international learners had any difficulties with conveying their meanings? If yes give an example.
- 10- Do collaborative interactions in multicultural MOOCs promote communication and help building new cultural knowledge?
- 11- Did you come up with new strategies, practices or opinions that did not belong to any one individual learner? Can you give me an example?
- 12- Cultural practices are objects, events, activities, social groupings, and language that participants use, produce, and reproduce in the context of making meaning. Are there any that you have applied/ newly gained/ changed or will change after the MOOC?

3.7.2 Interview procedures

Interviews were conducted over three months period. The researcher started contacting participants and collect data after the MOOC six weeks availability period is over, plus two weeks where the researcher worked through the target sample. 10 learners from diverse cultural characteristics and behaviours were interviewed according to the results of the scoping survey that is presented in section 6.1.4. A brief biography of the interview participants is presented in the finding section of the interviews see 6.2.1, to give a concise background information of the diversity of cultural attributes and MOOC behavioural activities.

The duration of each interview was around 45 minutes in average, and all interviews were done in English. The interviews were done virtually through video conferencing. All interviews were audio/video-recorded and subsequently transcribed after gaining participants' consent and permission. All personally identifiable information was anonymised. Interview transcriptions were manually reviewed with the recordings more than once, ensuring the accuracy of transcription, and getting familiar with the information as an interpretative practice to derive insightful understanding of data in relation to research question (Byrne, 2021).

3.7.3 Interview analysis

Given the aim of the interviews were to gain more in-depth understanding of how participants communicate culturally in MOOC, and to get rich insights about their transcultural awareness, experiences, attitudes, and perceptions, two layers of analysis were performed on the interview transcripts.

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The analytic method followed for interviews was Thematic Analysis (TA) approach following the six phases of Braun et al. (2019): (1) Familiarisation; (2) Generating codes, by systematically make sense of data; (3) Constructing themes, it is the intersection of data, researcher subjectivity, and research question; (4) Reviewing Themes, themes are reviewed first in relation to the codes then to the dataset and research question; (5) defining and naming themes, to create a lucid narrative that is consistent with dataset and informative in relation to the research question; (6) Creating the final document, choosing extracts and illustrations as well organising themes orders.

This thematic analysis approach was chosen as opposed to the previous content analysis. Both approaches aim to examine narrative materials, breaking text into relatively small units to be analytically described. However, thematic analysis is used here as a flexible research tool that can provide rich, detailed, yet complex insights of data (Braun and Clarke, 2006), where common threads are identified across a set of interviews. In contrast, data coding in content analysis, is used to describe a phenomenon where little is known about it in a conceptual form (Elo and Kyngäs, 2008), and its interpretation is based on quantitative counts (Morgan, 1993), just as the case with the first and the second phase of this research.

There are three broad approaches identified by Braun et al. (2019) under the TA umbrella: (1) coding reliability approach, which involve using structured codebook. Themes can be hypothesised based on theory with evidence gathered from codes; (2) Codebook approach, a midpoint between coding reliability approaches and the reflexive approach, but closer to the reflexive approach in terms of prioritising interpretative nature in coding over coding reliability; (3) a reflexive approach, a reflection of the researcher's active analysis and interpretations of patterns of meaning across the dataset (Braun and Clarke, 2019).

Post MOOC interviews conducted codebook approach, to best suit the objectives of the interviews, linking cultural attributes, dataset, and research question by active interpretation, while considering theoretical presumptions. In that sense, the researcher was interested to gain a deeper understanding of the samples' perceptions, experiences and attitudes towards cultural communication and process of collective knowledge in the MOOC.

Analysis was performed using NVivo the qualitative data analysis package for coding. To start the analytic process, there were two main coding methods: Inductive or "bottom-up" approach; and deductive or "top-down" method. Coding and analysis hardly fall explicitly into only one of these approaches and often is a combination of both (Braun and Clarke, 2021). Braun et al. (2019) argue that it is impossible to conduct one approach exclusively, and the predominance of one over the other depends on the researcher prioritising theory or data-based meaning. Thus, two distinct

layers of coding were applied to be able to look into the data at different levels and from different viewpoints (Campbell et al., 2013).

Initially, a deductive approach was conducted with three main categories mapped to the interview transcripts based on the main variables in this study: cultural communication; knowledge co-construction; and transcultural awareness (with its three levels as sub themes). Since the first two themes were broad and abstract themes, A second layer of coding was applied, in which the inductive or data-driven coding orientation was applied, working from the data to extract deeper meanings implied by participants without fitting them into a pre-existing frame, or the researcher's preconceptions (Braun et.al, 2019), as the main goal of the interviews were to gain a closer and detailed information from learners about their experiences, attitudes, and perception in relation to transcultural awareness and collective knowledge in the MOOC attended.

The third theme transcultural awareness was based on its model TCA (and its three levels) mapping all the interview transcripts to identify to what extent transcultural awareness were presented through participants' answers to match their level within their MOOC comments. Additionally, it helped explaining and interpreting learners' MOOC comments in relation to their cultural characteristics after the analysis had been accomplished. These themes are further be discussed in the interview findings in section 6.2.

The coding process was as described by Braun et al. (2019) "recursive" and "iterative". Analysis was time consuming and evolving over time, requiring an active role from the researcher to interpret and link codes and themes to the research questions. Therefore, following the six stages of thematic analysis, preliminary codes were clustered, and themes were regularly re-evaluated and updated. Several categories were integrated, separated, or deleted accordingly. Two senior researchers reviewed analysis of a sample of the data.

3.8 Ethical Consideration

The ethics approval for the study was granted by the University of Southampton's Faculty of Physical Science and Engineering Ethics Committee with an ERGO number (54079), for all the three methods applied in the research:

1- Content analysis or secondary data analysis of a MOOC (Run5, Run10)

The researcher conducted the analysis fully complying with FL MOOC platform research policies, and University of Southampton (UoS) research ethics. As the content analysis included all individual comments that were received anonymised, it was important for the research to quote

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some comments as evidence and in support of the analysis. However, for the first round (Run5), the researcher faced the challenge in obtaining participants' permission to report their comments since the only way to contact them was through the FL. Given the large number of comments, it was difficult to choose at that time the exact comments to present in the thesis considering other factors of analysis. To address this challenge, comments were paraphrased to provide these quotes as examples of different categories of the analysis.

In contrast, in the second cycle of MOOC analysed (Run10), in order to overcome this challenge for the second time, the researcher had the chance to collect and get permission of using quotes directly from all the MOOC learners who participated in the survey and gave their consent, even if they were not interested in doing the interview. As a result, all the comments provided in this thesis were in the form of:

- Comments paraphrased and do not have any quotation marks, when no direct and explicit permission gained, although they were available publicly.
- Comments provided between quotation marks (""), are original quotes of participants, who either gave their consent through the survey, or through FL.

2- The survey

- The survey itself was a methodological approach aimed to overcome the ethical issues in relation to collecting MOOC participants' personal and contact information, as well the different cultural attributes that were core for this study as mentioned in the prior point. Additionally, it had to be approved by both parties (FL, UoS).
- The online survey had to be implemented using specific building tools to comply with the FL policies. So, the choice was not completely up to the researcher.

3- The interviews

In gaining the participants consent, the researcher ensured anonymous data. When referring to any specific or named cultural reference, the researcher gained the participant permission to include this information.

After gaining the ethical approval, research participants obtained and signed the following:

- Invitation to participation that contain an overview of the research and its objectives.
- A link to the online survey, or a suggested slot for the interview with a link to join the MicrosoftTeams online meeting.

- The participant information sheet for both the survey and interview, providing primary research information.
- The consent forms (Appendix D) to be signed electronically within the survey statements, or a copy of it attached in the interview invitation email to be returned by the participant through email.

The researcher ensured participants got:

- The right to withdraw at any time, then their data will be removed.
- Anonymity: All recordings and transcriptions and other identifying data will be kept private. And they will be given pseudonyms.
- Data security: All data obtained will strictly be kept confidential and stored virtually in password-protected folder on the researcher's own university account encrypted within a fire-proof folder. All data collected will be destroyed at the end of the project.

For conducting the research and collecting data in the MOOC, the researcher was required to obtain various permissions from different parties involved. These permissions were complex and sometimes overlapping. It was crucial to satisfy all parties involved. Here are the permissions required:

- University of Southampton permission

The researcher ensured obtaining institutional approval from the ethics review board and research committee. This approval covered all aspects of the research, including data collection and analysis, and ensured compliance with ethical requirements (ERGO number (54079)).

- FutureLearn MOOC platform permission

The researcher had to fulfil the ethical requirements of the platform to gain access, collect data, and analyse comments. When quoting participants' comments, an explicit consent had to be obtained through the platform. If consent was not granted, comments were paraphrased, removing any personal identifiers.

Additionally, the researcher obtained permission to conduct and provide a survey within the MOOC course. Specific data collection tools were used as per the platform's requirements. Permission was also obtained to collect personal information through the survey.

- Learner permission

Informed consent was obtained from learners whose data would be collected through the survey or interviews. Participant information and consent forms were provided. To overcome challenges

in contacting participants through the MOOC platform, the researcher used the survey as a method to reach out to participants. Through the survey, participants were given the opportunity to approve the use of their comments in the MOOC course, share their personal and cultural background information, and express their willingness to participate in interviews. Contact details were also collected for further communication.

3.9 Chapter Summary

This section provided an overview of widely available research methodologies, as well as a description of the diverse mixed methods used in the current research. It establishes how the mixed methods case study design was applied to investigate and answer the research questions at three distinct phases: qualitative, qualitative transformed to quantitative, then another qualitative method.

The first phase was intended to examine empirically the updated TCA framework. The second phase was used to validate the findings of the first phase, and to pinpoint and assess the possible association statistically between transcultural awareness and knowledge construction. Additionally, quantitative data was collected to frame and inform the last phase of the research. Finally, the last qualitative phase was required to support and explain content analysis findings as well as evidence of the quantitative statistical analysis to address the research questions.

In this chapter, an overview of the methods used in the research was given according to their application of each phase of this research. Details about the application of each method in each phase will be mentioned in the following three findings chapters, including a description of the sample, and findings for each of the phases applied.

Chapter 4 Phase1: Analysis of MOOC comments (Run5)

The purpose of this initial phase is to empirically test the assumptions and scope the potential for answering the study's overall research questions. This phase investigates the viability and validity of the transcultural awareness model (TCA) in the context of MOOCs. It aims to identify levels of transcultural awareness representations in participants' comments. It also evaluated interactions between multicultural MOOC learners thorough their online discussions that are facilitated by a MOOC. Additionally, it explores to what extent learners' comments presented transcultural awareness to contribute to the answer of the first research question, and specifically RQ1a. This phase informed the next phase of the usefulness of transcultural awareness model as a framework in the context of the MOOC.

Part of this work was presented and published in 'CALL for widening participation: short papers from EUROCALL 2020 (Shahini et al., 2020)'. This chapter is structured in the following manner:

- Methods: introduces what, how and where the data was collected, the participants involved, and the procedure of data collection and analysis including reliability measures.
- Findings: reports on results, which includes descriptive quantitative content analysis and qualitative content analysis according to the three levels of TCA framework, to support answering the first research question and inform the next phase.

The context of the study was the FutureLearn MOOC platform, which was chosen for several reasons that were discussed previously in the methodology chapter, section 3.4. Additionally, the specific MOOC course (the case study) that was analysed was chosen based on selection criteria that were also addressed in the methodology chapter, section 3.4.

4.1 Methods

The researcher analysed text-based data (all learners' comments) from the fifth run offered of the chosen MOOC course EMI "English as a Medium of Instruction for Academics" in March 2019. The analysis for the EMI MOOC Secondary data (SDA) was ethically approved by the Faculty Ethics Committee with number (48827). The researcher was able to follow social interactions in their order of occurrence and context, by sorting the comments based on their date and time of posting. It is important to consider the context of interactions in order to interpret meanings correctly, as they are dependent on contextual interactions. This additional critical lens will result in a deeper understanding of the comments. The data were received in the form of an anonymised Excel file.

4.1.1 Participants

The EMI course was open and offered for free to anyone with internet access. For the fifth run of the course, 3156 participants were enrolled from 148 countries around the world according to demographic data provided by FutureLearn platform. There were 385 social learners representing 12% of MOOC participants (participants who posted/replied at least one comment – according to FL). Interestingly, an early course step encouraged learners to pin themselves to an interactive World map. Figure 4.1 indicates the location of the learners enrolled on the 5th EMI course from around the globe, and the density of enrolment according to learners.



Figure 4.1 Cultural diversity of learners in EMI MOOC (Run5)

4.1.2 Data collection

The course is a 4-week course that requires four hours study per week. The instructors were two academics from the University of Southampton. The main structure of the platform is that materials are divided into small learning objects (texts, videos, images) presented in successive webpages, and each is called a step. In EMI course, there were (81) steps or learning objects, with a discussion space for learners attached to each step called a comment section for learners to contribute, interact, and discuss with peers. Unlimited number of comments and replies can be posted by each participant. However, this comment section is a text- based space (plain text, 1200 characters only), and learners are not able to post any images, videos or even emojis. Each individual learner comment was considered as a unit of analysis.

There are other types of social interactions within the platform. Learners can follow each other and can be followed too. They can ‘like’ other participants’ comments. If they turn notifications on, they can be notified by email when they have new followers or when someone replies to their comments. In the comment section they can also reply to each other’s posts by hitting the reply button. Each comment section might represent a space for social and cultural learning. All the dataset of anonymised comments derived from the EMI MOOC course (Run5) offered in March 2019 was used in this phase. The collected comments were those posted at the free availability period, which was typically the number of weeks presented in the course (4 weeks), plus an additional two weeks (from 4th of March until 15 of April).

In total, 3821 comments were generated (by learners and instructors) within the 81 learning steps over the six-weeks of the course. All participants’ asynchronous comments were collected and analysed qualitatively, except the quiz steps which did not have any comments associated. Instructors’ comments were excluded from data collection, as the focus was on peer interaction to answer the research questions. The MOOC was one in which the discussion would be expected to deliver interesting new perspectives and knowledge between participants (see section 3.4). Figure 4.2 An Example of a comment section on FL platform demonstrates how the comment section appears to participants in the MOOC.

Own comment section of 1200 character space, with own username.

RS Rana SHAHINI

Add a comment... (plain text only, links will be auto-linked)

0/1200

DP Dorota Piestrak-Demirezen 07 OCT 2020

Hello everyone, I have joined this course to boost my ability to communicate in English properly.

Like Reply Bookmark Report

Other comments with names, time, and features (Like, Reply, Follow)

Like button if you like this comment

Reply button if you want to reply to this comment

Follow feature to be notified when this participant posts a comment

Figure 4.2 An Example of a comment section on FL platform

4.1.3 Data Analysis

All MOOC participants' comments (3792) were coded manually by the researcher and analysed qualitatively using a content analysis coding scheme based on TCA the adopted version of the ICA model (Baker, 2011), which was validated empirically in many contexts see section 2.1.4. With its dynamic conceptualisation, Baker's (2011) model better fits with globalisation beyond national boundaries. It is believed that the updated Transcultural Awareness Model TCA (Shahini et al, 2020) is ideal for the analysis of online discussions in relation to cultural communication. It focuses on examining these practices as a whole set of flexible and adaptable knowledge, skills, and attitudes within the context (Baker, 2015a).

Thus, the three levels coding scheme was used to code interactions and measure the level of learners' transcultural awareness, see Table 4-1 The TCA coding scheme. Each comment was coded under only one of the categories for the levels of TCA. Additionally, instructors' comments (69) were excluded from the analysis and labelled 'Zero', as well as incidences of non-communicative cultural practices such as adverts, comments using other languages (non-English), and duplicates.

Table 4-1 The TCA coding scheme

The TCA level	Description
Level1: Cross-cultural Awareness	<ul style="list-style-type: none"> • Articulate one's cultural perspective. • Compare cultures at a general level.
Level2: Intercultural Awareness	<ul style="list-style-type: none"> • Move beyond cultural generalisations and stereotypes, comparing between cultures at a specific level. • Mediate and find common ground between specific cultures. • Awareness of possibilities for mismatch and miscommunication between specific cultures.
Level3: Transcultural Awareness	<ul style="list-style-type: none"> • Negotiate and mediate between different emergent and dynamic cultural and contextual communication modes and frames of reference.
Zero	<ul style="list-style-type: none"> • Instructors' comments • Languages other than English • Adverts • Duplicates or copied comments • Nonrelated comments (i.e., thanks, hello, I know, no problem)

4.1.4 Reliability

The aim for this initial phase was to analyse learners' comments qualitatively and interpret them based on the (TCA) coding scheme to validate the model in the context of MOOC and explore the levels of transcultural awareness within learners' comments. Thus, after an initial round of coding by the researcher, and to secure the validity of the codes, data which were captured assigned and fit into more than one category or were on borderline were reviewed by a senior researcher and expert in analysing the TCA model. Inter-rater reliability was not possible to be established as the researcher was the sole coder. Yet, reliability was taken into account through an in-depth discussion of the analysis, and negotiation of codes. Consensus had to be reached before the entire coding was reviewed for inconsistencies by the researcher, conducting an additional round of coding for the key elements identified within the initial analysis of the data.

4.2 Findings

4.2.1 Descriptive quantitative content analysis

From 3861 comments posted on the fifth run of the EMI MOOC, 385 learners who were described as 'social learners' generated 3792 comments. 328 comments were labelled under category 'Zero' and excluded from the analysis based on the coding scheme including Instructors' comments. The

majority of comments were at cross-cultural level of awareness (Level1) Of TCA with 3290 comments, approximately (87%) of the total. While 225 of the comments were at the level of intercultural awareness (Level2) with a percentage of (6%). Just four comments had elements of transcultural awareness (Level3). More details on those comments and examples of the different levels will be provided next in section 4.2.2. Figure 4.3 displays comments' level of transcultural awareness upon each step in the course.

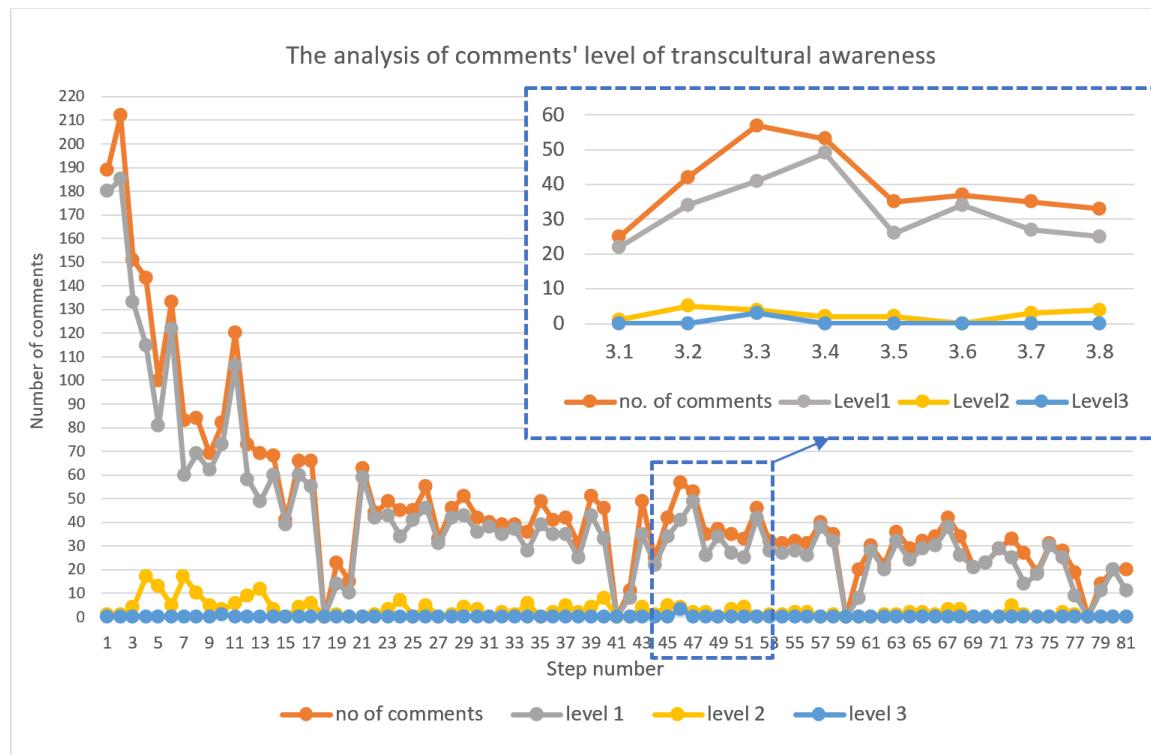


Figure 4.3 Transcultural awareness level of EMI MOOC(Run5) comments

The Figure above is a zoomed snapshot was taken for MOOC steps from 45 to 52, to give a closer look at those different levels illustrated. It was observed that the earlier comments in the MOOC run addressed initiatives to communicate with other diverse learners, and comments stated motivation to exchange experiences and ideas. Generally, there was awareness of cultural diversity. Yet, statistics and trends in the figure above showed participating and posting comments declining over time. The same pattern was recognised in the literature for retention (Phan et al., 2016), discussion break up and density of discussions (Goggins et al., 2016). As well in this study, number of replies in Figure 4.4 showed fewer peer communication and conversations beyond expressing different cultural perspectives and ideas. Overall, there was lack of meaning making, negotiating, and reacting to others' comments even within the replies themselves as inspected directly by the researcher.

It has to be noted that when analysing replies, although the average number of replies was 3.5 per a step, it was considered limited. The researcher did not rely on the automatic generator of course statistics but applied manual analysis of the replies. It was found that learners sometimes posted their opinions in the reply section to express a general idea or comment that was not related or linked to the original (parent) comment in anyway, and thus cannot be considered as a reply. Two examples are provided below of these types of replies that technically were posted in the reply section but were not actual replies but generic posts. All comments in the examples were paraphrased for ethical considerations see section 3.8.

Example 1: EMI Step 1.3 'Defining EMI'.

The activity: 'tell us about your context of EMI. How do you use English in your teaching and academic life?'

Comment: In the Ph.D. program, professors taught in English. I aim to teach nursing or statistics in English after the course.

A reply: Apologies, I posted this by accident. Please delete it.

From the example above it is clear that the reply did not mean to be posted in the reply section, whereas the automatic system counted it as a reply.

Example2: Step 2.3 'Task: what resources help you with your language?'.

The activity: 'we would like you to share some of your favourite resources. Mary and Rob like to recommend: 1-....., 2-, 3-

Comment: Specialised books, magazines, academic society, or university websites are the most useful resources to find expressions for academic contexts. I maintain a notebook to record interesting expressions and desire to find more ideas through the course.

The post received 3 replies; the first one was a question, the second was an agreement statement, but the third was a generic comment that discussed the main activity and not meant to be a reply as the previous comment did not share any links, but the reply came thanking for sharing resources that were posted by the instructors as demonstrated below:

Reply 3: Thank you for sharing the links. I consider using 5minutenglish to practice grammar and similar resources.

The results indicate that less interaction and peer communication occurred. It was found from the beginning of the course, that the number of replies were minimal (an average of 5% of comments

per step). Additionally, 'likes' as a typical way of measuring peer engagement and the simplest type of interaction were minimal too. Although the maximum number of likes triggered by a comment was (32), the average number of likes did not exceed six likes per step. Figure 4.4 illustrates the maximum number of replies and likes per step compared to the number of comments posted throughout the MOOC course.

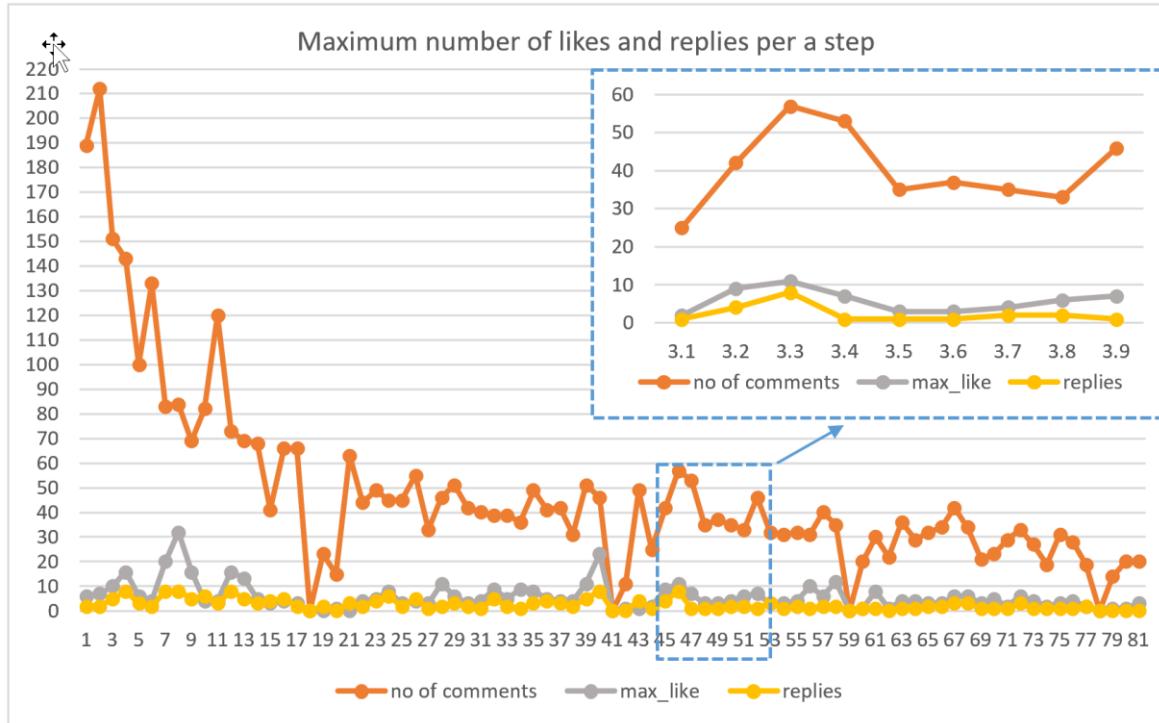


Figure 4.4 Number of replies and Maximum Number of likes

It is interesting to note that the movement and development of levels of transcultural awareness in peer discussions were not linear. Different comments representing different levels were presented in varying orders. This finding aligns with what Baker (2011) claimed in their research. Furthermore, it was observed that participants sometimes presented their first comment at a higher level, such as Level2, and then reverted back to the first level with their second comment. This back-and-forth movement between levels was consistent with Baker's findings in 2015, which helps explain why higher levels of transcultural awareness appeared to fluctuate.

These observations suggest that participants in the peer discussions were not following a pattern progressing from lower to higher levels of transcultural awareness. Instead, they demonstrated a more dynamic and non-linear representation, moving both forwards and backwards between levels throughout the course depending on the contextual discussion or the topic.

Yet, the appearance of comments with Level two and three declined generally as the course proceeded in line with the decrease of posted comments. The more the course advanced, the

more comments turned to be individual reflections, and comment were observed scattered. The findings agree with what Håklev et al. (2018) stated, that the asynchronous nature of the MOOC (with the numerous comments) makes social presence difficult to achieve.

4.2.2 Qualitative content analysis

In addition to the quantitative analysis, the comments were analysed qualitatively with a critical view, considering the contextual interaction. To note, all the comments from the fifth run of the MOOC mentioned in the next sub sections at all the levels of TCA, were paraphrased as examples of what was posted for ethical reasons as demonstrated previously in the methodology section, please refer to section 3.8 for more details.

4.2.2.1 Cross-cultural awareness (Level1) of TCA

This level was captured in the majority of the analysed data where learners discussed their own cultures and their experiences from their point of view. Often they compared their own culture with others on a general level with reference to national culture. So, cross cultural awareness was detected through the whole course supporting the importance of cultural aspects in peer discussions. In line with Baker's (2011) definition of this Level; it is the ability to articulate one's cultural perspective; and the ability to compare cultures at a general level. Examples of this level are illustrated in Table 4-2. Cultural perspectives were drawn mainly from national and other subcultures like referring to 'my university' and 'my culture', 'my context' and 'in my country'. Moreover, most of the comments at the second category of this level were based on generalisation and sometimes stereotyping. Humphreys and Baker's (2021) study supports this finding as a common and convenient way to initially discuss topics with people they do not know.

Table 4-2 Examples of the cross-cultural level of awareness (Run5)

Level1	Description	Examples
Cross-cultural Awareness:	• Articulate one's cultural perspective.	In our culture, women lower their gaze as an ancient religious tradition; in another, young people lower their gaze as a sign of respect for the elderly.
		It is appropriate to maintain eye contact with students in a Russian cultural context.
	• Compare cultures on a general level.	The Germans, for instance, tend to stare at others on buses, which the British don't appreciate.
		In some cultures, a distance of only a few centimetres is fine when talking face-to-face. but in others, less than a meter is uncomfortable.

4.2.2.2 Inter-cultural awareness (Level2) of TCA

Fewer comments were observed and categorised at Intercultural level of awareness (Level2) representing 6% of the total comments posted. The intercultural level contains four categories; moving beyond cultural generalisations and stereotypes; mediating and finding common ground between specific cultures; comparing distinct cultures and subcultures at a specific level; and the awareness of mismatch and miscommunications between cultures (Baker, 2015b).

In the EMI course, comments were mainly related to issues like teaching and learning in another language. Thus, many comments expressed cultural practices through language (see Culture and Language 2.1.1.2 for more details) as it is the main topic of the course. Here, learners were trying to compare cultures based on their own experiences in specific situations and contexts. They also identified variations within a certain national culture.

Additionally, it was observed in some cases that participants were trying to mediate between different cultures through facing the same challenges or obstacles when teaching or learning with diverse people. All the categories of this level were found in the comments and are presented in Table 4-3.

Table 4-3 Examples of Inter-cultural level of awareness (Run5)

Level2	Description	Examples
Inter-cultural Awareness:	<ul style="list-style-type: none"> Move beyond cultural generalisations and stereotypes, comparing between cultures at a specific level. 	<p>Natural accents are part of our background and culture. The most important thing is to communicate with others. Some professionals in my academic context communicate very well in English despite their accents.</p> <p>Students in an American institute listen all the time to that accent, so when they listen to other accents, they have problems of comprehension. The suggestion is to pay attention on a clear pronunciation when speaking.</p>
	<ul style="list-style-type: none"> Move beyond cultural generalisations and stereotypes, mediate / find common ground between specific cultures. 	<p>To avoid misunderstandings, I always write names, places, and dates on the board when presenting my lecture (British Literature) to international audiences.</p> <p>While attending lectures in Colombia (using Spanish), I encountered a problem. Since I was the first European student at the university, tutors didn't realize they needed to make adjustments to their lectures. Even after 8 months, I still have trouble understanding due to pronunciation, speed, lack of clarity, complicated run-on sentences, colloquialisms, etc. In light of this, I try to adjust my delivery to reflect what my English students experience when attending classes delivered in English.</p>
	<ul style="list-style-type: none"> Awareness of possibilities for mismatch and miscommunication between specific cultures. 	<p>Once my Cuban professor described a case to us and kept saying "abelinha," which means "small bee," and it made no sense to me at the time. Later on, we realized he was actually saying "a velinha," which is an old lady. He had to reintroduce the case again because everyone was trying to ignore the "bee" in the story... I found it really funny.</p> <p>People's names can be difficult to pronounce because they sound different in different cultures. Initially, I was worried about the quality of Japanese education because my Japanese students did not know Confucius (a famous Chinese philosopher). However, I discovered that my undergraduates simply didn't know him as Confucius because his Japanese name sounds like Koshi.</p>

4.2.2.3 Trans-cultural awareness (Level3) of TCA

Only four instances of this advanced level demonstrating transcultural awareness were posted. The level has only one abstract and grounded component. This component is defined by Baker (2015a) as the ability to move beyond initial interaction that is based on specific cultural generalisation and stereotypes, through negotiating and mediating between the emergent and dynamic communicative practices. This type of awareness showed learners' ability to be flexible and cope with diversity and fluidity of such a constantly changing nature of communication. They viewed cultural communicative forms and practices as not necessarily linked to resources or predefined in the context of MOOC (Baker and Ishikawa, 2021).

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Comments at this level demonstrated an understanding of culture and communication beyond the 'own' and 'their' culture. It is apparent that learners at this level, understood how to communicate in Level3 from their earlier experiences, such as growing, learning, or working in a multicultural environment locally, virtually, or abroad. Learners through their comments expressed respect and an openminded attitude towards different cultural forms and practices, showing an ability to deconstruct and reconstruct practices and perspectives. Table 4-4 demonstrates a couple of examples of how comments presented at this level.

Table 4-4 Examples of the Trans -cultural level of awareness (Run5)

Level3	Component	Examples
Trans-cultural Awareness:	<ul style="list-style-type: none"> • Negotiate and mediate between different emergent and dynamic cultural and contextual communication modes and frames of reference. 	<p>1- While there is variation in what is culturally appropriate, it doesn't necessarily inhibit you, even when you speak to students to clarify what you are doing. Students tend to be very tolerant if you pay attention to their spoken and unspoken suggestions.</p> <p>2- In my culture, people are social in the majority of cases body contact is normal. but we have to identify the context. It depends on generations too. Now, some people don't like to be touched, especially by foreigners. Others, do not like to be close to anyone especially men, depending on the time and context and people.</p>

From example 2 in the Table 4-4, it can be seen that this comment concluded many levels of TCA within it. Starting with "in my culture" at the first level, then moving to Level2 with "some people don't like to be touched, especially by foreigners" as it showed variations within the same culture, then produced the third level of awareness by considering moving beyond their own culture "depending on the time and context and people."

At this level, learners moved backward and forward between levels within or through different comments. So, they can present a Level3 comment and then later they can post another comment at the Level1 or 2, or vice versa, as identified by (Baker, 2015b; Baker and Ishikawa, 2021).

Below is another example of transcultural awareness level that appeared in a sequential way within a discussion thread moving from level1 towards Level3:

"In Spain, direct eye contact is expected during conversation."	Level1
"In Russian cultural context, maintaining eye contact is appropriate with students."	Level1
"In Australia, teachers used eye contact to dialogue with students. yet, it is rude and strongly not recommended for Australian aborigines."	Level2
"in Germany Direct eye contact is expected. Its took me quite a while to get comfortable with it, from where a I come, people are quite quicker to break off eye	Level2

contact as they fear to be intrusive. But if you break off eye contact too readily you may look suspicious”

“the length of eye contact can really vary and should be considered for people with different cultural background. So, when you give a lecture, neither to stare at one person, nor look away avoiding looking at people, your eyes should flow.” Level3

What brings us to the importance of the manual and critical qualitative content analysis especially in complex systems as MOOCs, appears in the example above as the development of the discussion and the context of the interaction along with the sequence of the levels, makes the analysis representative and accurate. In another words, if we separated the comments without considering the context and the discussion situation, we might analyse them differently. When we look at the Level3 comment in isolation by itself, we can analyse this comment as level one and consider it presenting an opinion or point of view, whereas actually it was a collective conclusion that proposed a negotiated and mediated cultural practice that does not reference any specific culture.

4.3 Conclusion: phase 1

This chapter findings validates the TCA model in the context of MOOC, with the appearance of transculturality in the comments (even with only four comments presenting the third level). There was a dominant of Level1 comments mapped to the cross-cultural level and fewer comments presented the intercultural level, which was consistent with the literature. However, the big difference in proportion between Level1 and Level2, was inconsistent with the findings of previous studies.

One explanation is that these studies targeted the development of TCA through interventions or clear goals towards intercultural experience. The goal in this study was different as first, the study aimed to measure TCA level as it occurs naturally in the context of MOOC and to what extent transculturality appears. Second, learners had different previous experiences as well different levels of TCA, and mixed cultural attributes that are hard to put all learners at the same starting point.

Additionally, and through the analysis, it was observed that little interactions and minimum direct communication was presented in the MOOC. So, the appearance of different levels at different percentage may reflected the diversity of motivations and previous cultural experiences, and not because of peer interaction, as it was evident in the comments with Level2 and 3 that brought experiences from out of the MOOC.

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These claims allowed the researcher to move to the next phase to confirm these findings with other sample of diverse participants, and to fully answer RQ1a, and investigate the association between transculturality and co-construction of knowledge in MOOCs, building on what was concluded by Smith and Segbers (2018) that transculturality promotes collaboration between people and welcomes diversity, maintaining individual and national identity.

Chapter 5 Phase2: The Relation between TCA and Co-Construction of Knowledge (Run10)

This chapter describes the methods employed in phase2 of the study, and the findings associated with their application. This phase has been designed following the initial results of phase one that provided empirical evidence of the validity of the TCA framework in MOOC context and the existence of elements of transculturality in learners contributions (Shahini et al., 2020). The aim of this phase is to confirm practically the reliability and validity of both the TCA and IAM content analysis methods for evaluating the quality of learners' comments in a MOOC. It provides a richer and more in-depth analysis by, being more trained for analysis, the use of more concise reliability measures, and produce more quantitative analysis and a representative example of sequence analysis.

At the same time to pinpoint the possible correlation between those two measures to identify the educational usefulness of learners' co-generated data. Additionally, it informed the later phase as to whom to approach for the interview (as a sampling technique), to gain a deeper understanding on how diverse participants communicate knowledge collectively. This chapter consists of two methodological parts:

- Qualitative and quantitative content analysis on Run10 of the same EMI MOOC. Participants' comments were analysed to investigate their quality according to two different frameworks:
 - a) the TCA method to confirm, compare and contrast findings of the first phase, and to explore participants' level of transcultural awareness in the tenth run to fully address RQ1. And prepare for the data transformation to quantitative categories addressing RQ2.
 - b) the IAM model to explore participants' level of collective knowledge construction through their comments and transform the data to quantitative form in preparation for the second method applied to contribute to answer RQ2a.
- Quantitative statistical analysis to examine the possible association between the level of transcultural awareness found in the comments regarding co-construction of knowledge (correlation) to answer the overall RQ2.

5.1 Methods

This phase of the project applied a mixed methods approach, starting with qualitative and quantitative content analysis followed by transforming these qualitative data to numerical categories to perform quantitative statistical analysis (correlation). All details about the content analysis method were outlined in section 3.5. Krippendorff's (2018) six steps for conducting content analysis were followed (utilising, sampling, recording, reducing data, abductively inferring contextual phenomena, and narrating). The first four steps were reported in detail earlier in section 3.5.3. The fifth step of the procedure, abductively inferring contextual phenomena explaining, and relating extracts to what do they mean are explained next, whereas the sixth step will be provided in the discussion Chapter 7 where detailed interpretations are reported to answer the analytical questions supported by the findings.

The researcher worked with an anonymised textual dataset, that is all learners' comments posted on the EMI MOOC course "English as a Medium of Instruction for Academics" from its tenth run in October 2020. The course was selected upon a criterion mentioned previously in section 3.4. The researcher critically analysed these comments considering the contextual interactions and comments sequence for a better analysis and richer interpretations of these interactions. The analysis for the EMI MOOC data had an extended approval by the Faculty Ethics Committee with the same number (48827).

After transforming both content analysis methods' categories into a numerical form, a statistical analysis was performed to test the presumption of the relation between TCA and CK.

5.1.1 Participants

For the tenth run of the EMI course that was freely available on 5th of October 2020 for six weeks, 3422 participants joined the course from 130 different countries according to FutureLearn demographic data. There were 348 social learners (participants who posted/replied at least 1 comment). According to the world map that learners pinned themselves into, globally diverse learners joined the course which was the target to have culturally diverse participants. Figure 5.1 shows the diversity of MOOC learners in Run10.



Figure 5.1 The EMI course (Run10) diversity of learners

5.1.2 Data collection and Data analysis

The dataset of anonymised comments derived from the 81 steps of the 4-week EMI MOOC course (Run10) in October 2020 were collected and manually analysed qualitatively and quantitatively, except quiz steps that didn't include any comments. In total, 3133 comments were generated (by learners). Each comment was considered as the unit of analysis with consideration of the context. Descriptive quantitative analysis comprised of coding several activities either manually or using functions of Excel/ SPSS to complete the analysis procedure as appropriate.

First, engagement and peer interaction markers in this course which consisted of number of comments, number of enrolments, number of social learners, number of contributions per learner in asynchronous discussions, 'likes' of other learners' comments and 'replies' to specific comments were analysed. Equivalent to the earlier MOOC run (Run5), it was observed that sometimes participants were not using the reply section to actually reply to a specific comment, instead they posted in the general comment section and the opposite is true. Some learners did not use the reply function to interact, agree, elaborate, or communicate directly with others, rather they posted in the general section comment for replying. Therefore, additional to collecting likes and replies based on the platform statistics, replies were recorded and analysed manually by the researcher to detect actual direct communication.

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Then, all comment data were transformed to ordinal categories upon the output of the two qualitative content analysis methods (TCA, IAM), and distribution of these categories were recorded throughout the course steps. Third, all resulting comment data from the first method (TCA) was correlated with all resulting comment data from the second method to test the association statistically using SPSS software. Finally, the sequence of learners' comments was identified based on both TCA and IAM level for each step.

Table 5-1 demonstrates comments' statistics; showing number of comments posted per learner; maximum number of likes per comment; number of replies according to the FL platform; and the number of actual replies posted in the MOOC.

Table 5-1 comments descriptive quantitative analysis (Run10)

No. of posts per person	No. participants	%	Max no. of likes per post	Freq	%	No. of replies	Freq	%	No. of actual replies	Freq	%
1	137	39.5	0	1862	59.4	0	3031	96.7	0	3053	97.4
2	47	13.5	1	718	22.9	1	64	2.0	1	71	2.3
3	32	9	2	312	10	2	24	0.8	2	7	0.2
4 - 15	83	24	3	143	4.6	3	5	0.2	3	1	0.0
<15	49	14	4	67	2.1	4	2	0.1	4 (Max)	1	0.0
Total	348	100	5	20	0.6	9 (Max)	7	0.2	Total	3133	100
97 (Max)			6	10	0.3	Total	3133	100			
			7 (Max)	1	0						
			Total	3133	100						

Qualitatively, all MOOC comments were coded manually by the researcher and analysed using two different content analysis schemes. First, based on the integrated TCA model (Shahini et al 2020), comments were analysed to assess online discussions in relation to transcultural awareness, and to confirm findings of the first phase with a different run of the same MOOC and a different sample of diverse comments. The same three levels coding scheme was used to evaluate the level of learners' transcultural awareness, as shown previously in Table 4-1 section 4.1.3. Each comment was coded under only one of the categories for the levels of transcultural awareness.

Second, the researcher manually analysed all the comments with the aim to evaluate the process and the quality of social knowledge construction in asynchronous learners' comments, adopting Gunawardena et al.'s (1997) coding scheme, see section 2.3.5 for more details on this model. This widely validated coding scheme (Lucas et al, 2014) is presented in phases from lower to higher

level of peer interaction (not necessarily sequential when applied). An overview of the IAM coding scheme applied for analysing this online data in this study is provided in the following Table 5-2.

Table 5-2 The adopted IAM coding scheme

Phases of IAM	Description
Phase 1 Sharing/Comparing Information	Statements of observation/opinion/identify problem/ agreement. Statements with supportive comments/examples. Statements asking/answering questions to clarify details.
Phase 2 Dissonance/inconsistency of ideas.	Statements of Disagreement. Statements asking/answering in concerns to disagreement.
Phase 3 Negotiation of meaning/co-construction of knowledge	Negotiation of meaning or terms. Negotiation/ identification areas of improvements. Identify areas/parts of agreement. Negotiation showing compromise and co-construction.
Phase 4 Testing/modifying synthesis or co-construction	Testing synthesis against shared responses/schema/experience/literature and contradictory.
Phase 5 Agreement statement(s) /applications of newly constructed meaning	Summarisation of agreement(s) Metacognitive statements of participants illustrating new knowledge construction or application.
Category Zero	<ul style="list-style-type: none"> • Instructors' comments • Languages other than English • Adverts • Duplicates or copied comments

As the dataset was received as an Excel file, the researcher coded all the comments in Excel for both methods (TCA, IAM) with a ten-day interval between each method. It was easy to manage and analyse the data in Excel as the analysis did not rely on specific words or search terms, instead the aim of the coding was to record and integrate texts with the situational interpretations and transforming them into an analysable representation (Krippendorff, 2018). After coding the data, the researcher cleaned the data excluding all non-representative items such as Instructors' comments; learners' comments in other languages (non-English); adverts; and duplicates from the analysis and labelled them as 'zero' for both methods.

It should be noted that throughout the coding process using the IAM method, and coding comments to the phases, there were no comments found and mapped to either phase four or five. These findings will be explained in the following section. But it is important to be identified as the reliability tests were undertaken for the first three phases only of the IAM model.

Before moving to the fifth and sixth step of the content analysis procedures as suggested by Krippendorff (2018) (abductively inferring contextual phenomena – narrating and interpreting), reliability and validity of coding will be discussed in detail next.

5.1.3 Reliability

This phase's goal was to test the association between knowledge co-construction and transcultural awareness, through quantifying and mapping MOOC comments to a coding scheme based on TCA and IAM frameworks, with a ten-day interval between the two methods. As mentioned previously, (see Content analysis Considerations 3.5.1) the analysis was employed to transform these textual categories into numerical forms to apply statistical analysis (correlation). Coding is time-intensive and selecting a subset for inter-rater reliability (IRR) may be more practical. Therefore, for each of the methods (TCA, IAM), a different collection of more than 20% (20% + borderline cases + cases fitted in more than one category) of the total comments were reviewed by a senior researcher and expert in that field, who independently rated the selection of data according to the content analysis coding scheme of that method. Any discrepancies were discussed and resolved until consensus was reached and insights were applied by the researcher. The table below describes the comment sample that has been selected for the purpose of IRR.

Table 5-3 Descriptive statistics of the sample selection taken for IRR

		TCA							IAM										
		0	1	2	3	Total			0	1	2	3	Total						
TCA_level	0	90	0	0	0	90	IAM_level	0	59	2	0	0	61	Total	1	630	30	4	664
	1	0	630	30	4	664		1	2	636	2	8	648		2	0	3	17	29
	2	0	9	36	2	47		2	0	8	0	60	68		3	0	19	77	806
	Total	90	643	74	14	821		Total	61	649	19	77	806						

IRR was calculated and reported using several methods (Cohen's kappa, Intraclass Correlation Coefficient (ICC), Krippendorff's Alpha) as suggested by De Wever et al. (2006) and commonly reported in multidisciplinary literature, see section 3.5.1. As part of this study, the three commonly used reliability measures in content analysis research were evaluated, reported, and illustrated in the following section. Table 5-4 Different Inter-rater reliability IRR scores (TCA-IAM) demonstrates the different IRR measures and values associated with them in relation to both TCA and IAM methods.

Table 5-4 Different Inter-rater reliability IRR scores (TCA-IAM)

Method	Reliability test	Score
TCA	Cohen's Kappa	.801
	ICC	.815
	Krippendorff's Alpha	.8631
IAM	Cohen's Kappa	.875
	ICC	.886
	Krippendorff's Alpha	.9172

1. **Cohen kappa** is commonly used for assessing nominal (categorical) variables. Different variants of kappa allow assessing IRR in either fully crossed (units of analysis that were coded to be rated by the same set of coders) or non-fully crossed designs (Hallgren, 2012). Kappa values range from -1 to 1. Landis and Koch (1977) suggested Interpreting kappa values according to guidelines, where 0.0 - 0.2 = slight agreement, 0.21 - 0.40 = fair agreement, 0.41 - 0.60 = moderate agreement, 0.61 - 0.80 = substantial agreement, and 0.81 - 1.0 indicating almost perfect to perfect agreement. Acceptable IRR measures vary depending on the study methods and research questions. However, (Krippendorff (1980) suggested that estimations should be discounted for values less than 0.67.

For this study, the Siegel and Castellan kappa's variant was computed in SPSS as it eliminates the bias effect (when marginal distributions of specific ratings are considerably different between coders) (Hallgren, 2012). IRR analysis was performed to evaluate the consistency with which coders rated subjects categorically as shown in

Table 5-5.

TCA Symmetric Measures		Asymptotic Standard	Approximate	
TCA Symmetric Measures		Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Measure of Agreement	Kappa	Value	Approximate T ^b	Approximate Significance
Measure of Agreement	Kappa	.801	.025	.000
N of Valid Cases		821		

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

Measure of Agreement	Kappa	Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Measure of Agreement	Kappa	.875	.020	35.441	.000
N of Valid Cases		806			

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

IAM Symmetric Measures					
Cohen Kappa Values for both TCA and	Measure of Agreement	Kappa	Value	Asymptotic Standard Error ^a	Approximate T ^b
			.875	.020	35.441
	N of Valid Cases		806		
a. Not assuming the null hypothesis. b. Using the asymptotic standard error assuming the null hypothesis.					

IAM

The resulting kappa indicated substantial agreement using TCA method, $\kappa = 0.801$ (Landis & Koch, 1977). The variable contained a modest estimation of error variance due to differences in coders' subjective ratings which is expected in a qualitative and interpretative approach and complex social contexts. Kappa for IAM technique resulted in an almost perfect agreement with, $\kappa = 0.875$. Both ratings using this method were deemed as adequate to test the hypothesis of this study.

2. Intraclass Correlation Coefficient (ICC) are useful with ordinal variables, for two or more coders, and may be used when all or only a subset of subjects is rated by multiple coders. ICC uses the magnitude of disagreement to compute IRR estimates. Larger-magnitude disagreements result in lower ICCs than smaller magnitude disagreements. The commonly used cut-off points for qualitative ratings based on ICC values are: poor if IRR is less than 0.40; fair if IRR ranges between 0.40-0.59; good if between 0.60 - 0.74, and excellent between 0.75 -1.0 (Cicchetti, 1994).

According to this study design, IRR was assessed considering four major factors to determine the appropriate ICC variant (see Hallgren (2012) for more details). IRR was assessed using a two-way mixed model, with an absolute agreement type in ratings, and a single-measures ICC, aiming to generalise the subjects rated by one coder. The resulting ICC for both methods was in the excellent range, ICC = 0.815 for TCA, and ICC = 0.886 for IAM (Cicchetti, 1994), indicating a high degree of agreement. Therefore, a minimal amount of measurement error was introduced by the independent coder. The high ICC value suggests that ratings were deemed to be suitable to test the hypothesis of the present study. An outline of the ICC measures for both methods is presented in Table 5-6 ICC measures of IRR for both TCA and IAM methods below.

Table 5-6 ICC measures of IRR for both TCA and IAM methods

TCA Intraclass Correlation Coefficient							
Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0				
	Lower Bound	Upper Bound	Value	df1	df2	Sig	
Single Measures	.815 ^a	.791	.837	9.822	820	820	<.001
Average Measures	.898 ^c	.883	.911	9.822	820	820	<.001

IAM Intraclass Correlation Coefficient							
Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0				
	Lower Bound	Upper Bound	Value	df1	df2	Sig	
Single Measures	.886 ^a	.871	.900	16.603	805	805	<.001
Average Measures	.940 ^c	.931	.948	16.603	805	805	<.001

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. The estimator is the same, whether the interaction effect is present or not.
- b. Type A intraclass correlation coefficients using an absolute agreement definition.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Two-way mixed effects model where people effects are random and measures effects are fixed.

- a. The estimator is the same, whether the interaction effect is present or not.
- b. Type A intraclass correlation coefficients using an absolute agreement definition.
- c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

3. Krippendorff's alpha is more flexible than kappa or ICCs, especially when designing non fully crossed studies as this one. It can be generalised across nominal and ordinal variables, although it is less known and supported by the famous statistical programs. A macro was produced by Hayes and Krippendorff (2007) to facilitate adopting this measure. It calculates disagreements instead of correcting percent-agreements to overcome other methods limitations. According to Hayes and Krippendorff (2007), Alpha must not be below $\alpha = 0.800$ to achieve high reliability. Also, in social sciences when $\alpha > 0.800$ that is considered a strong IRR (Krippendorff, 2004).

The KALPHA macro was downloaded. After applying the macro on the ordinal data of both methods an obtained value of $\alpha = 0.863$ for TCA, and $\alpha = 0.917$ for IAM (see Table 5-7). Krippendorff's Alpha reliability measures for TCA and IAM means an excellent IRR for both methods with all the considerations of being ordinal and as well not fully crossed of two coders in this study. Thus, the inter-rater reliability measures are considered excellent and adequate to proceed to statistical and qualitative analysis and interpretation.

Table 5-7 Krippendorff's Alpha reliability measures for TCA and IAM

Run MATRIX procedure:
Krippendorff's Alpha Reliability Estimate
Alpha LL95%CI UL95%CI Units Observers Pairs
Ordinal .8631 .8234 .9005 821.0000 2.0000 821.0000
Probability (q) of failure to achieve an alpha of at least alpha min:
alphamin q
.9000 .9735
.8000 .0011
.7000 .0000
.6700 .0000
.6000 .0000
.5000 .0000
Number of bootstrap samples: 10000
Judges used in these computations: TCA_level TCA_revi
----- END MATRIX -----
Krippendorff's Alpha Reliability Estimate
Alpha LL95%CI UL95%CI Units Observers Pairs
Ordinal .9172 .8845 .9473 806.0000 2.0000 806.0000
Probability (q) of failure to achieve an alpha of at least alpha min:
alphamin q
.9000 .1429
.8000 .0000
.7000 .0000
.6700 .0000
.6000 .0000
.5000 .0000
Number of bootstrap samples: 10000
Judges used in these computations: IAM_level IAM_revi
----- END MATRIX -----

5.2 Findings

This section reports the results of content analysis for each of the two techniques used, the TCA and IAM analytical frameworks. Then it demonstrates the statistical analysis to test the hypothesis of transcultural awareness level being correlated to co-construction of knowledge through online discussions.

5.2.1 Findings of TCA content analysis

3133 comments were posted on this run over the free availability period of the EMI MOOC (six weeks) by 348 'social' learners. 346 comments were labelled under category 'Zero' and excluded from the analysis based on the coding scheme (see Table 4-1 The TCA coding scheme). 86% of comments presented cross-cultural level of awareness (Level1) with 2693 comments. Intercultural

awareness (Level2) came second with 78 posted comments that presented only (2.5%). Lastly, only 16 comments accrued in transcultural awareness (Level3). Although the number of TCA Level3 is greater than this level in Run5, it represented a very small percentage from the overall number of posted comments (0.5%). Figure 5.2 illustrates comments' level of cultural awareness per each step in the MOOC.

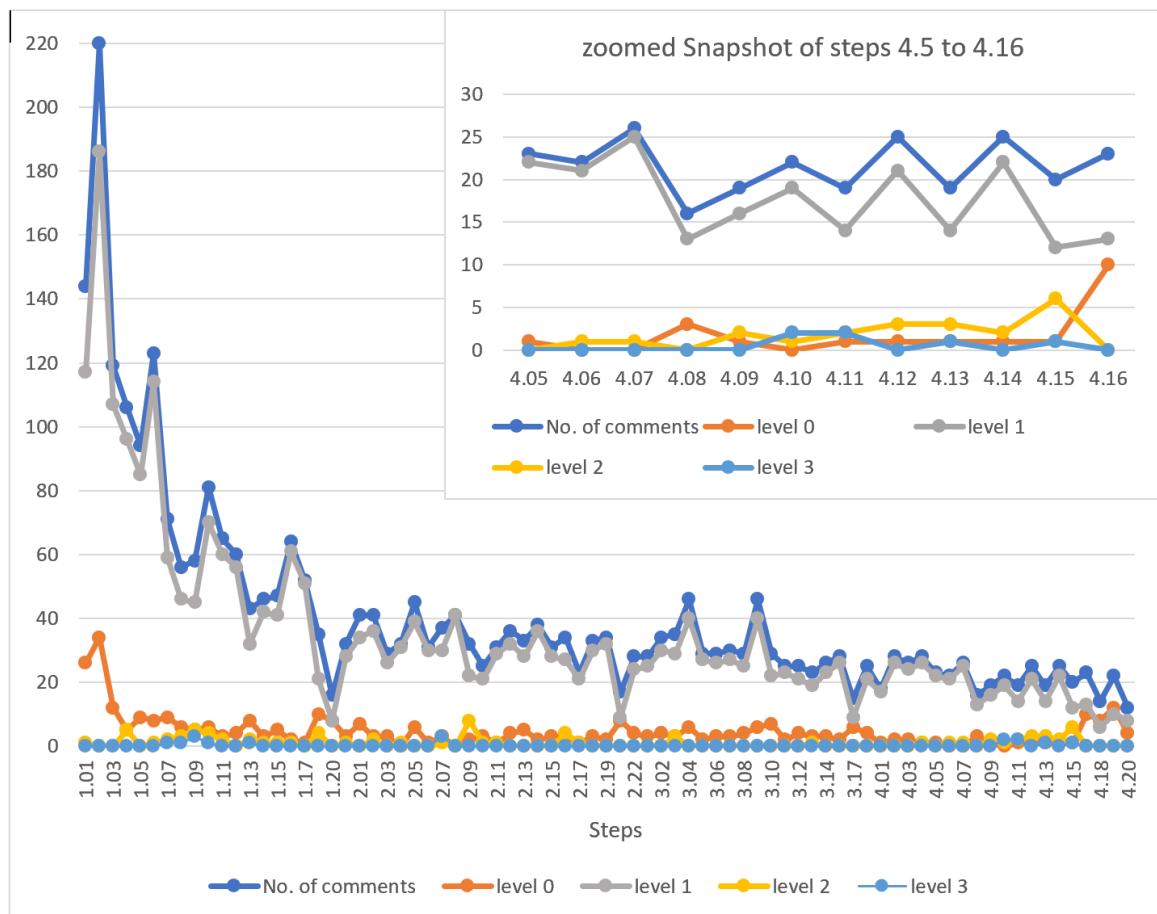


Figure 5.2 distribution of transcultural awareness levels in EMI MOOC (Run10)

Overall, it can be observed the number of comments posted decreased throughout the MOOC, and heavily weighted towards cross cultural awareness. The findings and statistics of this run (10) confirm the results of the previous phase (Run5) following the same pattern of levels of TCA, although diverse population with different cultures and backgrounds joined the MOOC in each run. 137 of the learners posted only once, and most of their cultural contributions were around expressing culture framed by their specific named nations. Learners tended to reflect on their experiences according to their context as static and fixed. These results are consistent with previous literature that measured participants in different contexts (Abdzadeh and Baker, 2020; Humphreys and Baker, 2021; Yu and Maele, 2018), examples of this level are provided in the next section.

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However, a small percentage of the comments showed how higher levels of awareness were important for interaction and communication in this setting. It was observed that comments at this level were often associated with mentioning participants' previous multicultural experience or knowledge, and not as a result of interaction within the MOOC.

only 10% of participants posted comments at Level2 (which result in 2.5% of the total comments) Almost 70% of the participants who represented Level3 comments contributed in Level2 also and made one quarter of participants who presented comments at Level2.

These findings suggest that there may be a relatively small core group of highly 'social' learners who are contributing at multiple levels, while the majority of participants are only engaging at the lower levels.

Table 5-8 percentage of comments and participants in each level of TCA

EMI MOOC	Run10	% of social participants
No. comments/participants	3133	348
Level1	86%	94%
Level2	2.5%	10%
Level3	0.5%	3.7%

The following section will provide a selection of examples that presented different levels of TCA and were considered representative of data. As stated previously in 3.4, this course targeted mainly professionals who were, or intended to, teach different subjects in a different setting using English where it is not their or their students' first language. Therefore, the contents of the comments on many occasions discussed cultural attributes through the language (i.e., pronunciation, accuracy), for details on the relation between culture and language please see section 2.1.1.2 (culture and language). For the following examples, pseudonyms were used to protect the anonymity of the participants in compliance with ethical guidelines, where comments contained personal information. All examples were either presented in quotation marks if they were quotes from participants with obtained consent, or paraphrased and identifiers were removed if no direct consent was received.

5.2.1.1 Cross-cultural awareness (Level1) of TCA

This level of awareness was clearly dominating throughout the course, demonstrated by the comments. Participants kept going back to this level even when they advanced to the higher levels. That is complying with what Baker and Ishikawa (2021, p.286) suggested "while people

may develop from levels 1 to 3, as outlined here, there is no suggestion that this has to be so. Individuals may at times exhibit awareness at Level2, or even Level3, and at other times revert to more basic Level1 awareness.”. Instances of Level1 cross cultural awareness are presented in Table 5-9, where participants generalised and predefined features of their culture, and simply making general comparisons with other distinct national cultures, similarly as cross-cultural perspective that was produced earlier as distinct fruits with each fruit type has predefined and static specifications (see Figure 2.1). All components of this level were apparent in the comments.

Referring to the representative examples mentioned below there were two observations. First, when learners expressed their own culture, it was mentioned associated with implications in education or teaching. That supports how important and related culture is as a factor that influence perspectives and behaviours in all aspects of life. Second, most of the comments in this level presented stereotyping and generalisation on a national level when compared to their own culture. Comments showed appreciation and awareness of differences, but as fixed and separated nations without considerations to individual differences or changes through interaction (Baker and Ishikawa, 2021).

Table 5-9 Examples of cross-cultural awareness level (Run10)

Level1	Description	Examples
Cross-cultural Awareness	<ul style="list-style-type: none"> • Articulate one's cultural perspective. 	<p>“Facial expressions and hand gestures are used in my culture to show understanding (or lack of it). Both professors and students rely on them to convey meaning.”</p>
		<p>“Actually, in my culture it is not polite to interrupt someone who is talking. We let someone to convey his ideas and wait for its end. If someone dominates a discussion and do not allow others to speak, I will admonish him not to do that”</p>
	<ul style="list-style-type: none"> • Compare cultures on a general level. 	<p>“The only aspect of culture and tradition for where I currently am (the UK), other than Covid-19 rules, are not to invade someone's personal space, i.e., 1.0m. Other cultures have a smaller personal space whilst others just ignore your personal space.”</p>
		<p>“Eye contact is an important body gesture in Indonesian communication and culture. Avoiding eye contact is a sign of embarrassment, just like it is in the West. However, in period films or TV shows, you'll notice that everybody seems to be avoiding eye contact.”</p>

5.2.1.2 Inter-cultural awareness (Level2) of TCA

Only 2.5% (78) of the comments represented the intercultural awareness level, moving to more complex understandings of culture and communication. Here, cultures were seen to be more diverse and comprise of many subcultures and groupings, based on participants' knowledge and

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experiences of diverse interaction and communication. Learners showed an understanding of the different interpretations of cultural practices in different contexts, demonstrating the effect of context and instances of interaction in interpreting culture. Comments showed recognition of the need to revise knowledge of other cultures and update them often. However, nationalism remained evident and significant in the comments when referencing culture.

The pattern of a decline in the number of comments when reaching higher levels is consistent with previous studies (Abdzadeh and Baker, 2020; Humphreys and Baker, 2021; Kusumaningputri and Widodo, 2018). However, the proportions were different compared to these studies. In their studies, there were significantly more instances of comments recorded as a proportion in Level 2 of TCA.

The inter-cultural perspective here was clear. Learner's comments were flexible and considered interaction and context just like a creative fruit platter. Each time fruits are sorted, they are mixed, cut, and arranged differently creating something new, although you still can identify the distinct fruits (Winschiers-Theophilus et al., 2019), see Figure 2.1. The examples provided in Table 5-10 below illustrates these approaches to cultures.

Table 5-10 Examples of Inter-cultural level of awareness (Run10)

Level2 Inter-cultural Awareness:	Description	Examples
	<ul style="list-style-type: none"> Move beyond cultural generalisations and stereotypes, comparing between cultures at a specific level. And acknowledge of subcultures and groupings 	<p>“A problem for me in Spanish is the stress is syllabic and not tonal; and the writing represents the sounds more faithfully than it does in English. So, I often don't stress sounds I should because they are connecting words and not nouns and verbs for example. The letters r, j, and g took me a while to master. I really had to modify my West country accent to be understood by my peers when I first began to teach”</p> <p>As a citizen and a schoolteacher, I have observed that having a positive and friendly body language is crucial to establish a connection with students.</p> <p>In urban areas, teachers tend to dress differently than those in rural areas. Dressing in a smart and professional manner boosts a teacher's confidence, which helps them deliver their lessons more effectively. However, even in rural areas, there are changes occurring in the way teachers dress.</p>
	<ul style="list-style-type: none"> Move beyond cultural generalisations and stereotypes, mediate /find common ground between specific cultures. 	<p>“People usually associate physical features with culture and assume that they must know and belong to that culture, and hence. They even try to mimic gestures and talk about topics that they assume the person acknowledges because its part of his/her origins, even if they have never been in touch with such culture because they were raised differently. I think that people should simply approach others for the sake to know them, the person, and then eventually they will find out what that person brings within which will enrich their relationship.”</p>
		<p>“As a lecturer we aim to give quality teaching to our students but in the case wherein our culture and behaviour affects the class, we should evaluate ourself and shift to other teaching approach. There are lot approaches suggested by experts for multicultured class. As an educator we should adjust our behaviour to conform with the acceptable or expected behaviour of the students because doing so will bring rapport and respect between you and the students.”</p>
	<ul style="list-style-type: none"> Awareness of possibilities for mismatch and miscommunication between specific cultures. 	<p>“Ignorance about other people's culture and where non-native-looking people are from is very common in this day and age. It's a form of racism that needs to be stopped. Admittedly, some people don't mean to offend and are just ignorant and stupid but this ignorance can be very insulting. We must never assume anything about people that we do not know. It is a very easy mistake to make. In the classroom this can be a disaster for the teacher if wrong assumptions are made about our students and can ruin the teacher-student relationship causing students to leave the course or to put a complaint in against the teacher. All because of a mistaken assumption.”</p>

5.2.1.3 Trans-cultural awareness (Level3) of TCA

A very limited number (16) of the posted MOOC comments presented elements of transcultural awareness, which presented 0.5% of the total comments. At this level, cultural references and communicative practices moved beyond fixed scales. They were dynamic, emergent, and not related to specific cultures. This level is based on the ability to negotiate, deconstruct, and reconstruct cultural references and communicative practices as they emerge in a specific context through interactions. Comments at this level moved beyond predefined categorisation to cultural awareness that referenced a range of communities, shifting from the local to the global, between and through scales in a fluid way resulting in a novel cultural form (Baker and Ishikawa, 2021). The following examples in Table 5-11 Examples of the trans-cultural level of awareness (Run10) show us how transcultural awareness was expressed.

Table 5-11 Examples of the trans-cultural level of awareness (Run10)

Level3	Component	Examples
Trans-cultural Awareness:	<ul style="list-style-type: none"> Negotiate and mediate between different emergent and dynamic cultural and contextual communication modes and frames of reference. 	<p>1- "I would agree with the comment about global citizenship, as well as with the transformative nature of our work, and our need to engage with "education in a critical and adaptive way".</p> <p>2- "Mutual communication by giving each other more information about how and where they grow and live would definitely remove the gap between "who I am" and "I assume that you are". In an EMI setting, teachers could use their own stories to tell and shape students' understanding of a fluid and changing nature of any cultural or racial concept rather than based on texts".</p> <p>3- "we need to adapt and adjust our language according to group level and their understanding, especially if we are in the multicultural environment. Our first objective is to use English effectively in intercultural communication contexts".</p> <p>5- "I would not directly challenge others' stereotypes and I assume that is not the intent. Because it would be hard to change them. Mutual communication by giving each other more information about how and where they grow and live would definitely remove the gap between "who I am" and "I assume that you are". In an EMI setting, teachers could use their own stories to tell and shape students' understanding of a fluid and changing nature of any cultural or racial concept rather than based on texts ."</p>

The first example shows how the participant understood the need to move from local culture to a global perspective. As a teacher he/she agreed that the education field has a frequently and continuously transforming field, and the need to engage in practices that are always reviewed and

evolved according to the contextual situations. These elements in the comments were described by Baker (2015b).

In the third example the participant showed us transcultural awareness with the need for fluid and dynamic communicative practices through a continuous adjustment and adaptation to the level of the language used to fit diverse students. The participant stressed the importance of effective communication through negotiation according to a multicultural context that is not tied to a particular culture.

Participants mainly articulated these complex conceptions drawn from previous international experiences. Transcultural awareness here provided a unique blend of cultural practices that are not tied directly to certain entities but related to several known or unknown cultures, just like the smoothie metaphor (see Figure 2.1). A unique taste is presented from the blended fruits, where you might or might not recognise the distinct fruits.

5.2.2 Findings of IAM content analysis

This section reports on the IAM content analysis of all the MOOC comments that were posted by the learners from the tenth run of the course to identify the phases and the quality of knowledge construction through online discussions. The IAM content analysis was conducted to address the research question (RQ2a): What are the levels of learners' social knowledge construction that appear in the MOOC online discussions? Findings suggest there is clear evidence that contributing to the comment section has a significant role in social knowledge construction.

All the 3133 comments that were posted on this run (Run10) over the free availability period of the EMI MOOC (six weeks) by 348 'social' learners were analysed. 265 comments were labelled under category 'Zero' and excluded from the analysis based on the adopted IAM coding scheme (see Table 5-2). The same criteria as TCA content analysis method were followed for exclusion, except for some comments that were considered unrelated comments for TCA which contained agreement or disagreement to previous comments were explicitly part of the categories of IAM model and had to be included even if the comment was as simple as 'I agree' which did not mean anything cultural when coding TCA.

The majority of posts occurred in phase I (88%), followed by Phase III with (2.6%), and less than (1%) reached phase II with 21 comments respectively. No posts were found at higher phases (4,5). These results are aligned with previous studies in online discussions (Bonafini et al., 2017; Gunawardena et al., 2016; Hou, 2012; Hou et al., 2015; Tawfik et al., 2017). The absence of phase 4 and 5 codes indicates that no peer discussions were observed that involved testing new

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knowledge against theories, facts or experiences, and no application of this knowledge in a novel context or way, or even summarising the concluded knowledge. That suggest that these phases of CK do not happen naturally as part of peer discussions, rather they need to be encouraged. Thus, that implies that there were no course tasks designed to motivate and encourage those types of CK. Figure 5.3 illustrates the distribution of each phase over the course.

Although most of the comments presented the first phase of knowledge co-construction by sharing and comparing different opinions and experiences, many of the social learners tended to engage in negotiation of knowledge by partly agreeing to other posts, elaborating on previous comments to improve an idea, or constructing a holistic view of a developed knowledge, rather than taking the opposite position, disagreeing with other perspectives. Below a collective examples and observation for each phase of the IAM method.

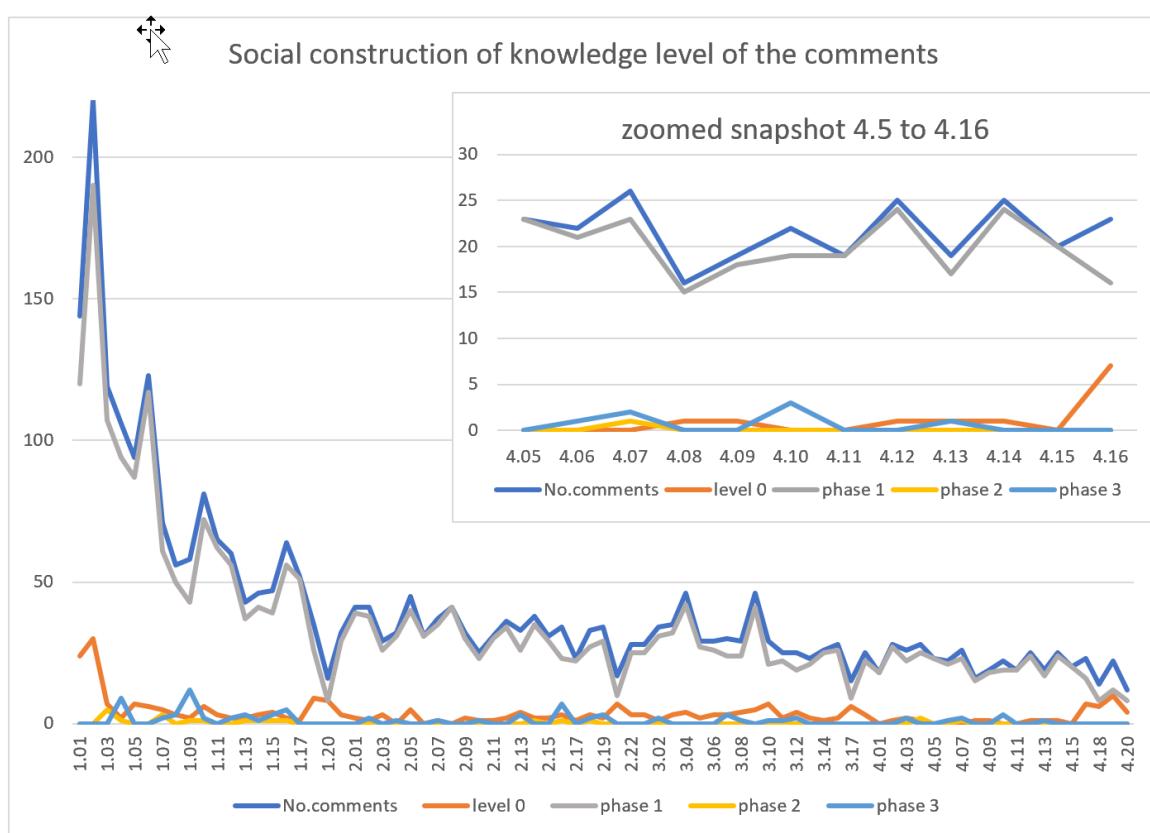


Figure 5.3 co-construction of knowledge level of EMI MOOC (Run10) comments

5.2.2.1 Phase I of IAM: Sharing and comparing

In this phase, most of the participants contributed and posted comments as a respond to the MOOC step activity (video/article) to share and compare their thoughts and points of view with others. This is the most identified phase throughout the course. Some learners in this phase use this comment section for reflection, or posted their opinions briefly without reading others'

comments, where others posted superficial comments repeating what had been discussed either by the course content or other learners, which consequently did not encourage interactivity or motivate peer discussion. Findings are similar to previous studies on synchronous and asynchronous online discussions, where higher proportion of Phase 1 interactions were reported (Bonafini et al., 2017; Gunawardena et al., 2016; Hou, 2012; Hou et al., 2015; Tawfik et al., 2017).

Other comments produced brief agreement statements, and few were enquiring more details about others' comments, which could initiate an arguments or developments of new knowledge, but unfortunately in most cases the questions were left without any reply. Examples of these comments in phase I of collaborative knowledge construction are listed in the Table 5-12 below.

Table 5-12 Phase1 examples of IAM (Run10)

Phase 1	Description	Examples
Sharing/ comparing information	<ul style="list-style-type: none"> Sharing information from experience. 	<p>"I don't try to be fun on purpose. I don't prepare things to be funny. I just try to create a good rapport with the class, make them trust me, and we can laugh every now and then but from situations that come up in the class naturally."</p>
	<ul style="list-style-type: none"> Comparing and supporting example 	<p>"I once noticed that "in December" sounds like "in the center" I believe Mary says 'First of all', but her students think that she says 'Festival'".</p>
	<ul style="list-style-type: none"> Agreement 	<p>"I agree with the fact that English is a method to set peace since communication got much easier by including one language for all."</p>
	<ul style="list-style-type: none"> Sharing point of view 	<p>"Naturally occurring humour - yes, jokes - no! Humour can relax your students, especially if it is aimed at yourself. Jokes can be lost in translation and then you (the teacher) looks stupid. Avoid jokes unless you know your audience very well."</p>
	<ul style="list-style-type: none"> Asking questions 	<p>"I would like to know more about that last activity you mentioned where students from different universities participated. What is that about? If you could give an example, please."</p>

5.2.2.2 Phase II of IAM: Dissonance, disagreement, or inconsistency

At this phase, learners presented disagreement and sometimes challenged previous opinions or tried to find counterarguments. This phase has the least comments coded under its category with 21 comments. This finding is opposed to other studies which claimed that number of posts decreases with each successive phase of knowledge co-construction (Gunawardena et al., 1997; Lucas et al., 2014). However, it is consistent with Wise and Chiu (2011), Beltrán Hernández de Galindo et al.'s (2019) and Ocaña et al.'s (2021) who claimed that participants in online asynchronous discussions advanced to phase 3 more than phase 2.

That can be explained by the nature and type of discussions encouraged by the course instructors that has no absolute right or wrong, and the fact that many of the participants talked from their own experience or point of view. There were few judgmental and oppositional comments. On one hand most of the contributions were welcoming diversity and taking advantage of this differences to learn more and develop more holistic and unique knowledge. On the other hand, there was no urgency or pressure to reach an agreement or united conclusions. For example, there were no graded activities or group work that needed participants to come to a conclusion or summarisation of any activity or situation. Table 5-13 below provides examples from this phase.

Table 5-13 Phase2 examples of IAM (Run10)

Phase 2	Description	Examples
Dissonance /inconsistency of ideas.	<ul style="list-style-type: none"> • Disagreement 	<p>After several comments agreed to consider English is a tool or a bridge, this learner disagreed saying:</p> <p>“English is like a barrier in learning and teaching in the country where multilingual community live together when we use this as a language it is always consider as a tough task to understand.”</p>
	<ul style="list-style-type: none"> • asking/answering in concerns to disagreement 	<p>when a comment posted mentioning that there is a segregation of international students in the host country, a learner commented:</p> <p>“I am even curious about the reason behind that? Whatever it might be I don't think it is convincing.”</p>

5.2.2.3 Phase III of IAM: Negotiation

Comments at this phase exceeded the comments number of the previous disagreement phase with 81 comments emphasising negotiation and presenting that in many ways. As we will see in Table 5-14 below, learners showed negotiating and relating previous different opinions regarding a topic and building upon that. Others encountered previous opinions and found themselves in partial agreement. They proceeded to expand upon those opinions, offering additional insights or limitations. Sometimes, they recognised the value in those initial viewpoints and enhanced and refined them.

Negotiation and co-construction of knowledge were clear at this phase within the comment section. Social learners seemed motivated to deconstruct and reconstruct knowledge.

Comments that initiated negotiation or any other co-construction of knowledge behaviours occurred because the participant chose to do so on their own accord, as the course was free and not graded. Although the course encouraged discussions, replying to others, and agreeing/disagreeing to other comments in several steps (11 out of 81), no participant was

obliged to participate. Additionally, there were no requirements for collaborative work or negotiation to gain any qualification. Nor there were any explicit goals set for collaborative knowledge building or negotiating meaning with peers.

Table 5-14 Phase3 examples of IAM (Run10)

Phase 3	Description	Examples
Negotiation and co-construction of knowledge	<ul style="list-style-type: none"> • Negotiation 	<p>“I think that it all depends on the situation. I mean, for instance, it would be ok to hear a student accommodating his/her speech to enhance communication as make themselves understand within their field of interest. It may also be acceptable for non-English teachers who teach content subject through an L2 because they can handle English well enough to communicate. However, I think that for English teachers, we have to be really careful about the way we use language and how we communicate things because we set the example for the others, so we have to try to be as accurate as possible (being that we are not native speakers) and know how language works to deliver good instruction.”</p>
	<ul style="list-style-type: none"> • Partly agreement 	<p>“I agree with his arguments, because using English as a foreign language can't be perfect in non-native students. They come from various background and result different level of ability. However as the educators, we should guide them to be correct in using English. We may not allow them to always be error. Although the effectiveness of communication is the most important, we should not always let them to do so. But People's perceptions of (right or wrong, effective or ineffective, or appropriate or inappropriate) also vary according to context and speakers, because people bring their own experiences, knowledge, expectations and positioning to their interactions and develop judgements of appropriate and effective language within their social performances is something I disagree. Because the language has standard. Although the use of language in communication is complex, I believe we are arranged by the standards.”</p>
	<ul style="list-style-type: none"> • Improvement of an idea 	<p>“Humor is an icebreaking for sure. Some people recommend it, when starting a speech. Once, it did not work for me and it was not among foreigners. For EMI, as the audience is diverse, one needs to be careful, for a joke can be funny in a country, but not in another one. Sometimes, a joke can be even offensive. So, being careful, humor will work well.”</p>

5.2.3 Linking transcultural awareness to knowledge co-construction: Comments sequence

Comments cannot be treated in isolation from their context rather as part of the learning process in MOOCs. As suggested by the literature IAM framework is used to analyse the whole process of knowledge construction (Gunawardena et al., 2016, 1997; Wise and Chiu, 2011). Comment data was closely analysed, specifically focusing on the sequence of comments within each phase of the

IAM model for every step. Not all steps have been analysed for comments sequences, only steps that included higher phases of knowledge construction (II, III) in addition to the phase I. The same procedure was repeated for TCA method to explore the process of transcultural awareness development and the connection between comments in different levels. An example of this sequence is illustrated in Figure 5.4 for IAM and Figure 5.5 for TCA in a course step. The example is discussed below.

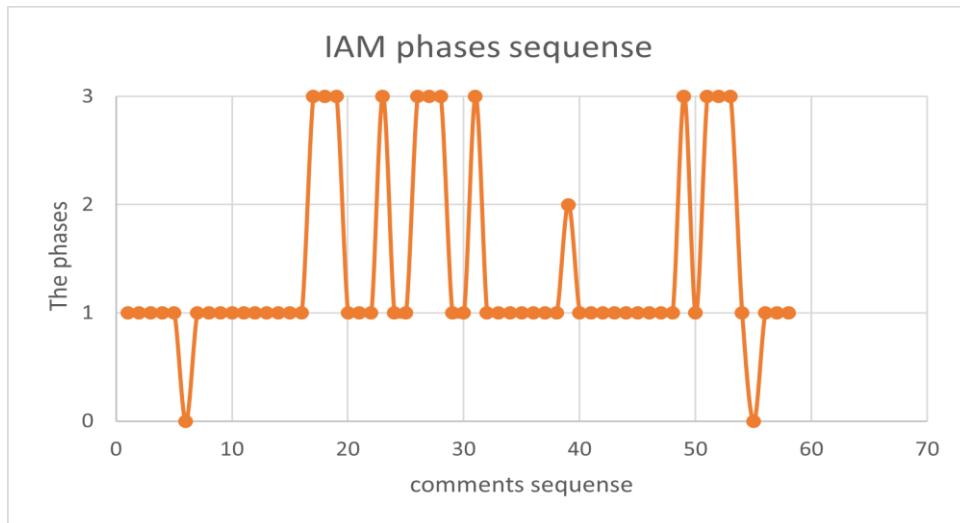


Figure 5.4 visualization of comments' sequence by IAM phases from the MOOC step (1.9)

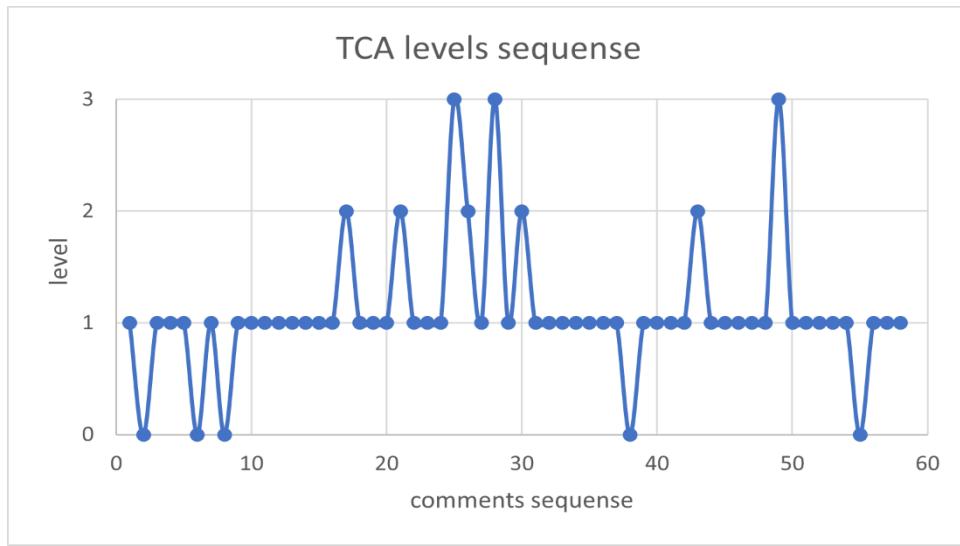


Figure 5.5 visualization of comments' sequence by TCA Levels from the MOOC step (1.9)

The example provided is presenting sequential comments in step (unit) number (1.9) from the EMI MOOC. This step has been chosen specifically as it was representative of higher levels in both models (TCA, IAM) and to ease compare the comment sequence of both methods.

In Figure 5.4 each point represents a comment, while the x-axis stands for the sequence of a comment, and the y-axis stands for the phase of knowledge co-construction. It was observed that

knowledge construction within the step discussion was not linear. The comments sequence shows little interaction between participants, as comments were fluctuated between levels. That can be explained by learners who were not paying attention to previous comments, and not reading previous contributions, their goal was to share and reflect upon their own perspective or experience. That is consistent with literature claiming that often there is little to no direct interaction between MOOC participants (Sunar, 2017; Tawfik et al., 2017).

Notably, there is a pattern toward higher knowledge construction in the middle of the discussion and another one by the end (e.g., there are more comments in phases 3 starting from comment number 17 than at the beginning), although some comments returned to the lower phases. Also, comments with higher phases were usually close to each other in the discussion, which may indicate that when 'social learners' read previous comments that motivated them to relate and advance the discussion.

A closer inspection was carried out to analyse learners' engagement tendency in this step. Interestingly, when referred to the number of comments per learner (see Table 5-1 comments descriptive quantitative analysis (Run10)). It was found that learners who advanced to the higher phase of knowledge construction were from the most 10% active participants in the course (the most posted comments per participant in this step (83,79,79,74,60 comments)). However, it has to be acknowledged that comments in lower phases may have influenced others and challenged the argument to reach a higher phase of knowledge construction.

Similarly, Figure 5.5 visualization of comments' sequence by TCA Levels from the MOOC step (1.9) visualizes comments' sequence by TCA Levels step number (1.9), where each point represents a comment, the x-axis stands for the sequence of comments, and the y-axis stands for the level of transcultural awareness. Same observations were acknowledged. As transcultural awareness level was not produced in a linear way within the step discussion. That supports literature (Baker, 2015b, 2021) as people used to move between levels as a reference to cultural forms.

As well, a pattern with a density of higher levels of TCA (2,3) was observed in the middle of the step discussions, and another one by the end. Comment of these higher levels are located close to each other and can be interpreted the same way as the IAM figure, when a learner reads the previous comment which had interesting things to communicate, then the learner is motivated to interact with this comment, making it a more interesting space for interaction for the following participant to read. Referring to number of posts per learner, it was explored that the more learners were social and contributed the more they produce higher level of transcultural awareness.

Accordingly, the similar patterns of TCA and IAM levels observed, support the identification of the relation between those two different variables, as they both appeared influenced by the same factors such as the motivation to engage and communicate (being socially active, reading and posting in relation to previous comments). It is a supported indicator to carry on further investigation to test how transcultural awareness of diverse learners is related to their collective knowledge construction through interaction and communication within the MOOC. So, exploring the quality of the comments and identifying the levels of TCA and CK is not enough to understand what factors may affect learners' behaviour to generate beneficial and unique knowledge that extend learning experience beyond static material. There is still a question as to whether engaging in higher levels of awareness has an emergent outcome of knowledge construction among the interrelated dialogue among participants.

5.2.4 The correlation

To confirm the association or the absence of the relationship between the two variables (TCA, CK), the two qualitative dataset that resulted from the content analysis were transformed to quantified ordinal categories to test the correlation between transcultural awareness and co-construction of knowledge and check if the test turned a statistically significant value or not. If these variables were correlated, then the strength of their association would be measured. The correlation test would also help explore how these two variables move together. One key benefit of correlation is that it provides a more concise and clearer summary of the relationship between the two variables than with other procedures such as regression (Pallant, 2020). First, a statistical description of number of comments for each of the variables and their categories is presented in the Table 5-15 below. There were no missing cases in either variable to be excluded.

Table 5-15 Descriptive statistics of comment cases under TCA and IAM

Case Processing Summary						
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TCA Level	3133	100.0%	0	0.0%	3133	100.0%
IAM Phase	3133	100.0%	0	0.0%	3133	100.0%
TCA Level	Excluded		346		11.0%	
	Cross-cultural level		2693		86.0%	
	Intercultural level		78		2.5%	
	Transcultural level		16		0.5%	
IAM Phase	excluded		265		8.5%	
	Sharing/comparing information		2766		88.3%	
	Dissonance/inconsistency		21		0.7%	
	Negotiation/knowledge co-construction		81		2.6%	
	Valid		3133		100.0%	
	Missing		0			
	Total		3133			

Before performing the correlation test, a scatterplot of the data was generated to visualise and speculate on the nature of the relationship between TCA and IAM and to enable a check of the assumption (Pallant, 2020). Figure 5.6 below demonstrates the trends on the scatterplot.

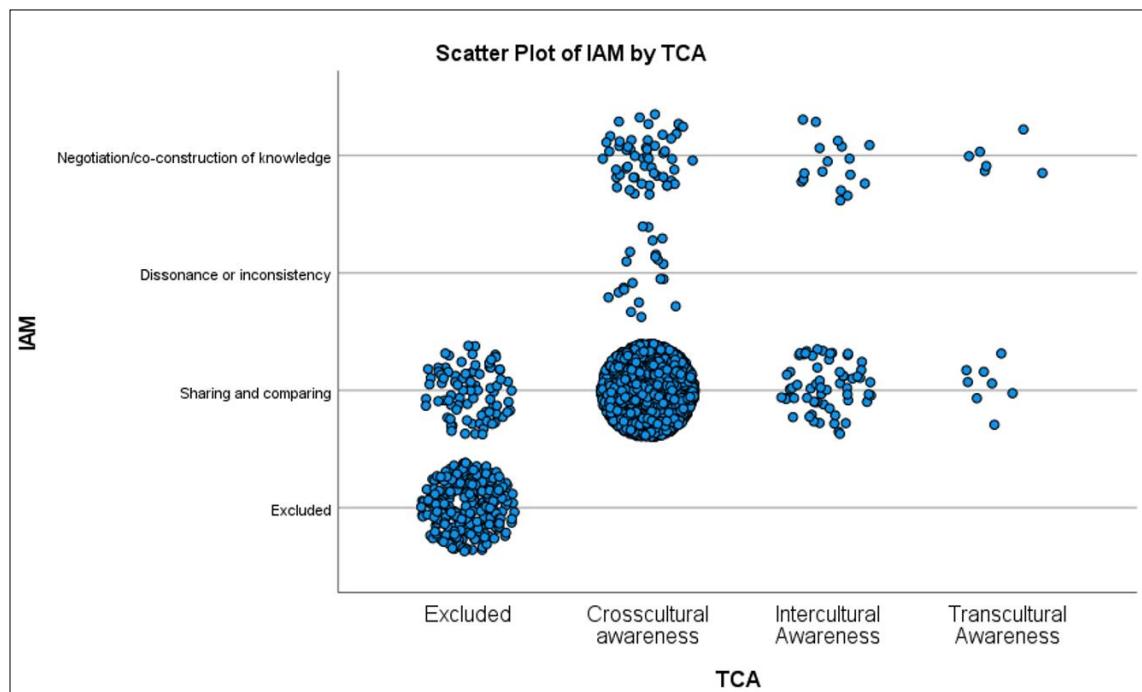


Figure 5.6 a Comment data visualisation based on TCA and IAM categorisation

It is usual to check for outliers that are away from the scatter, but this is not the case here as the ordinal data overlaps and circled around the category with different density. The distribution of

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data points cluster can draw a curved shape. An upward trend of the scatter plot indicates the positive relation between TCA and IAM, where the direction of the flow is from the left towards the right. The scatter plot showed a monotonic but nonlinear relation between the two variables which still supports performing the Spearman test and would present a valid result. The scatterplot shows a positive monotonic relation between TCA and IAM, however, the rate at which an increase occurs in TCA is not the same for IAM. It implies the complexity of this relation that can be affected by several factors, that affect them differently.

It was observed that higher level of TCA is associated with higher phases of IAM. The big chunk of comments excluded by TCA but sharing in IAM, were the agreement comments such as “I agree with you” or “I totally agree” “I am with you”. These 81 comments had no cultural representation and cannot be seen as similarities between cultures or common ground rather they were agreeing on a point of view without any cultural or context specification.

Another observation was the sharing level in IAM covers all four categories in TCA, and this trend can be interpreted as participants provided data mainly from their earlier experiences that were from out of the learning environments. So, they shared these experiences (IAM Phase1) which included different levels of awareness expressed through comments depending on their articulation of their previous transcultural experience. These observations support carrying the correlation between TCA and IAM to test and prove the hypothesis.

Additionally, in phase2 (dissonance) of the IAM, the categorisation was limited to the level of cross-cultural awareness of TCA. This categorisation implies that learners in the course generally disagreed with an idea or opinion based on their own perspective and context (referred to as Level1 of TCA as a general comparison). However, they did not engage in a comprehensive and specific comparison with other cultural practices, nor did they recognise and acknowledge differences among various subgroups. Furthermore, they did not clearly demonstrate any misunderstanding or mismatch with other cultures. As a result, their disagreement remained at the first level of TCA.

A non-parametric correlation using Spearman correlation test was performed to test the correlation between the two ordinal categories TCA and IAM, under 0.01 level of confidence which is a high level of confidence compared to 0.05 that is commonly used for social sciences, that is to make our result 99% accurate cases. Table 5-16 demonstrates the correlation.

Table 5-16 The correlation test of TCA and IAM

Nonparametric Correlations			TCA Level	IAM Phase
Spearman's rho	TCA Level	Correlation Coefficient	1.000	.725**
		Sig. (2-tailed)	.	.000
		N	3133	3133
	IAM Phase	Correlation Coefficient	.725**	1.000
		Sig. (2-tailed)	.000	.
		N	3133	3133

**. Correlation is significant at the 0.01 level (2-tailed).

From the table of the non-parametric correlation, the sign in front of the correlation coefficient (rho) is positive (+0.725) which means that higher levels in one variable means higher levels of the other. The value of rho =0.725, which is greater than 0.5, thus that means there is a large correlation between the two variables, suggesting quite a strong relationship between transcultural awareness and co-construction of knowledge (Pallant, 2020).

The value of the spearman correlation (0.725) indicates 52.56% shared variance. So, transcultural awareness helps to explain about 53 percent of the variance in learners' comments on knowledge co-construction. This is a respectable amount of variance explained compared to other social sciences research (Pallant, 2020).

The significance level (sig. 2 tailed = 0.00) indicates how much confidence to have in the results obtained. As this significance is strongly influenced by the size of the sample (comments = 3133), the results reached the statistical significance level where p= 0.00 and < 0.01 (traditionally in social sciences it is p<0.05) so, we can rely on these results for interpretation.

To sum up, the results of the Spearman correlation could be presented as follows, the relationship between transcultural awareness level (measured by TCA method) and knowledge co-construction (measured by IAM method) was investigated using Spearman correlation coefficient. Preliminary analysis was performed on the ordinal data where there is no need to ensure the assumptions of normality, linearity, and homoscedasticity. There was a strong positive correlation between the two variables, rho= +.725, n=3133, p=.0000, showing high levels of transcultural awareness associated with higher levels of knowledge construction.

5.3 Conclusion: phase 2

In this phase of the study, the analysis of the tenth run of the EMI MOOC has validated the use of TCA as a measure of transculturality in the MOOC context and confirmed the findings of the previous run. The comments across the two runs represented all three levels of transcultural

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awareness with considerably similar proportions, with the majority contributing on the cross-cultural level. While comments articulating opinions from one's own culture or context were prevalent and general in nature, those representing the highest level of awareness were driven by external and previous international experiences rather than communication with peers in the current MOOC course. Accordingly, this part of the study has answered RQ1a which focused on identifying the levels of transcultural awareness in MOOC comments. The answer to this research question is discussed in more details in the discussion section 7.1.

Furthermore, the study found a positively strong, and monotonic relationship between transcultural awareness and the co-construction of knowledge, with the increase in TCA associated with an increase in the co-construction of knowledge at different rates. The complexity of the relationship suggests that various factors may affect these variables on different levels as well.

In the next chapter, participants' perceptions, and attitudes towards cultural communication in relation to learning and co-construction of knowledge are examined to gain a holistic and deeper understanding of how their MOOC experience affects their learning in relation to transcultural awareness and co-construction of knowledge.

Chapter 6 Phase 3: Understanding MOOC diverse learners' perspectives and behaviours

A case study mixed methodology approach was followed, where initially a content analysis of MOOC learners' comments was conducted, then transformed to quantitative data to test statistical correlation between TCA and IAM following a data-driven approach. But the data alone does not contain the full story. The data is part of a larger context, that is why a data-informed approach complements and integrates the data driven approach, and vice versa in mixed methods (Creswell, 2013).

This chapter describes the methods employed in phase3 of the study and the findings associated with their application. This phase was directed to gather data from MOOC participants. Two essential components were incorporated in this chapter:

- First, surveying EMI (Run10) MOOC learners during the course, see section 3.6 for more details. The data obtained served as a supplement to aid the analysis of the interviews. Survey data analysis was also compared to the analysis of comments and interview data to support addressing research questions later in this thesis.
- Second, conducting semi-structured interviews with MOOC learners after completing the EMI MOOC course based on an inclusion criterion resulting from the survey.

6.1 MOOC learners survey

This section incorporates the survey findings of the survey, and the concluding selection of the interview participants in detail. The survey design, development, and procedures employed were described earlier in Chapter 3, section 3.6 , and there is a copy of it in Appendix C.

This section presents the results from the online survey as an essential and supplementary research method for approaching participants for the post-course interviews, and as a sampling technique to recruit them. The collection of the survey data was done during the MOOC course. But the analysis of the survey data was done after the free availability period of the course ended (6 weeks from it started). Participants' experiences and perceptions of peer interaction, engagements and communication led to initial understanding of the participants' cultural practices and their transcultural awareness in the MOOC setting.

In accordance with mixed methods approaches, the survey in addition to using it as a recruiting tool and a criterion of sampling, it rendered an initial description of the participants in the

investigated phenomenon and would be combined with interviews, and later with the MOOC comments analysis for those participants who took part in all these procedures of data collection to gain a deeper understanding and provide a richer interpretation of the phenomenon.

As it was mentioned previously in section 3.6.1, The survey was divided into three main parts: The first included personal and background information. The second was about peer interaction and MOOC engagement. The last part covers cultural communication and the application of knowledge constructed. Only participants who read the ethical participation sheet and consented to the study, providing their name and email were included in the survey results and analysis. Below are the results for each part.

6.1.1 Part 1: personal and background information

Overall, the survey received responses from 111 learners out of the 3422 who joined the course. The gender distribution was fairly diverse, with 57% male and 41% female participants. This indicates a good proportion of both genders in the sample. Almost half of the respondents (48%) were aged between 20-29, which may be due to the fact that this age group includes young professionals or students with little to no experience who are interested in professional development, studying or working internationally or intended to. The second largest age group was learners between 40-49 (18%), but overall, there was a good diversity of ages among the respondents, indicating that the MOOC attracted learners from different age groups. Please refer to Figure 6.1 for illustration.

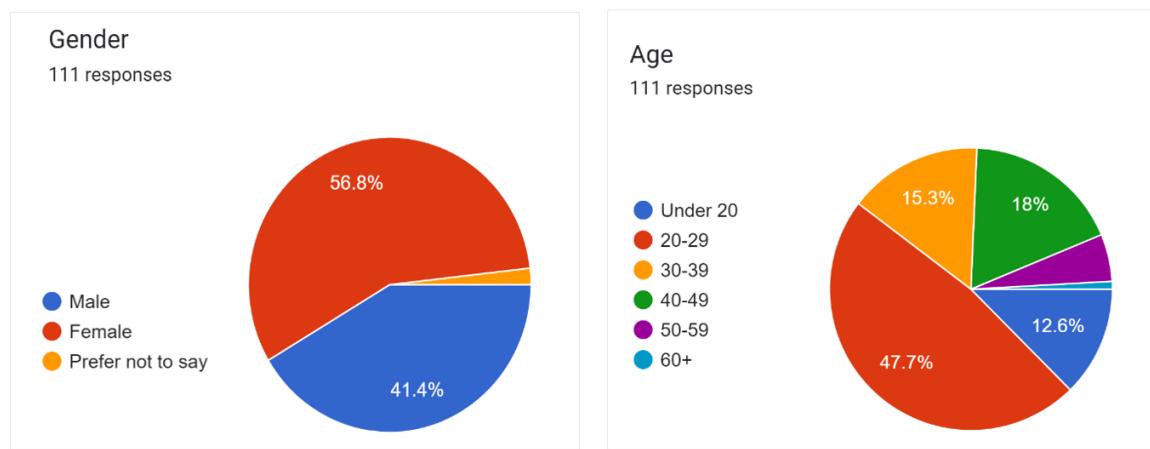


Figure 6.1 Gender and age of the survey respondents

Survey respondents came from more than 42 countries with the largest percentage for Turkey with 26.6% (29) (due to marketing strategy), then Pakistan 6.4% (8) see Table 6-1 below. It was reported that there were 20% of the participants living in a different country than their origins, which is an indicator of having an international and intercultural experience.

Table 6-1 Distribution of respondents' countries

Nationality	No. of participants
Argentina - Azerbaijan- Belarus- China- Cote d'Ivoire- El Salvador - Georgia- Germany - Ghana- Japan- Lebanon- Mongolia -Poland- Russia - Saudi Arabia- Spain -Sudan- Syria -Ukraine- Uzbekistan- Venezuela- Zimbabwe- Other.	1
Afghanistan-Colombia -Ecuador- Egypt- Ethiopia-France- Haiti- Indonesia – Iran -Philippines- United Kingdom.	2
Burma – Mexico - South Africa - Sri Lanka -Vietnam	3
Bangladesh	4
Brazil - India	6
Pakistan	8
Turkey	29

In relation to languages spoken, 29 different languages other than English were the first language of participants. 80% of the participants spoke more than one language, which is the majority, where 40% spoke additional two languages and 37% of participants spoke more than two languages. This is another indicator of diversity of experience and living in multicultural environments.

In relation to questions about MOOCs, the majority of participants were newcomers to the world of MOOCs, with (70%) of them stating that EMI MOOC (Run10) was the first MOOC they joined, whereas the other 30% had a previous experience learning through MOOCs (see Figure 6.2). In addition, almost a third of the respondents (30%) joined the course aiming to improve their English language skills by enrolling in this course, whereas 40% of them their goal was to gain more knowledge in the area of teaching, learning, and communicating through English language. However, fewer learners (14%) were looking to improve communication with diverse backgrounds, check Figure 6.3 for details.

How many MOOC courses have you joined before?
87 responses

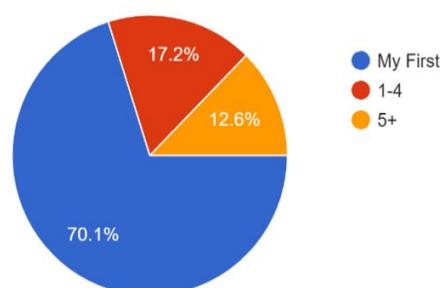


Figure 6.2 Number of previous MOOCs joined by participants

language				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	77	68.8	68.8
	1	35	31.3	100.0
	Total	112	100.0	100.0

knowledge				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	68	60.7	60.7
	1	44	39.3	100.0
	Total	112	100.0	100.0

communication				
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	96	85.7	85.7
	1	16	14.3	100.0
	Total	112	100.0	100.0

Figure 6.3 What is the main reason for joining this EMI MOOC (Run10)

The analysis of the survey answers indicates that the biggest proportion of respondents were undergraduate degree holders (46%), whereas master's degree came second with (28%) of participants. That implies that the majority of the respondents holds a higher education degree (82%). Additionally, respondents came from 46 diverse subject speciality according to their answers.

Interestingly, respondents also show diversity in professions occupied. On the survey question that differentiates between teachers and other occupations, there were two options; "teacher (school, college, university)"; and "other" associated with an open field to specify the other occupation (see Survey Design and development for more details). 28 professions were stated by respondents, where (44%) of them were teachers with different ranges of experience in teaching. The majority of these teachers appeared to have little to no experience in teaching English as a medium of instruction (61%). That can be explained by the marketing strategy of the course, targeting mainly teachers, educational professionals, or related to that field.

In summary of Part one of the survey, it has been shown by the statistical result that respondents who agree to take part in the survey giving their consent had diverse cultural and personal attributes in regard to, gender, age, languages spoken, nationality and living in a different place. Respondents showed little to no previous experience in the context of MOOC, and stated different goals for joining this course and communication with others was the least reason. These finding make a rich heterogeneous sample for interviews.

6.1.2 Part 2: peer interaction and engagement within the MOOC

The focus of this part is on participants' simplest way of peer interactions and behaviours that is supported by features of FL MOOC platform, which were: reading other comments; posting comments; replying to comments; and lastly liking a comment. The graphs below in Figure 6.4 illustrates peer interaction behaviours according to respondents.

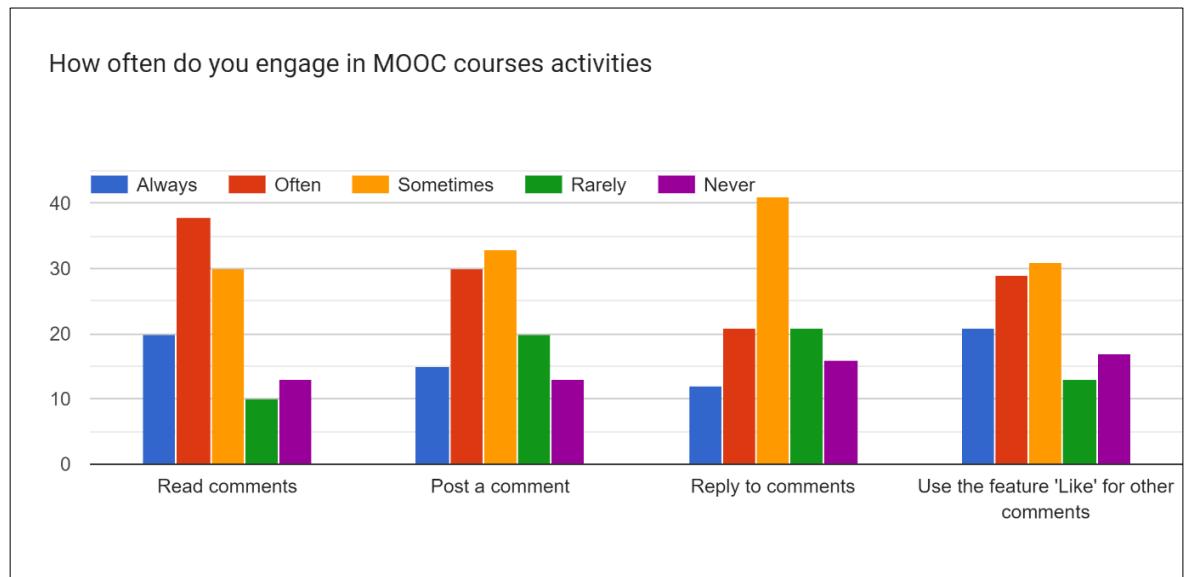


Figure 6.4 self-reported interaction behaviours in MOOCs

From Table 6-2 below, the most positive social behaviour reported by learners to exhibit in the MOOC was reading others posts with 52% of them choosing 'always' or 'often'. However, the findings of the content analysis (see 5.2.2.1) and analysing the comments' sequence (see 5.2.3) contradicted these results, indicating that usually participants comments show no influence, build on, or interaction with previous comments and sometimes the repeated the same ideas. 'Like'(ing) came second, as 45% of them chose it as a way of communicating, agreeing or appreciation of other posts. While replying to others was the behaviour with the lowest level of response, with 33% agreed that they rarely or never replied to another post, and that is consistent with what the descriptive content analysis in phase1,2 concluded from the overall posted comments.

Table 6-2 how often do you engage in MOOC courses activities?

	Read	Post	Reply	Likes
Always	20	15	12	21
Often	38	30	21	29
Sometimes	30	33	41	31
Rarely	10	20	21	13
Never	13	13	16	17
Total	111	111	111	111

6.1.3 Part 3: cultural communication and application of knowledge constructed

Generally, there was an overall agreement with most of the statements listed in this part by participants. These statements were related to communicating with diverse peers and applying new, collaboratively obtained practices and knowledge. By taking a closer look at these statements demonstrated below in Table 6-3, although the majority of participants (80%) agreed to 8 out of ten statements, there is a noticeable percentage (between 10-17%) of respondents who were not able to give an answer (by leaving the answer blank or choosing Undecided/ Do not know).

A possible explanation of that is being new to the MOOC setting, or not having any previous experience in online communication with diverse learners or could not provide a concise opinion on the matter. For example, one of the comments that a participant contributed to the end of the survey stated “I had off-line experience but not in MOOCs. I wonder if it will be different from face-to-face group work.”, so with the survey being provided to participants earlier at the last step of the first week of the course, it could be that some respondents could not build a perception until that point.

In addition, it was observed that one statement had a higher percentage of disagreement compared to the other statements although the overall percentage was low (10%). Statement number seven “it is challenging to communicate with learners from different backgrounds and cultures.” Had 11 disagreements. One possible reason for that can be extracted from participants’ comments added by the end of the survey, where a participant explicitly stressed “I disagreed with one activity (challenging to communicate with learners from different backgrounds and cultures.), from the language point of view, since I consider myself capable of speaking and understanding people in English very well.”. So, the participant did not find any difficulties culturally communicating with others, but he/she related this directly with the language level and not with other cultural forms or practices.

Another participant disagreed to the statement finding no problem in communicating with diverse learners stating, “I love to work with diverse cultural background.”, that claim was supported by another comment suggesting “I think it will be nice” and omitting any negativity that might come with diverse cultural communication. It can be claimed that participants were welcoming and motivated to communicate and interact with different cultures. That is aligned with the observations from the qualitative content analysis of learners’ comments at the first phase.

Table 6-3 Frequency table of respondents' perceptions of cultural communication and the application of knowledge co-construction

Questions	Agree	Percent	No opinion	Percent	Disagree	Percent
Question1: I like to communicate with learners from different backgrounds and cultures.	97	87%	14	12.6%	0	0%
Question2: It is interesting to share my own experience and practices with diverse learners.	98	88%	12	10.8%	1	0.9%
Question3: It is interesting to discover differences and similarities in different EMI settings	98	88%	13	11.7%	0	0%
Question4: I look forward to participating with diverse learners in collaborative activities.	86	77%	23	20%	2	1.8%
Question5: it is important to discuss different perspectives and experiences in the group activity.	95	85.6%	16	14.4%	0	0%
Question6: it is important to understand other learners' background and cultures in order to learn with them effectively.	92	83%	17	15.3%	2	1.8%
Question7: it is challenging to communicate with learners from different backgrounds and cultures.	76	68.4%	24	21.6%	11	10%
Question8: it is beneficial to share the outputs of the group activities with others.	90	81%	19	17.1%	2	1.8%
Question9: I am willing to apply my learning experience with diverse learners to another MOOC course in the future.	89	80%	19	17.1%	3	2.7%
Question10: I am willing to apply my learning experience with diverse learners in the MOOC to my future practice	95	85%	15	13.5%	1	0.9%

6.1.4 The selection of post interview participants

One of the main goals of conducting the survey is to help recruit participants for the interview.

Purposive sampling (heterogeneous) was employed on the survey respondents, who provided all

different personal and cultural information, to include more culturally diverse learners and wider range of learners' cultural attributes and attitudes from the EMI MOOC population. It is often a feature of qualitative research, handpicking cases to be included to meet their specific needs, on the basis of typicality judgement or possession of particular characteristics. Teddlie and Yu (2007) indicated that purposive sampling provides a greater depth to the study but not breadth. Creswell (2013) suggested that purposive sampling is a goal to capture heterogeneity in the population.

Based on the exclusion criteria, which were:

- incomplete survey entries related to background attributes.
- inability to be interviewed in English.
- having more than three similar background attributes (nationality, residence place, age group, teaching experience, level of education, gender).

This strategy allowed the researcher to seek respondents who have relevant research characteristics (learners with various levels of interaction and cultural characteristics and can communicate in English). Additionally, it facilitated the analysis of the predefined question of including different perspectives in performing the interviews, and various levels of cultural awareness and different approaches towards cultural communication and co-creation of knowledge, which was considered in the sample.

A total of 27 participants were selected out of 86 respondents who agreed to be interviewed. Out of these 27 participants, 16 accepted the invitation for interviews, creating a diverse sample with various cultural characteristics, backgrounds, and experiences, to gain a holistic understanding and avoid any unintended biases. The invitation emails included the participant information sheet and consent form, and the interview slots were scheduled online after receiving electronically signed consent forms.

Ultimately, interviews were conducted with 10 participants who were enrolled in the EMI course, willing to share their experiences, and had diverse cultural characteristics and behaviours. The Table 6-4 below presents pseudonyms and brief details of these participants taken from their survey responses or from the MOOC statistics. The ten participants were of different ages, genders, nationalities, and educational levels, with nine of them speaking languages other than English. Most of them were teachers (as the course originally targeted at teachers who teach through English or willing to), with varying years of experience, and exhibited different levels of engagement within the MOOC (posts range from none to 73 comments).

The sample was deemed sufficient for this qualitative study, as the focus was on the quality and variability of relevant events rather than the number of participants (Braun and Clarke, 2021). The interviews provided rich data and insights, covering a wide range of cultural characteristics,

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backgrounds, experiences, and MOOC activities. A brief biography of participants along with their answers are further described next in section 6.2.1, and discussed and interpreted in more details in Chapter 7.

Despite the argument of non-representativeness, and lack of generalisability beyond the sample (Cohen et al., 2017), at this stage of the research, where a qualitative approach was conducted, the notion of generalisability is not related to the study and even considered inappropriate according to Lincoln and Guba (1985) who preferred the term 'transferability', where results of the current study could be transferred to another setting or context, through a thick description of participants, responses in relation to a specific context (MOOC in this case), and providing the research community with potential directions for further inquiry and improved knowledge of the pedagogical benefits of transcultural awareness.

Table 6-4 Descriptions of the selected post MOOC interview participants

Participant	Gender	Age Group	Nationality	Live in another country	Other spoken Languages	education	profession	Subject teaching experience	EMI teaching experience	*Active learners	**Social learners	posts
P1C	Male	50-59	Brazil	Brazil	Yes	Undergraduate	Edu Administrative Technician	NA	NA	56%	Yes	49
P2D	Female	40-49	Poland	Germany	Yes	PhD	Teacher	10+ yrs	First yr	100%	Yes	19
P3E	Female	20-29	Burma	Burma	Yes	Master	Teacher	6-9 yrs	2-5 yrs	100%	Yes	6
P4H	Female	40-49	South Africa	China	Yes	Master	Teacher	10+ yrs	10+ yrs	2%***	No	0
P5I	Male	50-59	UK	Spain	Yes	Master	Teacher	NA	NA	100%	Yes	52
P6L	Female	40-49	Brazil	Brazil	Yes	Master	Teacher	2-5 yrs	None	100%	Yes	21
P7N	Female	Under 20	Lebanon	Lebanon	Yes	Undergraduate	Teacher	0 yrs	NA	26%	Yes	10
P8P	Female	20-29	Bangladesh	Bangladesh	Yes	Master	Teacher	10+ yrs	10+ yrs	26%	Yes	20
P9S	Male	50-59	UK	UK	No	Undergraduate	Teacher	2-5 yrs	None	100%	Yes	53
P10T	Female	40-49	Ecuador	Ecuador	Yes	Master	Teacher	10+ yrs	2-5 yrs	100%	Yes	73

*According to FutureLearn, Active Learner – a Learner who goes on to mark at least one step as complete in a course (O'Grady, 2018).

** According to FutureLearn Social Learner – a Learner who leaves at least one comment in the course (O'Grady, 2018).

*** According to the participant herself, she did 89% of this course but she did not bother clicking the button that determines the step as completed.

6.2 Post MOOC learners' interview

In this final and key phase of the research, interviews were carried out and were designed to integrate the other methods to answer the research questions. A qualitative approach was followed through post MOOC interviews. Online cultural communication is influenced by factors that are not easy to observe or measure directly. Interviews may allow interpretation of cultural communication meanings that may not be immediately apparent (Sangiamchit, 2017).

In addition, analysis of comments and survey answers may not provide the whole picture, or an in-depth understanding of the issues investigated as they provide superficial data (Creswell, 2014; Dörnyei and Dewaele, 2022). Thus, interviews made a comprehensive interpretation possible, and validate the issues investigated through other methods (content analysis, survey) as Cohen et al., (2017) advocate.

Following the findings of the previous section, where interview participants have been selected, recruited, and briefly described, this section provides details of the concluded themes from the analysis, and summarised biographical information of the ten participants, followed by detailed description of the interview findings.

Full details of the interview design and development, as well as procedures are outlined in section 3.7 of the methodology chapter.

6.2.1 Participants

Interviews were conducted with 10 learners with diverse cultural characteristics and behaviours according to the results of the scoping survey that was presented previously in section 6.1.4. A brief biography of the interview participants is presented below, to provide background information of the diversity of cultural attributes and MOOC behavioural activities.

P1C: A male participant aged between 50 and 59 years from Brazil. He has a bachelor's degree in translation. He speaks English in addition to Spanish and Portuguese. He works as an educational Administrative Technician at a Brazilian university with no previous experience in teaching. He was an active learner in this course, who often posts and likes comments, but only sometimes read or replied to other comments. He considers himself 'capable of speaking and understanding people in English very well' and that's why he does not feel challenged when communicating with diverse people.

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P2D: a female participant aged between 40 and 49 years old, from Poland. She is a professor who has taught in a German university for more than ten years. She just started teaching in an EMI context this year. She completed the course with 19 contributions. She speaks German and English very well. She has a PhD in Engineering. She is a moderately proficient user of English according to her 'IELTS' results. She often read comments, and sometimes post, reply and like comments. She is strongly motivated towards communicating with different cultures and backgrounds.

P3E: a female participant aged between 20 and 29 years, from Burma. She has a Master's. She has been teaching for more than 6 years and has experience teaching international students for a period between 2 to 5 years. She has never lived or work abroad. She considered herself a moderately proficient user of English. She always likes other's comments and often reads the comments posted, and sometimes she posts or reply. She is genuinely excited about working with diverse people.

P4H: a female participant aged between 40 and 49 years old, from South Africa but lives and works in China teaching English to Chinese students. She has a Master's, and more than ten years teaching experience in EMI settings. She often reads comments, but she is less involved in posting, liking, or replying to comments. Education is her passion and she strongly agreed to communicating with diverse people considering it part of learning.

P5I: A male participant aged between 50 and 59 years from the UK. He is teaching in Spain and speaks Spanish. He got a master in TESOL. He often reads, posts, likes, and replies. He strongly supports cultural communication. He was an active learner with 52 posts.

P6L: a female participant aged between 40 and 49 years old from Brazil, with a Master's in law. She has been teaching in a Brazilian university for a period between 2 to 5 years with no previous EMI experience. She speaks three languages (English, Spanish, Portuguese). She completed the course with 21 posts. According to her survey answers, she always communicates and interacts socially in MOOCs, and she is motivated to culturally communicate with others.

P7N: A young Lebanese female participant aged 19, who has never studied or lived abroad. She is an undergraduate biochemistry student who just began working part time as a French teacher. She speaks three languages (English, French and Arabic). She has completed the MOOC course. She always reads and likes other comments, but she does not contribute that often by posting or replying. This course was her first MOOC, and she felt excited communicating with learners from different backgrounds.

P8P: a female participant aged between 20 and 29 years old from Bangladesh. She is a Master's degree holder. She teaches literature in Bangladesh with an experience of more than ten years with global students. This MOOC also was her first. She read all the previous comments, with less posting and liking other comments, and a few attempts to reply to others. Regarding cultural communicating, she thought it is a good opportunity and not challenging for her to work with learners from different cultures and background. In this MOOC, she did not have the chance to apply all the cultural practices she learnt previously, but she mentioned that if she got the scope, she would do her best to apply all cultural communication techniques and knowledge to her students.

P9S: a British Male living in the UK, aged between 50-59. He does not speak any other languages than English. He has an undergraduate qualification. He has been teaching from two to five years. He has previously worked as a teacher abroad (South America, Egypt, Italy). He joined the FL MOOC platform in 2017 he often reads and posts, and sometimes he replies to others, but he never used the like feature.

P10T: a female participant aged between 40-49. She is Ecuadorian living in her own country. She speaks English in addition to Spanish. She has been teaching English for more than ten years in EMI settings. And she has a Master's degree in Bilingual Education. She joined more than one MOOC. She was a very active learner in this MOOC with 73 posts. She often posts, replies, and likes comments. But she does not always find the time to read comments. She feels challenged when communicating with diverse people.

6.2.2 Interview themes

For the qualitative interviews, two layers of coding were used to examine the data from different viewpoints and levels of generality based on the main variables of diverse peer interaction, knowledge co-construction, and transcultural awareness. Initially, a deductive approach was used to map the three main categories to the interview transcripts. Then, an inductive approach was applied to gain a closer and more detailed understanding of the experiences, attitudes, and perceptions related to transcultural awareness and collective knowledge in the MOOC attended, resulting in the subcategories.

In addition, all interview transcripts were mapped to the three levels of the TCA model to identify the extent to which transcultural awareness was present in participants' answers and to compare it with their level within the MOOC comments. Eventually, there were subthemes and subcategories that emerged from transcripts under the three main themes as shown in Figure 6.5.

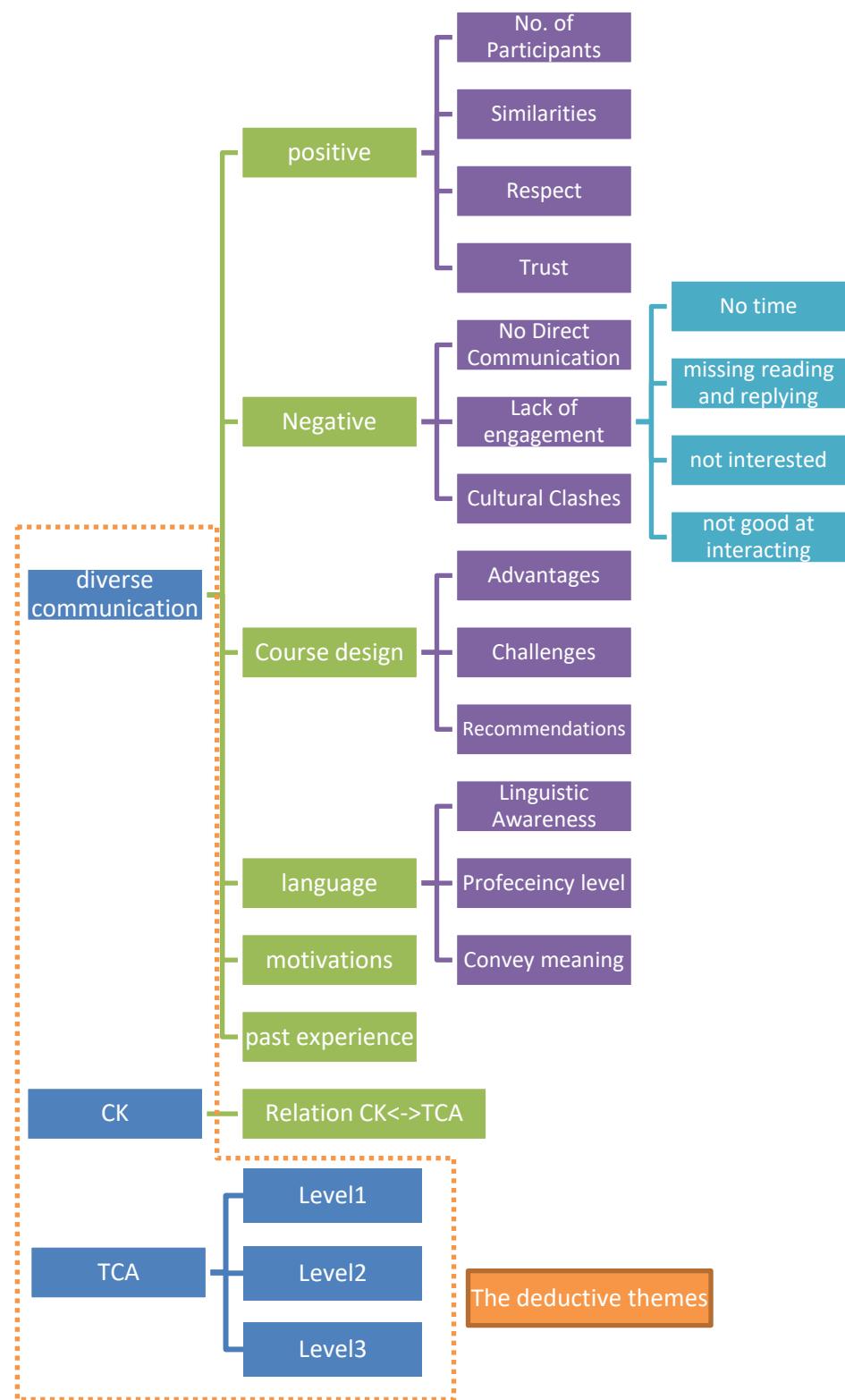


Figure 6.5 Deductive and inductive themes and subthemes

6.2.2.1 Diverse peer interaction and communication

This key theme is a broad theme expanded and branched based on the interviewees learning experience in the MOOC. It reveals how cultural communication perceived differently by learners. It concluded important factors that contribute to participants' cultural communication and awareness.

Overall, the interviewees have exhibited their awareness of multiculturality in the MOOC environment, with a clear difference in attitudes towards cultural communication. In addition, participants emphasise the importance of the course design and the language used in this communication. This theme with its sub-categories emphasises the link between these learners' perceptions and their different motivations to join the course as well as their previous personal physical and online experience in intercultural communication. This theme incorporates the following sub- categories:

- a) Positive perceptions towards cultural communication.
- b) Negative perceptions towards cultural communication.
- c) The influence of course design.
- d) The role of language in cultural communication.
- e) Different previous experiences and motivations: different transcultural awareness levels.

All the interviewees appreciated the MOOC multiculturality, showing interest to communicate, acknowledge and share perspectives, views, and experiences with culturally different people. As P1C stated:

“it's something very big, this experience of having the chance to talk to people from all over the world” (P1C).

P2D stressed her interest in learning more about different observed backgrounds:

“In this MOOC there were people from other countries with different nationalities maybe some I didn't know so I was really very interested to read what they think, how they teach, what problems they have or what do they think” (P2D).

a. Positive perceptions towards cultural communication in the MOOC

All interviewees have observed and supported cultural communication in the MOOC to some extent. Where some of them appreciated the volume of participation, flexible diverse learning and relating ideas when communicating; others stressed the importance of respect, trust and

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exploring similarities between different contexts. Those emerging issues were raised by participants and are considered important factors in intercultural communication. Table 6-5 below provides some of the extracts that presented learners' positive perceptions.

Table 6-5 Positive responses of interviewees towards cultural communication in MOOCs

Category	Extract	Participant	Mentions
Participation appreciation	"From the comments themselves you can see that they felt that the greater the participation was, the more they got from it."	P5I	N = 3
	"For a better interaction or a better communication first the fact that others participate... So, I guess being with lots of people."	P7N	
Finding Similarities	" Actually, there were comments that I can relate to... So, there were some things in common, some things... how can I say it... similar"	P7N	N=7
	" It was interesting to see what the other people think and at some points we had the same meaning, the same also opinion but it could be more countries, more culture, and more discussion."	P2D	
Respect	" In order to learn some things sufficiently especially within people or different contexts we need to have mutual respect, an understanding of each other, not to insult others"	P3E	N=6
	"I respected what they told me and maybe if I disagree on something I try to be very respectful in telling them the best way possible why I didn't agree...we have to learn to be respectful, that maybe we can learn from each other, like maybe there are things...like, I try to see different positions"	P10T	
Trust	"I think a lot of things come with experience and also in terms of trust because people can only show you what they want to. But if they trust you, they are more willing to expose themselves and be more honest"	P4H	N=3

These responses support the approach of ICA or the updated version TCA, which investigates awareness as a whole, including skills such as respect and trust, attitudes such as participation and engagement in social comments, and knowledge such as learning about similarities and finding common ground between different cultures. The importance of all these aspects is clearly

shown by the examples above and is aligned with the views of (Baker, 2015a; Byram, 1997), especially in online interaction when using a global language with global participants. Therefore, in MOOCs, promoting learning or knowledge co-construction, all components are needed to be encouraged through communication when designing for learning and teaching, not only the cognitive side (knowledge).

b. Negative perceptions towards cultural communication

The analysis revealed that most of the interviewees (N=9) identified challenges while culturally communicated other learners, such as cultural clashes (N=6). The other two main challenges from their perspectives were little to no direct communication, and a lack of engagement for many justified reasons, such as having no time for interaction; missing reading comments or replying to others; not interested or not good at interacting. Other negative perceptions have been mentioned by some of the interviewees in relation to cultural communication, such as 'reading disrespectful comments', 'different time zones', 'not acknowledging any intercultural communication within the comments by only reading them'. Table 6-6 below presents these perceptions.

More than half of the participants indicated how the communication with other diverse learners was not direct and difficult due to the difference in time zones, and not in real time. They suggested some tools, such as MS Teams, Google Meets or Zoom. The analysis collected several reasons justifying learners' lack of engagement where most of the interviewees (N=9) claimed that this reason hindered cultural communication.

Many of the participants justified their lack of engagement because of the huge number of comments and participation as something to be added to lack of time. Others were not interested in the first place to interact. Other reasons have been mentioned for not engaging with others such as: having no previous experience with the topic; facing internet access issues; being shy or introvert; not good in English; or even not good at interacting. In some cases, the content of the comments affected negatively cultural communication according to some interviewees' perspectives, stating:

"Most of the comments were just repeating, the ideas given by the professor on the video" (P6L).

P10T elaborated on that giving an example:

"The only thing I had a problem with is the student that was copying the comments of everyone, like, that really kind of shocked me" (P10T).

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There was a mix of different things that influenced these perceptions, one explanation could be the different motivations and goals to join the course, and the other one is different expectations from the MOOC and different experiences with the MOOC (see the results of the survey 6.1.1., and the next theme in Table 6-6.

Table 6-6 Negative responses of interviewees towards cultural communication in MOOCs

Category	Extract	Participant	Mentions
Cultural clashes	“When I did MOOC I saw an emoji, it was a laughing emoji. Somebody asked the questions and the other person answered back with a laughing emoji, yeah, and so when I saw that I felt like it was just an insult, you know, she was asking the question she didn't know but the other person was just like mocking at her so I thought their communication it cannot be good, so it was so bad”.	P3E	N=6
	“Oh, the temptation just to go in and go oh you got that wrong, ooh, to tell them out. No, no. I nearly did that a couple of times, but somebody may have seen that and thought. 'Oh, thank you, oh, yeah, I always get that wrong' but somebody else might have seen it as bullying or, you know, being racist and I thought no, just leave it”.	P9S	
No direct communication	“I think that whenever we have a communication, any talk, through a mechanism or a tool without this face-to-face contact, it becomes difficult, not because of the language and not because of the cultural background, not because of these questions, but because of, I don't know, people don't see each other, people don't know who are the people”.	P6L	N=6
	“There was never a conversation like a dialogue or something... interaction must go like in both ways several times and I had a feeling it was not always like this, maybe there were some people I don't know”.	P2D	
Lack of engagement	“Lack of time, this is something I'm observing in myself and in students so in the first week they are all motivated, yeah, and all want to learn and after some time they see that maybe the priority is shifting”.	P2D	N=9
	“It takes a while for them to reply, or it takes for me a while to reply to their comments or read their comments and sometimes I might miss some. So that was the problem”.	P7N	
	“Clearly did not like the way of interaction: we don't know the person we are dealing with or ... I don't know, in my case I would say that it's the lack of interest, the written exchange of ideas, in my opinion doesn't work very well, but this is my opinion”.	P6L	
	“I've been told sometimes in moments of criticism that my enthusiasm might get in the way of other people, so I think shutting up is good”.	P5I	

c. Course design: advantages, challenges, and recommendations

Most of the participants appreciated the technical and educational design of the course in relation to cultural communication. Some of the technical features mentioned by the interviewees were common features of the MOOC platform and were not specific to this course such as the convenient access online on own time, and affordance. As P5I stated:

“I think there’s lots of standout features within the course that enable you to participate more widely than you could have imagined”. He elaborated: “I think that social interaction can get over the paucity in technical or resource or content terms of a MOOC” (P5I).

Table 6-7 below demonstrates some of what participants claimed about course design advantages, challenges, and their recommendations in relation to cultural communication.

Table 6-7 Course design in relation to cultural communication in the MOOC

Category	Extract	Participant	Mentions
Advantages	“The course is so well organised that it promotes communication... So, the way each lesson was set up kind of contributed to communication”.	P10T	N= 10
	“Because it is worldwide, online and with diverse population, If you take that away the course, the learning would only be one-sided because it stays theory. It would really not have any value I think because, it’s important to hear what others say and what they experience, so to me it’s been very beneficial. When I interact”.	P4H	
	“In writing you have all the time to erase and write again and find the best way”	P6L	
	“ it’s also nice to participate without people looking at a year old white man who has a accent”. He elaborates: “ so you don’t know what country they’re from, if they’re male or female, etc, etc, so that’ P9:S brilliant. And I do what I can to shake off my prejudices”.	P5I	
	“ When someone triggers something that really interests you, you sort of follow the person’s reactions. And that is extremely useful.”	P4H	
Challenges	“it's not a forum as such because you can't just speak to anybody- you can't have a live conversation, you can just reply to someone's	P9S	N=6

	comments and you can like it and things like that, so that is the bad side of it”.		
	“We didn't have any tasks - please discuss with the others, the assignment or the task was always about us; so, what's your opinion? What do you think about this? How do you feel? it was never please discuss with the other people or maybe work on a Wiki or write a forum or comment at least once”.	P2D	
	“I think that the lack of a tutor. I know that there were tutors but they weren't active, they weren't participating in the chat or in the comments section. I think that in case we had a tutor, in real time, not all the time of course, it's impossible to ask a tutor to stay there 24 hours a day or 7 days a week, but at least to have a certain time. For example, they could fix a time, one hour a day for example, to interact with the students. I think that it would be great.”.	P6L	
Recommendations	“maybe once a week it could be a group activity, also asynchronized for example by writing a Wiki” she elaborated” synchronized phase is also very nice, they don't have to be all the time because otherwise it would not be MOOC but it could be also once a week or every second week kind of meeting for people who would like to, to have a lively conversation like a dialogue”.	P2D	N=6
	“Have one hour of live speak, anyone can ask questions, you know, something like that, like a sort of an online forum version of one of these large Webinars, one of these large team meetings. But that would have to be strictly controlled by the administrators”.	P9S	

Based on the analysis, it appears that learners appreciated the advantages provided by the comments. The written format of comments allows learners to think and prepare their thoughts before communicating, which can lead to more effective communication. Additionally, the anonymity provided by MOOC platforms enables learners to communicate freely without fear of judgment. Thus, it can increase the inclusiveness of the MOOC space, and prepare the social space to be more transcultural environment.

The ‘Like’ feature was also viewed positively by learners, as it served as a form of hidden communication between diverse learners. This feature can encourage learners to engage more with comments and facilitate social interaction. Similarly, the ‘Follow’ feature was also seen as a way of increasing social interaction by enabling learners to track and engage with

one another's comments. It is maybe beneficial to explicitly encourage learners to use these features and design for activate them more into the course activities.

On the other hand, from the learners' perspective, the course design has been observed to limit cultural communication for several reasons. For instance, half of the participants missed having live communication with diverse learners and felt the absence of instructors' engagement. They stressed the importance of the instructors' role in facilitating cultural communication. In addition, the lack of group dynamic tasks, collaborative discussions or writings also negatively affected cultural communication.

The analysis presented a collection of the interviewees' recommendations and design suggestion to boost cultural communication:

- stating clearly at the beginning of the course recommendations for cultural communication.
- set a minimum percentage of interaction to pass the course.
- apply a pre course test to check the language level and the ability of learner to communicate through English with diverse learners.
- change the activities structure after a while and change communication mode to encourage engagements in cultural communication.
- arrange a real time meeting or activity.

d. The role of Language in cultural communication

The analysis demonstrated how language was used and perceived by learners in relation to cultural communication. Three themes emerged under the language according to interviewees; linguistic awareness, proficiency level; and negotiating meaning. Learning language was part of the motivation and a goal for many to join the course. It was seen as a part of course content to learn how to communicate with other diverse learners effectively.

Below Table 6-8 presents examples of these aspects:

Table 6-8 Interviewees' examples on the role of language in cultural communication

Category	Extract	Participant	Mentions
Proficiency Level	"it's just a fantastic way for people to feel like they're communicating effectively, you know, and you don't have to worry about how perfectly redacted things are or whatever".	P5I	N= 7
	Once in a while I could note that the level of English was not advanced, that maybe it was intermediate or something like that because I could see, but it was clear, okay, the communication, the comments and posts were clear.	P6L	
Linguistic awareness	"It was a foreign language and an interesting topic and people from different backgrounds so altogether that motivated me or other people maybe to communicate...I was observing the usage of this vocabulary or the usage of the expressions or sentences in the texts of the other learners. I paid attention to all the meta language they used in order to communicate".	P2D	N=7
	"you've got to be less colloquial, less slang and sometimes you've got to write in clearer language that you would use normally"	P9S	
	"Sometimes I was not sure what's the point actually, so I understood the sentences, I understood the meaning, but I couldn't understand the sense of the... sometimes, yeah, sometimes I had the feeling that the people didn't answer the question, not precisely answer the question"	P2D	
Negotiate meanings	"When we had different points of view he or she explained back and then we all have arrived at the same conclusion"	P3E	N=8
	"You have all the time to erase and write again and find the best way, "Okay, this doesn't sound very clear, so I'm going to change this word," like, you have more time to produce an accurate piece of work"	P10T	

The majority of participants (N=7) agreed that the proficiency level of learners in English varied significantly and some of them used other languages to communicate. Nonetheless, most of the comments made were comprehensible and conveyed their intended message effectively. Despite the overall clarity of comments, some comments were brief and repetitive that did not add much value to the discussion. Moreover, negotiation of meaning was not prevalent from the participants' perspectives (N=4).

In this regard, one participant suggested using simple English, rephrasing sentences, or code-switching to communicate better, to overcome different levels of English proficiency. It can be said that overall diverse communication in this MOOC was good, but still more guidance and reminders should be made from the beginning at the course to unify the language to use as well as encourage using simple form of the language.

e. Different motivations and previous experiences, different cultural awareness levels

This sub theme emerged from the participants transcripts and through the analysis which revealed how interviewees' transcultural awareness contributed to their previous offline and online intercultural communication experiences as teachers and learners as well to their motivation to join this course.

First, participants showed different goals and motivations to join the MOOC, but the majority (N=7) shared the interest in communicating with diverse learners and know more about different experiences from different contexts. Therefore, in relation to transculturality, the sample clearly exhibits a higher level of awareness beyond a cross-cultural level, indicating that they have been motivated to: learn with a lot of people from different backgrounds, acknowledge and accept different points of view and perspectives on the topic; how diverse learners deal with issues in their contexts; and what is considered important to them in that context. On one hand some participants showed motivation to culturally communicate others. For example, P4H stated:

"I obviously aim for the course that helps me in terms of how to teach English effectively, how to teach English in an environment that is different in terms of beliefs, in terms of motivation, in terms of world view" (P4H).

Another dimension for joining the course:

"I needed to communicate with others like from different cultures since no travelling or you're just in a small circle, why not expand it" (P7N).

Whereas P2D expressed:

"It was very interesting for me maybe to observe the whole discussion and the problems which occur in the English-speaking community, I made a lot of comparisons to my situation and this English-speaking surrounding was new for me" (p2D).

On the other hand, other learners did not aim to communicate with diverse learners, nor had any intercultural experience or awareness. For example, P1C had no previous experience teaching in

EMI setting, the subject was new to him, and his goal was not to communicate with others, rather his focus was on the course content and its overall standard. According to him, that affected his participation and engagement with others. However, by the end he valued cultural diversity and communication as he stated:

"It was a surprise for me, because from my point of view, you would teach the subject, I would not have to deal with cultural differences. So, this was very interesting, because if I wanted to teach EMI in the future, it's advisable that I learn about differences, so that I can deal in a better way with people..." (P1C).

He elaborated expressing how he realised the importance of intercultural communication:

"it's something very big, this experience of having the chance to talk to people from all over the world. I intend to dedicate more time from now on, like, in this experience of talking to other people and getting to know them" (P1C).

On the other hand, P9S has an EMI teaching experience in various intercultural contexts, that included online and offline experience. He stated:

"I was online working for the school that I'm working for now and I did some teaching to South America, so people from Peru and Bolivia" and "I was in Cairo with the British Council so mainly Egyptians but we had a couple of Saudis, Yemenis, Syrian, Libyan, some of the expat community so there'd have been, what, Russian, Ukrainians, French, North Korean" (P9S).

So, when he was asked if he recognised any misunderstanding or mismatch with diverse learners in the course, he stressed:

"I had to be culturally sensitive and culturally aware. And that's also with some of the topics sometimes might not be culturally appropriate" (P9S).

Then, he provided an example of cultural clashes in an intercultural setting from his previous experience, showing his higher level of awareness, adding that when he comments he tried to be less colloquial, use less slang and write in clearer language that he would use normally. He mentioned an incident when he used a cockney expression that made no sense to an international person. He elaborated saying:

" I'm more aware of how I speak, my accent has changed, and I speak slower" (P9S).

From the analysis it is claimed that previous experiences as well as participants' motivations had a direct influence on all the interviewees' perceptions and attitudes towards cultural communication in the course, as well as their cultural awareness level.

6.2.2.2 Co-construction of Knowledge (CK)

Overall, this section presents qualitative data and interpretations related to the co-construction of knowledge (CK) in the MOOC setting. The data suggests that learners in the sample (N=9) clearly engaged in collaborative knowledge building through commenting in various ways. The different phases of knowledge co-construction (three phases) have also been identified by participants. Additionally, the link between co-construction of knowledge and the level of transcultural awareness (TCA) has been highlighted by several participants (N=6) within this theme.

An interesting finding is how learners read and considered previous comments before posting their own, demonstrating a collective approach to knowledge building. Participants also negotiated the meanings and looked for agreement of perspectives within comments. Furthermore, learners expressed how collective comments were more interesting and beneficial than individual learning, which suggests the importance of social and peer interaction in learning.

For instance, P1C stated:

"I had to answer a question, but before answering, I read the answers of my colleagues, my classmates, and based on what they were saying, I could prepare my answer in a better way." (P1C).

P2D emphasised how interesting and beneficial collective comments were:

"They actually answered everything in these comments, so I didn't understand this course as much as the collaborative comments with MOOC" (P2D).

She explained how that was encouraging and motivating stating:

"And also, a kind of acceptance or agreement of my own thinking, so I saw myself in their answers and it was a kind of positive feeling". (P2D).

P3E expressed how negotiation took place as part of knowledge building:

"When we had different points of view he or she explained back and then we all have arrived at the same conclusion" (P3E).

P7N agreed with that, indicating that there was successful communication through comments when they were relating each other's ideas or talking about them, which implies reaching a higher level of knowledge construction. P5I underpinned that new knowledge was built through collaboration of other people from the comments themselves. He suggested that these comments

were insightful providing peer support and feedback, he also considered it a useful and beneficial collective resource of knowledge:

“I really enjoyed the constellation of opinions that, you know, without having done that I wouldn’t have been able to view that kind of insight and see how collaboratively people could find support from each other or feel that they were suffering in the same way at times and prospering as well. From the comments themselves you can see that they felt that the greater the participation was, the more they got from it. It’s like a record of stuff and you can kind of dip in and out of it. So as an archive for something to begin I think they’re very useful, like you can get something from it even when most of the participation has been done. It’s certainly not transactional, you know, it’s much more enriching than that.” (p51).

Several participants considered co-construction of knowledge starts with reading others’ comments. For instance, P10T appreciated reading and participating in comments as they produced ideas, resources, helpful update on research, or provided useful suggestions from experience:

“I think I received a very good contributions to my comments. Some of them gave me very good ideas or resources to follow the research on something, and I found it very helpful, yes. And then also, well, I also told them from my experience what I have used, what I have done, and most of them also found it really helpful too. Some of them thanked for the suggestions, and so did I. So yes, it was very productive.” (P10T)

Likewise, P9S described the process of co-construction of knowledge, starting from reading comments, internalising, then articulating opinion, which might be a full or part agreement to build on, or unapplicable in his situation so he disagreed with it. But sometimes he might miss some comments because of the huge amount of them:

“You can see other people's comments, you get asked a question and you think oh, how am I going to answer this one? I can't think. By looking through obviously you don't want to copy everything but people will have similar opinions and you will look at somebody and go ah, yes, yes and it can jog your memory..., I did see a lot of great ideas, a lot of great tips, useful things, I've got a list of them somewhere, not on this laptop on my old one, yeah. Sometimes there were too many ideas, sometimes you just couldn't look at all of them so

you had to pick and choose and sometimes you'd see an idea and you'd go no, don't think that would work not in my context or something like that" (P9S).

The data also shows how feedback from others was appreciated as part of the co-construction of knowledge. This feedback was not limited to theoretical discussions, but also involved practical advice on how to deal with real-world problems. This highlights the practical applications of co-constructed knowledge and its potential impact on participants' real-life experiences as an extended and unique and global MOOC knowledge. As P4H indicated:

"People are actually involved in conversation they give feedback in terms of praxis, what they do in the practical environment, what parts of the theory is working for them, what parts of the theory might not be working for them, and the problems. And how you could possibly deal with the problems. So, it's a very unique conversation and an opportunity to test methods, ideas, and theories" (P4H).

However, other participants did not identify that much of knowledge co-construction in the comments, as P6L stated:

"Comments were just repeating, they were repeating the ideas given by the professor". This course was her first MOOC experience and did not meet her expectations. She justified her opinion saying: "I was looking for a most advanced course - for me it was not so advanced as I expected." (P6L).

Moreover, the data highlights the link between co-construction of knowledge and the level of transcultural awareness which were pinpointed by several participants (N=6) within this theme. Below two examples demonstrating how CK is linked to TCA. The first example is drawn from an extraction illustrated in Figure 6.6 from P2D interview where she showed how transcultural awareness is related to successful group knowledge building, an interpretation of this extract to follow.

256 And also the task is one thing
 257 but the other thing is how to work on it and in the way of working you already see the cultural
 258 differences, so for example in the activity I don't know the name of the ladies, the first one
 259 suggested that we all write down our ideas and then combine them together. And it was not my
 260 way how I would start but because I'm from the Polish culture we never say the other people how
 261 they have to do it but I've readjusted this, I saw this and I also tried to start something several
 262 times....
 263 But I would start with a meeting, I would like to get to know each other and to see how are you, a
 264 little bit introduction and what's your background, who are you, what do you look like? It's
 265 important for me, maybe not with the video but at least with the voice because I also accepted
 266 that some people don't like the camera but it has to be a conversation so it can't be written all the
 267 time. But I respected this, that she initiated this and you have to know this like for example,
 268 people who are from Asia they're more in the background, they never start, the Germans always
 269 say, 'Okay, I take this, you can take...' or 'I take this and I will do this', yeah? So, you know, I think
 270 the content is not that important or the task is not important but the way how do you handle this,
 271 so you can learn a lot from and sometimes the way of learning, the group activity is more
 272 important than the content itself

Figure 6.6 Extract from P2D interview

The participant stressed the equal importance of diverse backgrounds and what they bring to the learning activities, and the output of the activity itself. She provided a practical example of how she readjusted her cultural practices to respect the initiative of others during group work, despite her disagreement on the approach. This mismatch was related to her cultural practices as a national reference (Polish). She demonstrated a higher level of transcultural awareness by mediating and adopting these practices.

Later, she negotiated her cultural practices further by deconstructing and reconstructing emergent cultural practices, without reference to specific cultures, based on her previous experiences. She was open-minded and respectful of others' preferences, as demonstrated when she suggested using only voice communication instead of video during group work, acknowledging that some people may not like the camera, as she said in line (265):

"Maybe not with the video but at least with the voice because I also accepted that some people don't like the camera, but it has to be a conversation, But I respected this, and "I respected this, that she initiated this"(P2D).

Although she valued a starting conversation to introduce each group member, she recognised the need to negotiate cultural practices and showed a high level of transcultural awareness (in line 268), by drawing from her previous experience as a teacher of international students. By comparing cultures in intercultural contexts on a specific level (TCA Level2), she demonstrated how transcultural awareness can facilitate knowledge construction through communication with diverse learners and incorporation of previous experiences and cultural practices.

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The second example focuses on participant P7N's interview, where she concluded that successful intercultural communication involves higher levels of knowledge construction with diverse learners during discussions and interactions. Initially, she did not consider sharing and comparing ideas between diverse learners as part of co-constructing knowledge neither communication. She stated:

"In the chats when we were talking about... Or when we were just suggesting the ideas where we use English, where we use the EMI(?), we weren't communicating actually at this point, but then when we were like relating each other's ideas or talking about them, here, yes, there was communication" (P7N).

Later in the interview, she expressed moving from the second phase of disagreement or inconsistency to the third phase of knowledge construction by elaborating on some ideas, or partly agreeing to others and relating to them, in addition to looking for a common ground to reduce the distance between learners, showing intercultural awareness level saying:

"We had at some point similar points and by the different points that we were talking about we could like relate at some point, so I guess that's part of how I felt that it reduces the distance" (P7N).

She directly linked the disagreement of ideas to cultural clashes that hinder cultural communication, when she was asked about online international communication experience:

"It just has a weakness when it turns into something else than communication when you just like focus on your ideas and you don't accept others' ideas. So, I guess in this way the communication is not useful" (P7N).

By the end of the interview, she manifested her higher level of cultural awareness and open-mindedness stressing the importance of respect as cultural practice through replying to comments:

"The respect that we had when we were chatting, the fact that we were replying to each other. We could've just written our opinion and not replied to each other, but we actually did" (P7N).

Overall, P7N demonstrated an evolving awareness of the importance of communication and knowledge construction with diverse learners and how they both affect each other, emphasising respect as the key to succeed in both.

6.2.2.3 Learners' transcultural awareness

In this section, the last but important theme is presented from the interview transcripts. This key third theme was the only predefined theme with its three subthemes of the analysis using the deductive approach. This section incorporates two parts based on the three levels of TCA framework, first descriptive quantitative analysis, and frequency distribution of interview transcripts according to participants; followed by the qualitative analysis of these transcripts.

All the interview transcripts were analysed and mapped to these three levels. the results of the analysis showing of the TCA level for each participant in the interview associated with frequency are illustrated below in Table 6-9.

Table 6-9 Interview transcripts' analysis of TCA

TCA	Participants									
	P1C	P2D	P3E	P4H	P5I	P6L	P7N	P8P	P9S	P10T
Level1	Cross-cultural awareness of culture role on our and others									
Freq.	7	5	3	3	3	2	1	4	2	3
Level2	Inter-cultural Awareness (intercultural awareness)									
Freq.	4	10	14	3	7	6	11	2	1	12
Level3	Trans-cultural awareness when moving forward and backwards, negotiating and mediating between different emergent sociocultural modes									
Freq.	0	2	1	2	4	1	0	1	1	0

The analysis revealed that all participants in this sample exhibit a higher level of transcultural awareness which is presented as Level2 in the table. Additionally, more than half of them (N=7) reached Level3 showing transcultural awareness with fewer incidents. The following subsections provide detailed analysis of participants' transcripts with examples of each level of TCA.

Level1: Cross-cultural awareness of culture

This level of cultural awareness involves a conscious understanding of culture that influences behaviour, beliefs, and values in communication. It appeared frequently among all the ten participants, showing general understanding of cultures in relation to one's own and other cultures. The role of culture and context was clearly articulated in the participants' interpretations, referring to their national culture, or comparing cultures on a national level, where generalising or stereotyping was observed too, as shown below in examples of Table 6-10 Interview transcripts' extracts presenting Level1 of TCA.

Table 6-10 Interview transcripts' extracts presenting Level1 of TCA

Level1: Cross-cultural awareness extracts	Participant
"They have cultural differences that, for example, one thing for me it's okay, for you it's not okay, and vice versa. So, we have to know the cultural background, culture of people that I would be teaching."	P1C
"I'm from the Polish culture we never say the other people how they have to do it".	P2D
"I believe, the more traditional side of Egyptian culture is very patriarchal based so very male dominated".	P9S
"I was observing the extreme politeness of them, I think the British people are like this".	P2D
"it's also nice to participate without people looking at a 50 year old white man who has a British accent".	P5I

Level2: Intercultural awareness

In this level of intercultural awareness, participants identified different cultural meanings, considered possible misunderstandings, and compared their own culture with others on a specific level stemming from interaction and specific instances of intercultural communication. Level2 included more complex understanding of cultures and negotiation of communication and misunderstanding. The analysis provided evidence that all participants in this sample exhibits a higher level of cultural awareness. Their answers showed different components of intercultural awareness. First, awareness of common ground between cultures was observed in several participants' answers when they were asked about co-creating new cultural knowledge:

"Culture plays its role since we're from different countries but actually I didn't find that vast difference between me and them. So, there were some things in common, some things... how can I say it... similar" (P7N).

P2D agrees with that stating:

" It was interesting to see what the other people think and at some points we had the same meaning, the same also opinion but it could be more countries, more culture, and more discussion" (P2D).

Second, many participants showed the ability to compare specific cultures beyond generalisations stemming from their own intercultural experiences. As an example, P6L compared engagement with the audiences between Brazil and United states when lecturing saying:

” Whenever I give lectures in Brazil, I think that ... how could I say, Brazilians are more effective, I don't know whether it's cultural, but people here are more effective. In New York, for example, the lecture I gave, people were a bit more reserved, a bit more cold, reserved. In Brazil, people speak more”(P6L).

Some previous mismatch or misunderstanding incidents were reported by interviewees while communicating with others indicating Level2 of TCA. According to P3E:

” When I did MOOC I saw an emoji, it was a laughing emoji. Somebody asked the questions and the other person answered back with a laughing emoji, yeah, and so when I saw that I felt like it was just an insult, you know, she was asking the question she didn't know but the other person was just like mocking at her so I thought their communication it cannot be good, so it was so bad” (P3E).

She explained that this action is considered disrespectful as the person is transferring social media practices to this online learning environment and that did not suit the contexts. She elaborated showing respect, open minded and intercultural awareness:

” In this MOOC we really have to interact with different people from different backgrounds so we need to be careful with our language or sometimes we need to be careful with our usage... we need to try not to use the insulting words or some words that can intimidate other people or other communities.” (P3E).

Other interviewees showed how they were open-minded to other cultures trying to mediate and negotiate practices according to the intercultural communication. P4H expressed how successful communications accrues:

” Something that is acceptable to you might not be acceptable to them. Something that normally would work for you will not work for them. And it is important to have conversations and to ask people how they do things, how they experience things. And if you're not inquisitive and if you do not do that then you will not be able to understand other cultures and have efficient conversation and communication with them” (P4H).

She gave an example of mediating and adopting from her previous experience as a foreign teacher in China. When she tried to use negative reinforcement to treat problem behaviour it did not work as students felt offended. She boosted their behaviour using certain concepts they can understand in their culture and find a link to discuss the type of behaviour she wanted, using something that they are comfortable with to open the communication channels between them.

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Similarly, P10T emphasised the importance of being opened to other cultures without pre assumptions in communicating with diverse learners:

” I don’t expect that person to be or to behave in a certain way, either because of their physical appearance or cultural background or anything. I just give them a chance to show me who they are” (P10T).

Finally, several participants showed awareness of multiple voices and perspectives within the same culture, just as P3E declared:

” I thought I come across the same person in a different MOOC so at first I thought he was the same person and he came from that country, then I came across another person from the same country but when I realised that they all came from the same country but they have the different cultures so then I realised that even though they came from the same country they all can have their different cultures”. She concluded:” although we came from the same place, we can have multi cultures, so we need to be more variants in cultural things” (P3E).

Level3: Transcultural awareness

Several participants showed how they have perceived a deeper and more complex level of cultural awareness. They represented a dynamic intercultural communication. For example, P3E showed the complexity of cultural practices in communication, moving across and through cultures according to different scales as time and instances of interaction with diverse people. So, when asked about how she communicates culturally online with others P3E stated:

”Definitely it can change, we can have some belief that we thought it can be right but when it compared to other cultures it can be wrong so I think we can change our opinions according to times. I would say, yeah, times, maybe people” (P3E).

Thus, cultural flows can be formed differently depending on instances of communication. P9S as an international teacher, supported this idea of flexibility and fluidity of moving between blurred boundaries depending on instances and people. P9S suggested:

"I would see how it would go. at the start of every course I would show them the rules of my class, now you may have to change that culture to culture as well the materials, and if say on the second or the third lesson you realised that there is going to be a possible conflict or if it arises, address the class rules bring it to the open and say ok there was a problem, I understand that you guys object to this and you guys didn't. we need a happy medium, we need something that we all can agree on what do you suggest? I get them to give you the idea and you adopt that for the rest of your work at that place or maybe just for that one course" (P9S).

Cultural practices in interaction have been identified as a constantly changing process and not fixed, as P4H emphasised:

" I think it's flexible. Changeable is coming from a judgment. They need to change. Flexible means we are having a conversation and we see that can work for all of us. I am moving backwards and forwards all the time because things need change. It cannot stay the same" (P4H).

This indicates that cultural communication is not necessarily bound to specific cultures, but it can move and flow to a wider frame transcending frequently.

Additionally, through the analysis it was observed that participants during the interview were moving backwards and forward between the global and the local identity as well as the level of their cultural awareness level according to the context, the situation, and the people diversity in intercultural communication. The following example collects different extracts from P2D interview, showing how this participant moved between different level of awareness and cultural references throughout the interview, and that is consistent with Baker's (2015a) conclusion. The example below provides line numbers of the interview transcript to show the sequence and the flow of the interview. These parts of the interview are provided with line numbers the way they appeared in the interview transcript, as sometimes they are provided depending on the issue discussed and not in sequence.

P2D had a multicultural background, referenced to national culture. She articulated her own culture background stating:

" I'm Polish, I live in Germany for 20 years, my husband is Turkish" (Level1, line 215).

Then she moved forward to expressing how cultural communication online was in the MOOC from her point of view:

" It was interesting to see what the other people think and at some points we had the same meaning, the same also opinion but it could be more countries, more culture, and more discussion" (Level2, line 243).

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In this intercultural awareness level, she showed her identification of similarities and common ground between national cultures. As well her ability to be open to other cultures in discussions although she did not know their cultural references as she mentioned “could be”. As the interview goes along P2D showed another element of intercultural awareness in the form of mismatch with named cultures, then mediating and ability to accommodate as she disclosed:

” The first one suggested that we all write down our ideas and then combine them together. And it was not my way how I would start but because I'm from the Polish culture we never say the other people how they have to do it, but I've readjusted this this, I saw this and I also tried to start something several times” (Level2, line 258).

She elaborated:

”Sometimes can have some cultural clashes or misunderstanding situations where you don't know what happened, why is he frustrated or she's frustrated when you said something wrong, but you don't know you said something wrong, so this is always the problem with intercultural communication” (Level2, line 296).

She even goes further expressing her intercultural awareness, comparing named cultures on a specific level drawn from her previous intercultural communication experience in teaching international students:

”People who are from Asia they're more in the background, they never start, the Germans always say, 'Okay, I take this, you can take...' or 'I take this, and I will do this” (Level2, line 267).

Later, P2D moved from the global to the local and vice versa, expressing the complexity and flow of cultural practices moving backwards and forward as well through and across different cultural references, and adopting a flexible approach towards unnamed cultures:

” I grew up in Poland and then when I was 14, I went to Germany to Berlin (Level1) ”and went to school with 13 nationalities and it was the shock of my life, yeah? And after I came back to Poland, I couldn't adapt to this monocultural stuff because the perspective is always the same (Level2). I'm not saying there's something wrong, this is just different and if you see so many different points of views, so many different cultures and you see there is not only one truth(?) but there are so many and you learn to be tolerant and to be, I don't know, open minded (level 3)”. “So, I think, you know, then more about the cultures and also you learn more about yourself because you always compare with your own culture and you see okay, I agree, I disagree. In my culture it's like this, I like it very much and sometimes you like more the perspective of the other culture, and you take some benefits from the other cultures”. (Level3, line 682).

In the previous example the participant presented different levels of cultural awareness moving forward and backward in a fluid way between the local identity and culture to the global. She represented her specific cultures and sometimes moved dynamically beyond that in the context. She induced both her own behaviours, beliefs and those of others and make use of her cultural communicative abilities to articulate these. Furthermore, she encouraged diverse learners or even teachers to co-create knowledge, by combining different experiences and context specific knowledge and cultural practices to benefit from each other and create a holistic knowledge. She connected directly the cultural awareness level with reaching a successful knowledge co-construction. She stressed that being open minded and respectful to others as well as negotiating meaning and practices are so important to achieve any diverse group work.

To summarise, this section presented the third phase of this research which included two sequential methods: surveying MOOC learners, followed by interviewing a sample of them. The survey (which targeted all the learners who attended the tenth run) was used as a recruitment method and a selection criterion that resulted in a heterogeneous sample for the interview.

Survey method of data collection and analysis were described, followed by detailed survey results. The survey findings included frequency descriptions of respondents' answers, which led to the selection of the interview participants.

Finally, post MOOC interviews were conducted with ten MOOC diverse learners, to understand in-depth their perceptions and experiences in relation to learning and communicating with diverse MOOC learners. Interview method of data collection and analysis were described, followed by detailed findings and interpretations.

Chapter 7 Discussion

This thesis seeks to discover to what extent transculturality would be beneficial for online learning in a culturally diverse and complex setting of a MOOC platform.

Much of the previous research about transcultural awareness and communication was carried out either with a limited culturally diverse sample in local settings or formal courses (Humphreys and Baker, 2021; Kusumaningputri and Widodo, 2018; Sangiamchit, 2017; Yu and Maele, 2018). In contrast this research has the focus on a fully diverse sample, where the MOOC course held participants from more than 170 countries, with different motivations and experiences. The survey was conducted with learners of various cultural and personal attributes, including age, gender, nation, language, educational background, profession and even goals. The interviews were conducted with a heterogeneous sample too. In this way the study accessed insights from a wide range of diverse learners with different cultural attributes, experiences, and interactions both online and offline.

The central emphasis in this chapter is interpreting and integrating research results to answer the three main research questions contextualising them within the field. Here however, the questions will be considered in a different order. The discussion begins with answering the sub-research questions of RQ1; (RQ1a) What are the levels of learners' transcultural awareness that appear in the MOOC online discussions? Followed by the second sub-research question (RQ1b) In what way do diverse learners in a multicultural MOOC represent and construct transcultural awareness through their online discussions? The discussion of these two sub-research questions should contribute to answering (RQ1) and elaborate on what extent does transculturality appear in a multicultural MOOC (RQ1).

The chapter then moves to answer the sub-research question of RQ2 first; (RQ2a) To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC? The discussion of this sub-research question should contribute to answer RQ2: Is there any association between learners' level of transcultural awareness and their knowledge co-construction in a multicultural MOOC context? Finally, the discussion of how multicultural MOOC learners perceived their learning experience in terms of cultural communication and co-constructing knowledge is at the end and would answer the last research question RQ3.

7.1 RQ1a: What are the levels of learners' transcultural awareness that appear in the MOOC discussions?

This first sub question had two separate lines of enquiry. To address this sub-question, the results of the TCA analysis for both runs of the MOOC (Run 5 and Run 10) are compared to evaluate any differences or similarities between the two runs and confirm the presence of transculturality in participants comments. The findings also identified the diversity of transcultural awareness by assessing the level of the comments posted by MOOC participants.

The purpose of the initial MOOC comment content analysis (Run5) was to validate the adopted TCA model empirically in the MOOC setting. Additionally, and more importantly, to ensure the identification of transculturality and transcultural awareness in this context. The challenge this research faced was the minimal expectation of transculturality and transcultural awareness to appear in this setting according to claims of previous research (Abdzadeh and Baker, 2020; Baker, 2013; Yu and Maele, 2018). This challenge was due to short duration of the MOOC course (4 weeks), and the various previous cultural and transcultural levels and experiences of the MOOC participants. However, the aim of the research was to investigate the occurrence of the phenomenon naturally in this complex setting. That contrasts with the previous studies which took actions to develop and promote transcultural awareness and needed a base line to be able to measure the development through the using the model to measure TCA before and after an intervention or an activity.

Since this study assumed that a learning environment would include learners with different levels of transcultural awareness measures, it could be assumed that replication will occur. However, similar results were not predicted due to both the diversity levels and the interaction level. For example, theoretically, it was possible that each iteration of the MOOC has participants with cross-cultural, intercultural, and transcultural levels of awareness, but maybe presenting different percentages of each level which might then mean that participants are considered a significant factor affecting CK. Additionally, the study assumed that participants who have a high transcultural level frequently contribute to the comment section of the MOOC, and potentially contribute to knowledge construction. Identifying similarities and differences between the two iterations for these TCA levels, helped explaining how they appeared in the MOOC and how that supported knowledge construction within comments.

This sub question was answered by analysing the learners' comments based on the TCA model for both runs of the MOOC (Run5 and Run10), where in both runs the three levels of transcultural

awareness were identified. Table 7-1 summarises the overall coded comments based on TCA analysis for both runs of the MOOC and according to each level.

Table 7-1 Comments overview based on TCA model for MOOC runs (5,10)

EMI MOOC	Run5	Run10
No. Comments	3290	3133
Level1	87%	86%
Level2	6%	2.5%
Level3	0.1%	0.5%

Based on the table above, the Level1 comments got the highest percentage in both runs. This may indicate that most of the comments in the MOOC were communicating their own or others' cultures generally based on predefined cultural reference. The percentage of comments at Level2 was higher in Run5 (6%) compared to Run10 (2.5%), which may indicate that the comments in Run5 were relatively more representative of advanced cultural awareness compared to Run10.

Although fewer than 1% of the comments presented transcultural awareness Level3 in either run of the MOOC, their occurrence presented evidence of the existence of a more complex, flexible, and fluid understanding of cultural forms and practices. Additionally, they validated the TCA model in this context empirically, and thus supporting the appearance of transculturality in the MOOC to proceed and investigate the phenomenon even more concerning its pedagogical benefits. Overall, these findings suggest that there may be some differences in the nature and quality of comments received under different conditions of the EMI MOOC. Therefore, further analysis is provided below to draw more conclusive insights.

7.1.1 **Cross-cultural awareness (Level1)**

In both runs of the MOOC, level one or the cross-cultural level of TCA was found to be significant and dominating. The majority of participants perceived having a static and simplistic understanding of culture, which was bounded by national frames (Table 7-1). When sharing their own national culture or sometimes other cultures, generalisation and stereotyping were the norms of their comments.

Comments at this level appeared to be general among most of the MOOC participants, indicating a limited understanding of cultural perspectives and contexts. A possible reason for this could be that these participants had a variety of personal, educational, and cultural experiences, and knew

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little about each other's backgrounds. Therefore, they generally framed their cultural understanding based on generalisations and national comparisons, which make discussions easier to understand for other participants.

This approach is consistent with the claims of Humphreys and Baker's (2021) that this is a convenient and expected way to engage initially and is appropriate for short period of time interactions. For, example, P10T from Ecuador generalised about the body language of academics in her country, not limited to her institution but as a cultural practice on a national level:

“Well, I want to say that, unfortunately, in my country, there is this idea that professionals have to be seen as authorities maybe, in control, so that is why most professionals who teach in universities and even secondary education sometimes, do not have good body language, as they portray themselves as the figure of respect. So, using body language would make them feel kind of acting out things. That is the idiosyncrasy of our culture.” (P10T, Run10).

Other participants expressed and shared their perspective on a certain cultural practice (eye contact), linking it directly to their nation:

“In our teaching contexts (China), teachers normally would use eye contact when they expect the students to get involved in the discussion.”

“In Brazil, eye contact shows appreciation of both, speaker and listener.”

Another possible explanation for the domination of TCA Level1 among participants could be the type of activity provided and the way it encouraged discussions from one's own context and opinion. Typically, discussions at the beginning of the course started with articulation of their own context and supported by a general point of view.

The findings around the TCA Level1 were consistent with the results of many previous empirical studies that explored the relativity of the model in different educational contexts with cross-cultural representations of cultures (basic cultural awareness) (Abdzadeh and Baker, 2020; Humphreys and Baker, 2021; Kusumaningputri and Widodo, 2018; Yu and Maele, 2018).

Interestingly, the findings of both runs had close similarity of the rate of this level. It seems that despite the changing nature of participants and their level of awareness, maybe the norms of comments in this multicultural MOOC tend to remain the same. This indicates that Level1 of TCA is a common occurrence among participants in such settings. These findings suggest that efforts should be made to encourage participants to express a deeper and more complex understanding of cultures, so that, MOOC discussions can better reflect the richness and diversity of cultures.

7.1.2 Intercultural awareness (Level2)

The proportion of comments categorised at the intercultural level was relatively small in both runs and ranged between 2.5% and 6% (Table 7-1), exhibiting a marked decrease compared to Level1.

These findings, which present the natural state of MOOC comments at the intercultural level of TCA, are contrary to previous research that measured the TCA level as part of specific interventions aimed at developing TCA (Abdzadeh and Baker, 2020; Kusumaningputri and Widodo, 2018; Yu and Maele, 2018; Baker, 2012). Findings from this study suggest that comments with intercultural level are relatively less prevalent in MOOC discussions. This suggests that Level2 of TCA does not occur naturally but needs to be encouraged. MOOC activities need to be intentionally designed to promote these types of discussions.

Another explanation is that the course activities encouraged the sharing of opinions and discussions of one's own context and experiences. In addition, there was no necessity for direct communication and collaboration, which would reveal elements of this level including possible mismatch or misunderstanding between cultures (see components of Level2 Table 4-1). Additionally, there were no group work, activities, or assignments requiring the need for negotiation and mediation between distinct cultures (which are again components of this level).

Moreover, comments at this level for both runs were identified mainly as showing a comparison on a specific level or acknowledgement of the existence of variety within cultures and groups, which were derived from participants' own previous experiences and not as a result of peer interaction, inter/trans cultural communication, or drawn from observations of other people's comments within the MOOC course. Refer to examples of both runs at Level2 of TCA, Table 4-3 and Table 5-10 which clearly presented individual earlier experiences or perspectives.

From both runs of the course, it was observed that many comments provided by participants were rich in representing different cultural perspectives and meanings. However, these comments did not demonstrate any acknowledgement or awareness of cultural mismatches, nor did they attempt to negotiate different cultural meanings or relate to comments in finding common ground.

These comments were mapped to Level1, as they were considered as sharing a cultural perspective and answering the course task. However, they did not acknowledge or present awareness of specific cultural mismatches between cultures discussed in previous comments or build upon them. This finding indicates that participants either did not read previous comments

and reflected only on the task posted by the course, or did not find any instructions or suggestions to discuss and engage with others, as mentioned by participant P2D in the interview (p. 159).

For example, in EMI MOOC Run10, in one of the course activities, it was suggested that participants discuss the change of the term “English as a medium of instruction EMI” to “English as a medium of education EME”. Several learners linked this suggested term and referenced it in relation to the language used in their own national culture.

For instance, one learner did not prefer the EMI concept because in Russian, the word “instruction” has a connection with something strict and compulsory, like a command (the provided examples here are paraphrased for ethical issues see section 3.8. So, the language used here referenced a cultural meaning (for more details see section 2.1.1.2. Another participant did not like the term “instruction”, stating that in Spanish it sounds “like military”. In contrast, another comment suggested that in French, “instruction” refers to providing pure knowledge and know-how, and as an academic, the participant is involved in EMI more than in EME.

This example illustrates how learners have rich and varied points of view on a presented idea, and this view is linked directly to a cultural perspective presented through their national language on a specific level. However, these diverse cultural views did not represent any awareness of other comments mismatches, misunderstandings, or even acknowledgments of finding similarities. Since there were no right or wrong answers in the comments, this did not lead to any intercultural clashes or misunderstandings, nor did it motivate participants to come to a conclusion.

This finding suggests there is a need for more explicit instructions and guidance on how to engage with peers in MOOC discussions. It also highlights the importance of creating a learning space that encourages learners to engage in meaningful and effective dialogue, covering different components of Level2 TCA (see Table 2-2), such as negotiating differences, and finding common ground.

7.1.3 Transcultural awareness (Level3)

For the third and more dynamic level of transcultural awareness, comments for both runs did not exceed 0.5% of the total comments posted. However, these comments held with them various elements of transcultural awareness expressing ‘fluidity of culture’, ‘flexibility of cultural community communication’, ‘respect’, ‘continuous adaption of the situation and adjustments of expectations from others’, and ‘the readiness of adaption to others and negotiation’. The appearance of this transcultural level of awareness is an empirical proof of the existence of transculturality among MOOC’s diverse participants who conceptualised cultural forms as

dynamic and emergent. Some had the ability to consciously negotiate and contribute meaning making without relating them to any specific culture, as supported by Baker and Ishikawa (2021).

Participant comments at this level for both runs primarily provided perspectives drawn from previous experiences of intercultural communication rather than examples of participants interacting with people from other cultures within the MOOC itself. This claim was consistent with Baker (2013), who found that participants provided data from outside of the learning environment studied. In this EMI MOOC course, it could be because the structure of the course and its activities were encouraging the sharing of different opinions and points of view, without explicitly involving learners in collaborative discussions or group work around the course content.

Also, as supported by literature in intercultural learning (i.e. Baker, 2015b; Baker and Ishikawa, 2021), some participants were able to communicate at Level 3, emerged from their earliest experiences, such growing, living or working in a multicultural environment. So, this TCA awareness is embedded and expressed through their comments.

The next example from Run10 (see Table 5-11) demonstrates how comment data at this level was pulled from outside the MOOC, presenting dynamic Level3, drawn from participant's previous experience with diverse people. When asked about how to deal with students' thinking and feelings in relation to diverse cultures in a teaching context, the comment stated:

"I would not directly challenge others' stereotypes and I assume that is not the intent. Because it would be hard to change them. Mutual communication by giving each other more information about how and where they grow and live would definitely remove the gap between "who I am" and "I assume that you are". In an EMI setting, teachers could use their own stories to tell and shape students' understanding of a fluid and changing nature of any cultural or racial concept rather than based on texts." (Run10, comment).

This participant understood others' basic and static understanding of cultures. His/her knowledge of this awareness prevented him/her from clashing with others, instead, his/ her transcultural awareness led to communicate through interaction to mediate between these cultures by getting "more information about how and where they grow and live would definitely remove the gap between "who I am" and "I assume that you are" (Level2). Then, consciously get involved in more complex meaning making approach through deconstructing this conceptualisation of distinct cultures and reconstructing it, stating "teachers could use their own stories to tell and shape students' understanding of a fluid and changing nature of any cultural or racial concept rather than based on texts." (Level3).

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After a closer inspection of the comment data for both runs, it was discovered that the majority of comments classified as Level3 were posted by the top 5% of active learners who had contributed more than 40 times () .

Table 7-2). This could be because they were eventually motivated to do so and discovered that online discussions with diverse learners were beneficial for them (that is similar to what Baker's (2013) students reported about the optional online course they took). As a result, they became more engaged demonstrating greater transcultural awareness whenever the discussions allowed for it.

These findings are consistent with previous research by Deardorff (2006) and Rajprasit (2020), who reported that providing learners with intellectually stimulating learning activities that connect to real-world issues will enable them to demonstrate cultural open-mindedness and higher cultural awareness. Additionally, this study's interviews findings supported the influence of motivations and prior experiences on the degree and the depth of transcultural communication, as a whole subtheme emerged from transcripts (see point E: Different motivations and previous experiences, different cultural awareness levels).

Table 7-2 The frequency of posting comments of TCA Level3 participants

Run5			Run10		
Participants	No. comments	TCA Level3	Participants	No. comments	TCA Level3
R5P1	73	1	R10P1	92	1
R5P2	53	1	R10P2	79	1
R5P3	50	1	R10P3	77	1
R5P4	29	1	R10P4	74	3
			R10P5	74	2
			R10P6	53	1
			R10P7	51	1
			R10P8	47	2
			R10P9	40	1
			R10P10	22	1
			R10P11	10	1
			R10P12	9	1

In this research, the transcultural awareness levels of comments in two different MOOC populations were compared to gain a wider understanding of the complex transculturality in MOOC comments. The study aimed to answer RQ1a, focusing on identifying the three levels of transcultural awareness in MOOC comments.

The findings showed that all three levels of transcultural awareness were present in both MOOC runs, with similar percentages. This suggests that the same pattern of participation and representation of transcultural awareness is present, even with different populations of MOOC participants and diverse cultural attributes. Additionally, level one comments were dominating, which is consistent with previous research in different educational settings. This indicates that MOOCs are no different from other educational settings in terms of the prevalence of cross-cultural comments.

Based on the findings of intercultural awareness level, comments in comparison to existing literature do not occur naturally in the MOOC. Instead, they need to be actively encouraged and incorporated into the design for learning to enable more reflection at this level. This finding suggests the need to take deliberate steps to facilitate this level of TCA, incorporating more opportunities for participants to engage in meaningful and contextual interactions that consider diversity.

The study found that level three of transcultural awareness (TCA) was identified in both Run5 and Run10 with the lowest percentage of the MOOC comments. The findings of the study suggests that this level of TCA was mainly reflected in the comments of active learners who had individual motivations and prior experience with intercultural communication. However, it was not evident as a result of peer interaction or communication in the MOOC course.

This finding implies that participants who have a high level of motivation to communicate with different cultures and have previous experience or knowledge with transcultural communication are more likely to exhibit a higher level of TCA in their comments. This highlights the importance of creating a learning environment that provides opportunities for learners to communicate and engage in collective activities.

7.2 RQ1b: In what way do diverse learners in a multicultural MOOC represent and construct transcultural awareness through their discussions?

This sub question consists of two parts, and to answer it first, participants' representations of transcultural awareness through MOOC discussions is discussed, followed by a discussion of how participants' transcultural awareness level was developed and constructed in the MOOC course. These issues are addressed through a combination of survey, interview, and content analysis of MOOC comments.

7.2.1 Representation of TCA

The main purpose of participants' online communication on EMI MOOC was not to share their cultures. Rather, they aim to reflect on their teaching and learning experiences in relation to the use of English globally and as a medium of education, and to share their different activities, experiences, and ideas from their own different contexts. Several studies supported and reported that engaging in learning activities that involved real world issues in connection to local and global contexts, would stimulate open mindedness and critical cultural awareness (Deardorff, 2006; Baker, 2012). The goal here was to capture how participants' comments explained and were connected to transcultural awareness representation in their discussions and had nothing to do with how participants actually and culturally viewed themselves or others.

To answer this part of the research question, three ways in which participants represented TCA were identified and extracted from various findings:

- 1- Sharing previous individual interactions, knowledge, and experiences with diverse people.
- 2- Emphasis on skills, behaviours, and knowledge (awareness) always associated with transculturality.
- 3- The use of MOOC social interaction features (posting, liking, and replying) as a cultural communicative practice.

Following are detailed discussions of these various representations, as well as supporting examples.

1- Sharing previous individual interactions, knowledge, and experiences with diverse people

It was observed that comments which included previous intercultural knowledge or experience, often produced awareness at higher levels of TCA. According to Jarvis (2012), experience is an

indispensable source of knowledge for lifelong learners, which is the case in MOOCs, and an expected finding in EMI course comments. The example below presented a Level2 comment posted on the MOOC (Run10) from a British participant who lived and taught English in Spain. He spoke about his personal experience in relation to language and the need to negotiate his way of speaking to communicate successfully with his students.

“A problem for me in Spanish is the stress is syllabic and not tonal; and the writing represents the sounds more faithfully than it does in English. So, I often don't stress sounds I should because they are connecting words and not nouns and verbs for example. The letters r, j, and g took me a while to master. I really had to modify my West country accent to be understood by my peers when I first began to teach”(Run10, P5I).

Another example was drawn from a comment made by an Indonesian teacher who teaches English to Indonesian students. She identified subcultures within the same cultural group who displayed variety of accents in relation to their language (Level2 of TCA).

“I selected neither agree nor disagree for encouraging my students to communicate in English like a native English speaker. The reason is they are vocational high school students. They are not children. They are adults whose brain formed as well. We will find it's hard to change them like native speakers. I know well about their capability. I realize that most of them didn't get any sufficient education before. I feel very proud of them when they can speak English fluently but still in our Indonesian or Sundanese accent. It doesn't matter” (Run10, comment).

The last example shows how participants presented their higher level of TCA in a comment associated with a previous intercultural experience at a Level3 comment posted by an Algerian teacher who speaks three languages and teaches English as a third language. In this comment the participant expressed her opinion about cultural communication through language, and how that is dynamic and adaptive according to contextual interactions in multicultural environments without tying that to specific national resource.

“We need to adapt and adjust our language according to group level and their understanding, especially if we are in the multicultural environment. Our first objective is to use English effectively in intercultural communication contexts. Unfortunately, in my country people tend to focus more on your errors when you are practising a new language, this not just limited to English, even with

French, which is the first foreign language in Algeria. Thus, for Algerian who has a certain mastery of English, this kind of errors (three feedbacks) is not tolerated, I was always unconfident to speak English because I was afraid that people would focus on my pitfalls rather than my progress" (Run10, comment).

From the previous examples of content analysis, along with the interview findings, bringing previous experiences were the main way of articulating a higher level of TCA (see Table 4-3 and Table 5-10, and refer to Different motivations and previous experiences, different cultural awareness levels). These findings suggest that these representations were individual and were not the result of any transcultural communication within the MOOC. They were indicators of potential transcultural practices that could be evolved and encouraged by providing opportunities for in-depth and collective discussions with clear and explicit instructions.

2- Emphasis on skills, behaviours, and knowledge (awareness) always associated with transculturality

Participants through their comments and supported by interviews, stressed the importance of certain concepts, attitudes and behaviours in a multicultural environment to ensure successful communication. These expressed terms were often associated with a higher-level comment or statement of TCA. For instant, in the comments, the most frequently used term was 'respect' being logged 33 times. Therefore, was considered important and associated with a higher TCA comment (Level2 or Level3). Examples below are drawn from Run10 comments as well from interviews expressing how important respect is in a culturally diverse environment, and stressing common ground between cultures whilst encouraging mediation and tolerance:

"I would remind them to show respect for everyone in the class because we are all there for the same purpose, which is learning. We all have our differences, otherwise, life would be boring, and we have to be respectful and tolerant with everyone" (Run10, comment).

"Let us mutually respect each other with dignity and individuality. Me must understand the pluralism of different cultures and norms, alright! We unite together with differences. That is worthwhile." (Run10, comment).

"I think the first thing is respect, mutual respect, even if someone comments a thing and she or he wasn't sure about, but we all need to be very welcome and have respect for him or her, so I think the most important thing is to have mutual respect."(interview, P3E).

“What I mainly focus on is to see, “Okay, is this a good person? Does this person have good values? Are their intentions good – with me, with the people around him?” And then I focus on that, not...maybe he may have, he is influenced from his culture or his religion, but as long as that person is respectful, that person is good with other people, that’s what matters to me. even within the same country, there are different lifestyles, different types of family culture too” (interview, P10T).

These examples demonstrate higher levels of TCA that included respect referenced sometimes to national cultures and sometimes as an emergent practice. Other components of awareness presented by learners in the MOOC included: flexibility, curiosity, cultural sensitivity, empathy, fluid, reflective, dynamic, motivation, negotiation, and open mindedness. Full examples of these qualities are presented in Appendix E.

The TCA model which was integrated from Baker’s (2015b) ICA model (see 2.1.5) provided a useful analytical framework for the researcher to evaluate the content of comments. However, its level of abstraction, particularly at TCA Level3, makes it challenging to develop concrete and practical recommendations, guidelines, and instructions for engaging in transcultural communication among learners and MOOC designers where it looks at contextual and changeable interactions (see ICA limitations 43).

As a result, the integrated findings suggest that the TCA model in practice needs to be extended to include practical components and general guidelines for encouraging awareness in this context that were identified and extracted directly from participants’ data (Table 5-10, Table 5-11, Appendix E). Many of these awareness components were supported by literature in different contexts too, Byram, 1997; Jurkova and Guo, 2021; Slimbach, 2005; Harrison, 2018; Schachtner, 2015; Ishikawa, 2021).

The proposed components are still considered holistic in nature and do not differentiate between knowledge, skills, and attitudes, to avoid the problematic issues that may arise from such differentiation (Baker, 2015b). The following practical components are considered fluid and flexible strategies that are not referenced to any standardisation or boundaries (Baker, 2015b; Canagarajah, 2013), and meant for global effective communication:

- Showing respect and communicate with empathy .
- Conscious awareness of possible multiple and transcending perceptions, interpretations, and behaviours in a fluid and emergent way.

- Awareness of flexible identities, acknowledging the dynamics of cultures without abandoning own cultural background.
- Engagement in a meaningful dialog with flexibility and confidence in multicultural and uncertain settings.
- Negotiation and participation in meaning making between different cultures.
- Open mindedness, showing more complex understanding of fluid worldviews beyond biases, stereotypes, and judging.
- Curiosity to explore, experience, and apply different cultural perspectives with cultural reflective manner.

3- The use of MOOC social interaction features (posting, liking, and replying) as a cultural communicative practice

The density and type of social interactions used by MOOC participants (post, reply, like) varies depending on the pedagogical activity design, the technical features applied by a MOOC platform, and the social interaction opportunities designed (Tubman et al., 2016). From the perspective of culture as a practice (Baker, 2015a), these social interaction features were analysed as sociocultural practices in this MOOC. Here, participants also identified them as a MOOC cultural communicative practice. From the content analysis of the tenth run of the MOOC, out of 348 social learners, 40% of participants posted only once, and 2206 likes were captured. 1271 comments (40%) received at least one like with a maximum of 7 likes per comment. The percentage of likes were found to be close to the percentage of the survey respondents reporting they always/often ‘like’ other comments (45%) as a way of engagement and peer interaction.

For example, at the end of tenth run of the MOOC, one comment reflected on the course stressing the positive impact of the course's social features on their learning experience. It mentioned that receiving ‘likes’ from peers all over the world gave them a sense of confidence and happiness as a learner. They also expressed being valued and listened to in a multicultural environment, where they were new. This was identified as a significant benefit of the course. Finally, the participant recommended the course to friends based on their positive experience. This highlights the importance and support of the ‘like’ function for an inclusive learning environment, and as a cultural communicative practice.

Likewise, P2D in her interview, expressed her happiness when her comments got liked by others. She mentioned using ‘like’ often during the first two weeks of the MOOC before she got busy with her job. She conceptualised this feature as a way of indirect communication with diverse learners to imply different things such as showing interest, observation, or even feedback:

"I think the same or it is also my opinion, or I like it. So, I was hoping that they answer me back and I think it never happened, maybe once or twice so I saw maybe it was a hidden communication, sometimes I liked people's comments and they liked me too later. Maybe, you know, they were interested, okay, I like the comments maybe I think similar, or I have similar experience, but it was never directly said or never directly communicated, I was so happy because, you know, you need feedback" (interview, P2D).

Findings from interviews suggest that MOOC social features such as posting and liking and even replying do not often happen naturally as a cultural practice or communication in the learning environment. Rather they need to be encouraged, setting expectations with clear goals and instructions to gain a meaningful and effective transcultural communication.

P2D, who had previous experience using Twitter and Facebook, explained that she had never used the 'like' feature. During her first ever MOOC, she described how the design of the MOOC activities influenced her sociocultural practice of posting and liking comments. She applied this feature for the first time as a response to the course instructions. This finding stresses the crucial role of activities' design and course instructions in encouraging different types of social interactions.

"I never like liked anything, I don't like this Twitter and so on, you know, the Facebook, I never liked this, I never did it and this is actually the first time I used this like - I will apply but I probably I don't have the same expectations because I don't know if the other people have the same expectations. We were like asked to do this, it was a task to like someone, it was a given task, and also it was always the activity to try to comment so it was something that we couldn't develop on our own" (interview, P2D).

On the other hand, P3E stated that she liked others' comments instead of posting because of the absence of instructors' feedback. This was consistent with what she reported in the survey, of always liking comments, often reading them, but sometimes posting (just 6 comments):

"I usually comment on a comment but in this MOOC the only thing I just do is I just give like because at that MOOC there are instructor feedback but when I did this MOOC, I did not see any moderator or any instructor" (interview, P3E).

Some newcomers to the MOOC, had different expectations of a MOOC course, resulting in different behaviours and use of these interactive features. For instance, P6L was enrolled expecting (as reported in the survey) to always use all social features (read ,post ,like ,reply).

However, she revealed that she did not use the 'like' button and posted less than she expected (21 comments) as the course did not meet her expectations. She admitted that these cultural communicative practices were difficult and did not work for her.

"For me it was not so advanced as I expected. I thought that the communication and the interchange of communication was not effective. we didn't have face-to-face contact. I think that this communication is a bit difficult, not because of the language and not because of the cultural background, not because of these questions, but because of, I don't know, people don't see each other, people don't know who are the people. I don't know, I think it's difficult. I made many comments but there wasn't any sort of response, but I confess also that I didn't make comments, I didn't answer other comments as well, so I confess that I wasn't a very ... I didn't participate so much in this communication" (interview, P6L).

In contrast, these types of communicative practices between diverse learners encouraged others to participate and apply them. Here, P7N demonstrated how she was motivated by other participants to represent such a communicative practice (posting comments), without the fear of English proficiency limitations.

"I actually took another course one year ago on FutureLearn about biochemistry and I didn't comment even though I'm a biochemistry student and I could've shared my thoughts or my knowledge, but in this course, I felt like people... What attracted me was that they're writing paragraphs and I enjoy reading paragraphs and knowing information, so I was like, you should go for it, you should like write your thoughts, write them so people can read them". (Interview, P7N)

Based on the integration of comments, survey responses, and interviews, it is suggested that different MOOC expectations should be taken into account, in relation to diverse communication in the learning environment (what? And how to communicate). Given that course design has a significant impact on cultural communication, both positively and negatively (see 6.2.2.1 for interview data), that is extended to include the MOOC social features (like, post, reply) and managing participants' expectations. These findings highlight the importance of clearly setting out what to discuss in the course, as well as providing guidance on how to discuss and communicate. By doing so, there is a greater likelihood of exhibiting social practices that represent and facilitate transcultural communication.

7.2.2 Construction of TCA

Due to the analytical and correlational nature of this project, developing and constructing transcultural awareness or co-construction of knowledge was not a research goal. Rather this phenomenon was observed, captured, reported, and interpreted as it occurred naturally.

Learners' comments did not clearly and explicitly show how TCA was promoted in MOOC comments. However, reading others comments influenced learner's transcultural awareness in a non-direct way, where some learners exhibited a higher level of transcultural awareness through others' diverse intercultural experience and knowledge. In that regard, P2D in her interview demonstrated that similarities and differences through EMI interactions with peers were identified from reading culturally diverse opinions and experiences in the comments. She described the 'like' feature as a "hidden communication", and stressed learning from others' transcultural experience identifying similarities and differences on a specific level (which are elements of TCA Level2):

"Maybe it was a hidden communication, sometimes I liked people's comments and they liked me too later. Maybe, you know, they were interested, okay, I like the comments maybe I think similar, or I have similar experience, but it was never directly, but I read really everything too much so you couldn't follow it, but I was very interested how it (EMI) was in other countries so actually I got these answers. And sometimes I have commented on". (Interview, P2D)

Another example of how the MOOC design may helped developed TCA was identified in P1C's interview. He mentioned two situations where the MOOC helped him raise awareness; one from the MOOC activity; and the other from reading comments. P1C stated:

"There was a question asking me what I would do to solve a kind of problem involving cultural differences, and it was a surprise for me, because from my point of view, you would teach the subject, I would not have to deal with cultural differences. So, this was very interesting, because if I wanted to teach EMI in the future, it's advisable that I learn about differences, cultural differences, so that I can deal in a better way with people." (Interview, P1C)

Although this comment provided a basic and national culture view of others, it illustrates how through the MOOC content, P1C developed a better understanding of how cultural sensitivity is important in communication and teaching. The second example demonstrated how P1C constructed a higher level of TCA through reading comments. Here he gained this intercultural

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knowledge from reading a comment that compared cultural differences (religion) on a specific level:

“According to the aspect of my cultural background as a Muslim, I believe 'there is no God but Allah'. When I suppose to express this view to my class in relation to culture, one of my students stars to clash with me saying 'then, what about our God or Goads?' I would manage this situation by saying that 'my dearest student, this is my personal belief, according to my belief I said so. I did not say that you should believe my thought. You may have different belief in God. I definitely respect your belief. My belief is for me, and your belief is for you. We do not want to clash for it. Let us mutually respect each other with dignity and individuality. Me must understand the pluralism of different cultures and norms, alright! We unite together with differences. That is worthwhile" (comment, Run10).

Thus, P1C constructed an intercultural awareness and knowledge (Level2) from reading others' intercultural practices, clashes, or mismatch, and comparisons made by others on a specific level:

“Because there was a person, and I guess ... was from a country similar to yours, and she was saying something about difference of God and Allah, and she gave an example, so we learn about the cultural differences and experiences during reading the comments.” (Interview, P1C)

Likewise, P3E showed how her TCA level was promoted through observing other diverse learners' comments. In the interview, when she was asked if she learned any practices from cultural communication within MOOCs that she would like to apply in the future? She replied that she learnt a cultural practice that she will not apply:

“When I did MOOC I saw an emoji, it was a laughing emoji. Somebody asked the questions and the other person answered back with a laughing emoji, yeah, and so when I saw that I felt like it was just an insult, you know, she was asking the question she didn't know but the other person was just like mocking at her so I thought their communication it cannot be good, so it was so bad. I think that kind of action was being disrespectful because they were just doing things that they do on the social medias in the action that they shouldn't do on learning.” (Interview, P3E).

P3E claimed that when interacting, some online cultural practices (such as using a laughing emoji) should be used depending on the context and the situation, since they may mean

different things in different situations. As such people should move backward and forward adjusting the application of these practices depending on the context and the nature of the interaction. So, observing these communications through reading comments promoted her transcultural awareness. She added that these practices in MOOCs were disrespectful and should be moderated by instructors:

“When they interact with each other they need to be very respectful and precise then the moderator things or the instructor things need to be careful with that kind of action, they need to track that kind of challenges because if learners feel stressful because of those communications they will not be willing to learn in this MOOC anymore.” (Interview, P3E).

Finally, some developed transcultural awareness practices were not captured directly from comments, and others initially, were not identified as intercultural communication either. To exemplify, while interviewing P10T, she was asked if she faced any challenges communicating with other MOOC learners? She considered only one problem with a participant that she could not understand:

“The only thing I had a problem with is the student that was copying the comments of everyone, like, that really kind of shocked me, it was, like, what is (he/she) doing? Why are you copying my comments? I don’t know who it was”. (Interview, P10T).

The researcher went back to the comments and found C10T posted on step (2.14): “Why are you copying my comments??” In a later step (3.7) she posted a comment and by the end of it she wrote: “Don’t copy my comments!” (Comment, Run10, P10T).

These two comments were not considered a cultural clash as the behaviour was not considered cultural. This practice was identified by the researcher as a learning integrity and a common-sense issue. However, by getting back to the duplicated comments that were excluded from the analysis and categorised as ‘Zero’, it was found that there were several comments copied from P10T and posted by the same participant, which the FL system did not detect as plagiarism and were not deleted. That was because this active participant did not copy a whole comment and posted it on his/her behalf, instead he/she took parts of different participants’ comments that he/she seemed to like, agree, or felt were useful, and combined them without changing a word (maybe synthesizing?), but the problem was not referencing those as people’s ideas.

After P10T’s request, the participant only stopped copying P10T’s comments but did not stop posting other learners’ comments. Neither the researcher nor P10T considered that attitude

cultural. Later, in an interview with P3E from Burma, she was asked if she gained any new cultural practices from the MOOC comments? And her answer was:

“I'm not sure but I think the one thing I gained from that MOOC is we can't copy other messages because we are just like stealing or robbing, so I think one thing I have learnt by participating in the MOOC is in our writing we cannot write any other intellectual work of other, so I think it is the kind of cultural practices different from ours that I have learnt from others.” (Interview, P3E).

P3E described this attitude explicitly a cultural practice, linking copying comments to an acceptable cultural behaviour locally. She showed open mindedness when reading comments and had the motivation to change from her local culture to this global cultural behaviour she observed. She considered it beneficial to shift from the local culture to a global one that is not necessarily linked to any specific culture. It has to be noted that the participant who copied comments was from the same region as her, with a similar background.

The intention of that participant could not be confirmed whether it was a conscious decision to plagiarise in a smart way, or a cultural attitude showing agreement or appreciation of other comments, or simply a lack of English proficiency. However, it was taken by other learner as a cultural form that needed to be altered in order to adopt to this global environment. This conclusion supported Frame's (2009) claims that communication behaviours and common references are simultaneously and dynamically shaped by different cultures in each instance of interaction.

To answer this part of the research question, it has been concluded that MOOC participants may develop TCA in a non-direct way; that could be from others' intercultural practices and experiences shared; or from reading comments and observing other diverse people interacting or communicating through comments. Therefore, non-direct communication between people from different backgrounds may result in enhancing TCA of communicators themselves or others who observed it in the environment.

Add to that, analysing individual comments without consideration of the context nor the sequence would not be the whole story. It may even would result in a wrong interpretation. With a critical view and integrating findings of mixed methods (comments analysis and interviews) (see sections 6.2.2, 5.2), a deeper understanding of how transcultural practices were formed deconstructed, reconstructed, and transcended in this complex setting. As it was the case with copied comments, which was explained as a cultural form of practice by an interviewee.

These answers to the research question highlight the crucial role of all types of communication, whether they are direct (i.e., posting and replying) or indirect (i.e., liking and reading), in representing and developing TCA. It is recommended to motivate and incorporate all these types of communications into the design of both the MOOC content and methods of delivery. If they are integrated into the course, it will benefit all types of diverse learners and become more inclusive for all active, social, and lurking MOOC participants and enhance the overall global learning experience.

7.3 RQ1: To what extent does transculturality appear in a multicultural MOOC?

This section aims to answer the main RQ1. The discussion in the two sections above (7.1, 7.2) highlights the extent of transcultural awareness reflected in MOOC discussions and how it is reflected through these discussions. It is now appropriate to consider the findings in relation to RQ1.

Since this study was based on the presumption that in an open free multicultural MOOC with no educational, age, or other specific background restrictions, the MOOC will always include diverse learners presenting different levels of TCA measures. Thus, it was assumed that literal replication will occur as Yin (2014) called it, and similar results of different TCA levels would always appear.

Theoretically, it was possible that each run of the MOOC would have participants who would represent the highest level of transcultural awareness through their comments. By doing so, the integrated TCA framework was validated empirically in MOOCs with the appearance of transcultural elements in comments in different population of diverse participants. This MOOC case was an empirical inquiry to investigate transculturality phenomenon “in depth within its real-world context, as the boundaries between phenomenon and context may not be clearly evident” (Yin, 2014, p. 16). It provides “investigating connections, patterns and context, and reflecting on the bigger picture as well as on the detail” (Atkins and Wallace, 2012).

All three levels of TCA model were found in both runs (Run5, Run10), with cross-cultural Level1 dominating with a surface-level understanding of cultural practices, and mainly through articulating own cultural perspective references to own cultural context and nation (see 7.1.1). It is claimed that significantly fewer comments were at intercultural Level2 than established in earlier literature. That is because; first, there was no intention to develop TCA through specific interventions, rather observing how comments are presenting these levels naturally; second, the pedagogical activities encouraged sharing and comparing from participants’ own perspective and

context; third, there was no necessity for direct communication or collective conclusions to be reached (7.1.2). Comments identified as Level3 were minimum with very few comments, which usually arose from prior transcultural experiences or knowledge away from the learning environment, and the possibility of presenting a Level3 comment was greater for proactive and more engaged learners (7.1.3).

It was concluded that the transcultural awareness level is represented by learners in three different ways (7.2.1): first, sharing previous experiences and interactions in diverse contexts; second, emphasis on specific skills, attitudes, and knowledge when expressing global communication in comments that represented high level of TCA; third, by considering the use of different FutureLearn social interaction features as cultural communicative practices. Moreover, in the MOOC, it is claimed that participants developed a higher level of TCA indirectly, either by reading other participants' comments, or observing other learners' cultural communication and practices (see 7.2.2). These claims supported the methodology applied by this study, first, by using manual and critical content analysis, then by using mixed methods as explained earlier (see section 7.2.2).

Finally, this study concluded that the level of TCA presented in MOOC comments does not necessarily reflect the learner' actual level of transcultural awareness. This was evident by integrating the comment data with the 10 interview transcripts of participants. It was observed that eight out of the ten participants showed some elements of transcultural awareness level in the interview compared to their comments in the MOOC (Run10). The graphs below (Figure 7.1) illustrate this comparison clearly.

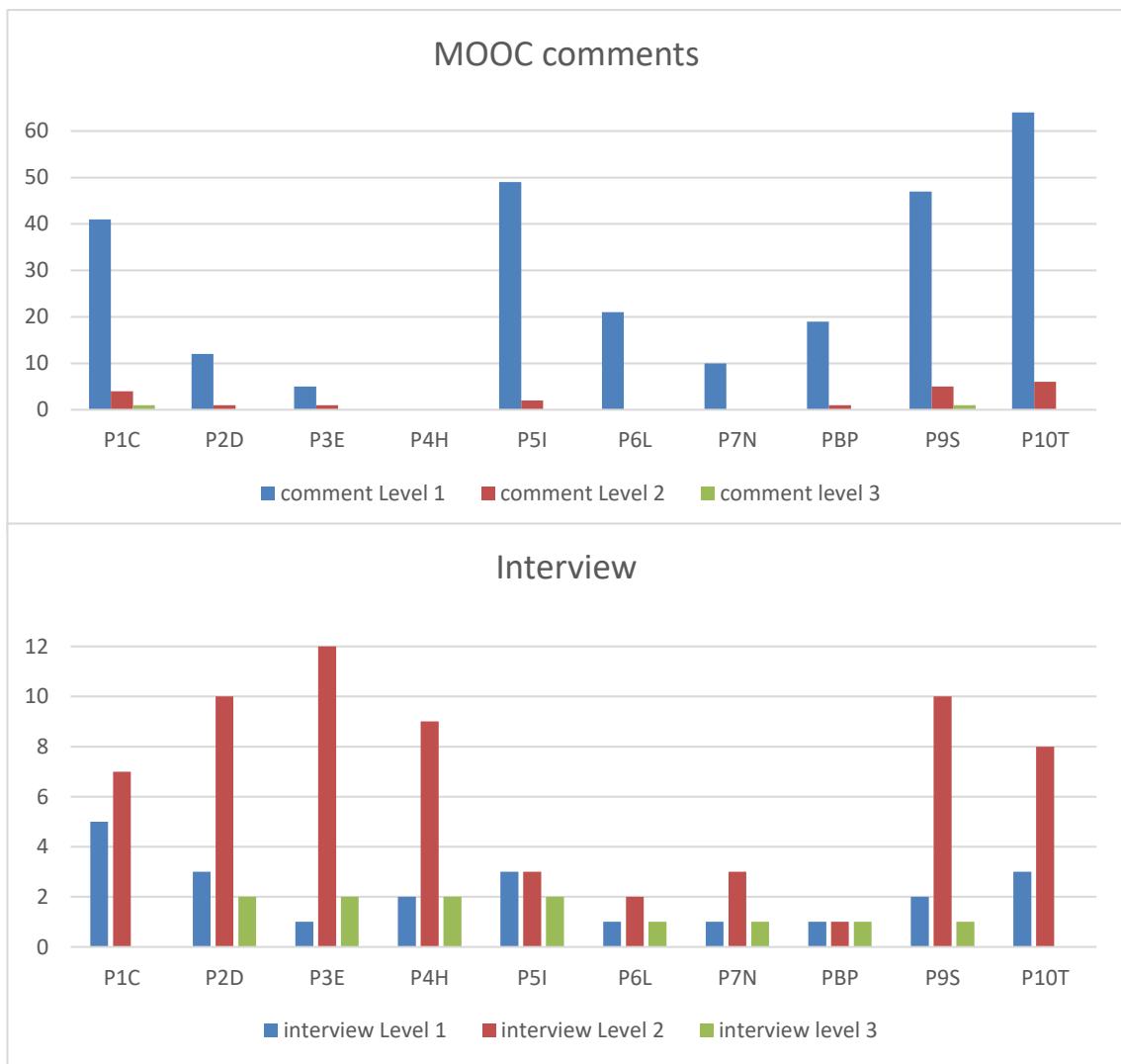


Figure 7.1 Comparison of Interview participants' TCA level in comments and interviews

Unlike the dominance of cross-cultural awareness at Level1 in comments, intercultural awareness at Level2 in interviews was significant. In addition, the majority of the participants (eight out of ten) demonstrated transcultural awareness at Level3 in interviews, whereas only two of them commented at Level3 in the MOOC. A possible interpretation could be that these higher levels of TCA do not occur naturally or individually; rather, they need to be encouraged through clear learning and collective goals. Furthermore, the nature and design of the MOOC activity did not clearly invite in-depth discussions between learners.

Another explanation is the absence of real-time sense and interaction that usually creates pressure for contributions or answers (as in interviews). In interviews, the participants had the opportunity to provide expansive data and engage in in-depth discussions with focused questions asked. Some of the issues were also addressed by the participants themselves, stating course design challenges that may hinder transcultural communication (see section 6.2.2.1, Course Design Challenges).

In conclusion, minimum level of transcultural awareness was reflected in MOOC discussions, these were the result of individual prior international experiences, and not as the result of transcultural communication within the course. Additionally, MOOC discussions did not reflect or represent the actual level of transcultural awareness level of participants, with no explicit learning goals and clear guidance to interact and communicate in a meaningful and inclusive way.

7.4 RQ2a: To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC?

As mentioned earlier in this chapter, the sub-research question of RQ2, (RQ2a): To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC? Is answered first, as the discussion of this sub-research question should contribute to answer RQ2: Is there any association between learners' level of transcultural awareness and their knowledge co-construction in a multicultural MOOC context?

This study presumed that participants with high TCA levels frequently contribute to the MOOC discussion and potentially to collective knowledge construction. Therefore, all learners' comments in the tenth run of the MOOC were analysed with the aim of evaluating the process and the quality of social knowledge construction, and findings were reported based on the IAM framework (see 5.2.2).

Comments represented only the first three phases of the IAM model. In the majority of the comments, different opinions and experiences were shared and compared forming the first phase of knowledge co-construction (88%). Instead of taking the opposite position, disagreeing with other point of views (phase II, 1%), it was found that social learners engaged in negotiation and meaning making by agreeing partly with others and improving an idea, or co-constructing a developed idea (phase III, 2.6%) more than phase II, yet the percentage was low.

In relation to phase one of CK, higher proportions of Phase 1 interactions were reported similar to findings from previous studies on synchronous and asynchronous online discussions (Bonafini et al., 2017; Gunawardena et al., 2016; Hou, 2012; Hou et al., 2015; Tawfik et al., 2017), whereas few showed phase 2 and 3, and comments failed to advance to phase 4 and 5 to demonstrate testing and applying new constructed knowledge (Gómez Jaimes and Hernández Castañeda, 2018; Lucas et al., 2014). Findings of this study differ from previous claims including the developers of the IAM model, that number of posts decreases with each successive phase of knowledge co-construction (Gunawardena et al., 1997; Lucas et al., 2014). While there were more phase3 comments (negotiation) than phase 2 comments (dissonance or inconsistency), the occurrence of phase3 is

still considered low. That is aligned with (Beltrán Hernández de Galindo et al., 2019; Ocaña et al., 2021).

One explanation of these results is that in this multicultural MOOC, cultural considerations of politeness and rudeness while expressing points of view may be one cause for this movement, where diverse learners tend not to disagree sharply. As suggested by (Dubovi and Tabak, 2020) and observed in this MOOC's comments, different opinions and respectful disagreements contributed to a greater probability of constructive interactions and facilitated collective knowledge. Islas (2004) similarly identified participants moving directly or from IAM phase1 to phase3, attributing it to lack of open disagreement, which has been described as unfavoured or unnecessary in the Mexican cultural context.

These claims were supported by Cheng et al. (2019) who suggested that IAM phases did not necessarily progress in the original order prescribed, nor did it move in a linear way. Therefore, it is not a necessary condition to have these types of interactions to achieve a higher phase of CK, especially when phase three consists of a more constructive way of expressing different perspectives (e.g., elaboration, partly agreeing, suggestion of improving ideas).

Another explanation is that discussions within the MOOC encouraged diverse perspectives and opinions, with no clear right or wrong answers. Participants mainly expressed their own experiences, without being judgmental or taking opposite positions. Therefore, contributions were welcoming of diversity and focused on collecting unique knowledge. Additionally, there was no pressure to reach an agreement or united conclusions, as there were no graded activities or group work that required summarisation or a consensus. Examples of this phase show these claims clearly and are provided in Table 5-14 Phase3 examples of IAM (Run10).

The same pattern of IAM phases was followed by the interview participants when their comments were extracted. Statistically, nine participants out of ten shared and compared information, while three of them demonstrated disagreement or inconsistencies of ideas. Whereas half of the participants showed markers of negotiation and construction of knowledge. Figure 7.2 below illustrates these contributions. These findings indicate that the interview sample is representative of the diverse population in relation to CK. So, participants views and perceptions provide a rich insight and a deeper understanding of to what extent to which CK is acknowledged and beneficial in the context of MOOC.

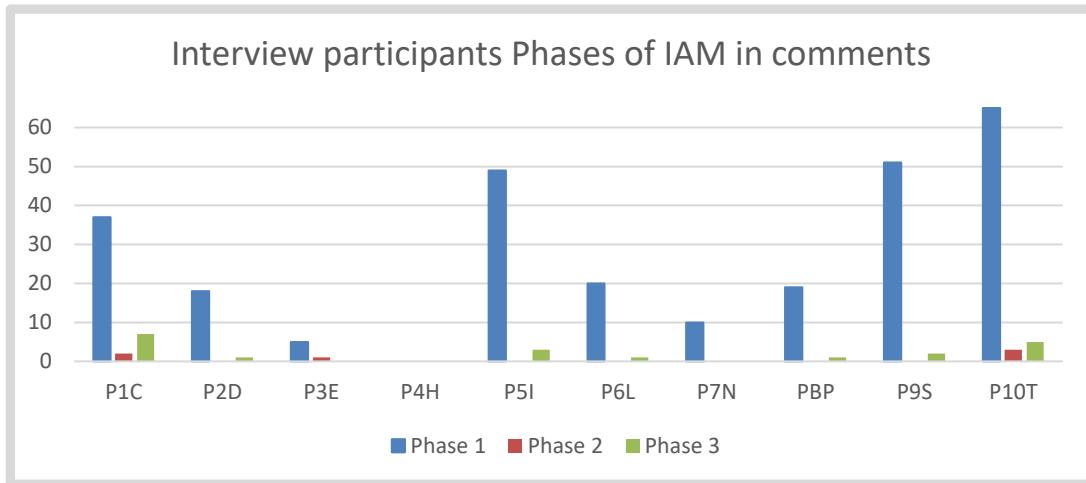


Figure 7.2 IAM phases of interview participants' Run10 MOOC comments

The findings suggest that interview participants valued the opportunity to engage with their peers through commenting. They found this form of social and peer interaction to be more interesting and beneficial than learning solely through the MOOC materials. The comments made by peers were seen by interview participants as insightful, providing valuable support and feedback to other learners (see P5I quote in section 6.2.2.2).

Additionally, the comments served as a useful collective resource that produced ideas, resources, and helpful research updates. The learners appreciated the feedback from others as it contributed to the co-construction of knowledge and went beyond theoretical discussions to provide practical and contextual suggestions based on experience on how to deal with real-world problems (see 6.2.2.2). Even one participant identified an opportunity to reach a higher level of CK (phase 4, see Table 5-2 The adopted IAM coding scheme) when she stated:

"So, it's a very unique conversation and an opportunity to test methods, ideas and theories" (interview, P4H).

Although this opportunity was not found in the analysis of comments, the potential for it was pinpointed and desired. The practical applications of co-constructed knowledge were highlighted, particularly its potential impact on participants' real-life experiences. Overall, the comments made by peers were considered an extended and unique global resource of knowledge in the MOOC, which provided learners with a richer and more engaging global learning experience.

The findings from the interviews suggest that participants believe that co-construction of knowledge begins with reading other people's comments. The participants stated that they read previous comments before posting their own, which demonstrates a collective approach to knowledge building and a way of negotiating the meanings of content (P1C, P10T, P9S quotes, section 6.2.2.2).

To add, the findings from the content analysis of MOOC Run10 (section 5.2.2) showed that comments regularly fluctuated between CK phases and did not always increase, indicating that learners often did not pay attention to previous comments, nor read previous contributions (see Figure 5.3). This resulted in setting the CK back to phase one by posting an individual opinion or responding only to the MOOC activity. This can be explained by their intention not to communicate with other comments and only share or reflect their own opinion or experience. That is consistent with literature claiming that often there is little to no direct interaction between MOOC participants (Sunar, 2017; Tawfik et al., 2017). This observation was also found in the interview participants data. For instance, P9S, an active and social learner (see Table 6-4), admitted that he did not read all the comments stating:

"I never read every comment so if I've joined a course late or if I'm a week behind I don't go through every comment, I'll only look at the page that I'm on or if somebody has replied to me, I'll go and look at that, maybe that part of the forum but, no not all" (interview, P9S).

P2D who was a social learner too, agreed with that, elaborating:

"I read at the beginning all of them. Then particular people I liked the posts of particular people, and I didn't click follow them, but I always read the texts of maybe five or six people, that I can see beneficial for me" (interview, P2D).

Moreover, there was a tendency for a sequence of comments presenting higher phases of knowledge construction at some points within the discussion on the timeline (more close comments in phases two and three ,see Figure 5.2), which may indicate that when social learners read previous comments that were also posted by social learners, that motivated them to relate and advance the discussion. This was again confirmed by the above quotes and from the findings of quantitative analysis, which suggest that learners who advanced to the higher phase of knowledge construction were the most active participants in the course.

These findings do not eliminate the possible influence of lower phases comments on discussions to reach a higher phase of knowledge construction, nor do they imply that other types of learners (i.e., lurkers) do not read previous comments or benefit from them. As P4H, who was not a social learner (Table 6-4), highlighted the importance of reading comments, stating:

"It was interesting to see how a person in India would interpret something. Someone in Botswana, how they would interpret the information. And for me being in China, how we do it here. So that is quite interesting." (Interview, P4H).

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Based on this integration, it can be concluded that learners in MOOCs do not always read previous comments or contribute to discussions with the intention of communicating with other participants. This often results in setting back the knowledge construction process to phase one. However, social learners who read previous comments posted by others have the motivation to advance the discussion, resulting in higher phases of knowledge construction. Learners who advanced to higher phases of knowledge construction were found to be the most active participants in the course. The findings suggest that reading and engaging with previous diverse comments can provide a rich and unique collective resource of knowledge, benefiting all diverse learners (lurkers, active, and social).

Second, the design of individualistic and contextual activities may hinder reaching the final phase of IAM (Wang and Sun, 2022), when not motivating learners for co-construction beyond sharing different perspectives or opinions. Therefore, a sufficient guidance and an explicit goal to advance to higher levels of testing and applying the new co-constructed knowledge is recommended.

Finally, the level of participation and engagement were found to be influencing co-construction of knowledge caused due to a lack of time, lack of interest, different expectations, different experiences and motivations as reported by the interview data. Therefore, pointing out different desired cultural and social features and functions in the MOOC, should be further emphasised as scaffolds for higher-level co-construction.

To sum up, peer discussions in the MOOC represented the first three phases of knowledge construction. Notably, the majority of comments (88%) fell within the initial phase, sharing and comparing diverse perspectives. Participants engaged in negotiation and developing ideas (phase3) more than taking sharp opposing viewpoints and disagreements (phase2), contrasting the previous claims that the number of posts would decrease as co-constructed knowledge phases progressed. Factors like respect, open mindedness, and the fact that the course encouraged diverse opinions and experiences without the pressure to reach a final conclusion may contribute to this tendency.

Comments were valued by participants and found insightful, beneficial, and valuable for support and feedback. However, not all participants consistently read previous comments, often resulting in a reset to phase one of knowledge co-construction. Engaging with prior comments increased motivation to advance discussions and reach higher phases of knowledge co-construction.

7.5 RQ2: Is there any association between learners' level of transcultural awareness and knowledge co-construction in a multicultural MOOC?

Throughout the previous chapters, this thesis has discussed theories and literature related to how transcultural awareness is significant for effective communication, as well as co-constructing knowledge in the diverse MOOC context. From a social constructivist point of view, both transcultural perspective and CK are defined as continuous processes of shaping and reshaping meaning. They both welcome diverse perspectives and experiences to support learning. Additionally, both are promising to benefit the quality of MOOCs by extending and evolving MOOC content and enriching participants' generated content or knowledge.

Empirically, an association between transcultural awareness and co-construction of knowledge was pinpointed first from the united objective of assessing the quality of peer online interaction and discussions. Then, this trend became more apparent through the analysis of MOOC comments, the patterns of these comments, and the visualisation of the analysed comment data, and finally a statistical correlation supported these findings.

Upon analysing 3133 MOOC comments for transcultural awareness in Figure 5.2, and again for co-construction of knowledge in Figure 5.3, a similar pattern was observed throughout the course. It was noted that there was a decrease in engagement and participation over time. The table below summarises and simplifies the comparison between the results of the two types of analysis.

Table 7-3 Summary of content analysis results of TCA and IAM methods

EMI MOOC	Comments	Social participants
No.	3133	348
TCA Level1	86%	94%
IAM phase1	88%	92%
TCA Level2	2.5%	10%
IAM phase2	1%	4%
TCA Level3	0.5%	3.7%
IAM phase3	2.5%	12.3%

The cross-cultural level of TCA as well as the first phase of knowledge construction had the highest levels of engagement among participants, with 86% and 88%, respectively. This suggests

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that participants were engaged with the course content as they were asked in the activities, sharing and comparing opinions and expressing experiences from their own context and cultural background in a general and, perhaps, stereotypical way.

Comments at the TCA intercultural level of awareness had a relatively higher proportion (2.5%) compared to Phase2 of knowledge co-construction (1%). This could indicate that even when participants presented a variety and inconsistency of opinions, including mismatching or misunderstanding other cultures or comparing cultures on a specific level, they were drawn from their own previous experiences and not built on or related to each other's comments. Thus, they remained in the sharing and comparing phase of CK. Additionally, comments mapped to the TCA Level2 component: mediate between specific cultures (see Table 4-1 The TCA coding scheme), were considered part of the negotiation, partly disagreeing, and constructing knowledge, and were mapped to Phase3 of CK.

These findings supported the visualisation of the data (Figure 5-6), where phase2 of dissonance in CK was categorised only at the level of cross-cultural awareness of TCA since learners did not make a specific comparison in contrast to other cultural practices nor did they identify these differences acknowledging different sub-groups, and did not clearly involve misunderstanding or mismatch with other cultures within this MOOC discussion.

TCA Level3 was the lowest representative in comments (0.5%) compared to third and highest CK phase found in the data (2.5%). This suggests that participants were more likely to negotiate the meaning and improve others' ideas with less emphasis or awareness on transcended cultural practices that are not tight to cultural boundaries, and when they reach TCA level3 that is because they demonstrate this higher level in relation to previous transcultural communication and not the result of peer interaction.

Overall, the results of the content analysis suggest that there may be some trade-offs between comments representing transcultural awareness and knowledge co-construction. Taking a closer inspection and much in-depth analysis of the MOOC comments (Run10), a sequence analysis and visualisation of the data was carried on in relation to both TCA and CK, and then evidenced by statistical analysis.

The study demonstrated a positive relationship between TCA and CK with three main takeaways that will serve as discussion themes to answer RQ2. These themes highlight the importance of reading previous comments; posting comments (social engagement); and course activity design as factors that influence the quality of comments. The interactivity of reading and contributing to

comments will be discussed under one theme (level of social engagement), as they influence each other and overlap in interpretation.

Level of social engagement (reading and posting comments)

Based on the analysis, it was observed that the patterns of knowledge co-construction comments and TCA in the course decreased overall as the course progressed. That suggests that there was limited interaction among the participants throughout the course when it came to co-constructing knowledge and representing transcultural awareness. Furthermore, comments made by the participants tended to fluctuate between different phases and levels, without any consistent trend towards higher levels over time. This was also evident from the analysis of MOOC comment sequences too in section 5.2.3, as illustrated in Figure 5.4 and Figure 5.5.

The findings suggest that learners were not paying attention to previous comments and were not actively reading or engaging with the contributions of their peers. Instead, their primary goal was to share and respond to the activity based their own perspectives or experiences. This lack of interaction and engagement may have hindered the development of co-constructed knowledge and transcultural awareness represented in the course.

Moreover, these findings suggest that learners who actively engage in social interaction and contribute to discussions tend to exhibit higher levels of transcultural awareness and knowledge construction. This implies that learners who were more active, participating collectively, and consider previous contributions in the learning environment are more likely to benefit from the diverse perspectives and experiences of their peers, leading to a holistic understanding of the topics and the construction of new and creative knowledge.

The analysis in section 5.2.3 revealed that comments with higher levels of transcultural awareness tended to be located closer to each other on the timeline, and that was also true for co-construction of knowledge. This suggests that social learners often read comments posted before them or on the same page and were motivated to interact with those that are interesting to them, as indicated by the participants (see (interview, P9S, p.203). This created an interesting space for interaction, and subsequently participants were more likely to contribute to those comments as well.

The study found that around 70% of participants who made TCA Level3 comments also contributed at Level 2, suggesting that there is a small core group of highly social learners who are contributing at multiple higher levels of TCA, while the majority of participants are only engaging at the lower levels.

The analysis also revealed that comments made by earlier participants have a clear influence on subsequent comments in the discussion. Comments that expressed strong positions or concise opinions, tended to trigger higher levels of CK. Further, they encouraged higher levels of TCA if they were supported by examples from real experiences or context, even if they were classified at a lower level. On the other hand, brief comments that simply answer the question without contributing to the discussion can disrupt the development of CK and reset the discussion to a basic sharing level. Additionally, the way the comment was structured and expressed (in the form of a discussion or only responding to the activity) influenced the following comments (see Table 7-4 below).

Overall, the analysis suggests that both TCA and CK may be influenced by similar factors such as motivation to communicate and building upon previous contributions. However, TCA is directly influenced by participants' previous transcultural knowledge and experience (see section 6.2.2.1), while CK is more influenced by current MOOC contributions. Visualisation of the data (Figure 5.6) also supported these claims. It showed that the sharing phase in IAM covers all levels of TCA, suggesting that participants were primarily sharing data from their earlier experiences outside of the learning environment (IAM Level1), and these experiences reflected their levels of awareness expressed through comments.

The next example provided a sequence of comments in step (1.9). It illustrates how comments are influenced by nearby (according to timeline) or previous comments and that influence type of participation and thus the level of collective knowledge presented as well as TCA.

The sequence example

Step 1.9 was chosen for sequence analysis, as it included higher levels of both variables (TCA, CK) with high density too. The step activity raised a controversial issue to discuss and encouraged perspectives from different contexts where no right or wrong answers. It stated:

- “Do you agree that English users accommodate to each other when communicating in your context, rather than just trying to be ‘correct’? (‘Accommodation’ is when a speaker adjusts his/her language so that it is closer to that of another speaker in order to enhance communication).
- Are you expected to say ‘three pieces of feedback’ instead of ‘three feedbacks’ in your institution?
- Should ‘mistakes’ like this be tolerated? What is your opinion?” (FL, 2020).

The table below demonstrated a sequence of comments. Some of the comments in this example are paraphrased examples and are not quotes for ethical consideration (see section 3.8).

Table 7-4 Step 1.9 comment sequence example

Seq.	Comment	TCA Level	IAM Phase
15	It's possible that in our country , some people (including myself) would use "three feedbacks" instead of "three pieces of feedback." However, I now understand that the latter is more grammatically correct, as explained by Professor Jennifer Jenkins. In my opinion , while it's important to correct such mistakes, we shouldn't dismiss the overall message or idea that a person is trying to communicate simply because of a grammatical error.	1	1
16	As non-native English speakers, we often try to adjust the language to our needs to better understand what we're learning. However, ' I most definitely disagree ' with this accommodation. Although I am aware that "three feedbacks" and "three pieces of feedback" have the same meaning, I believe the latter sounds more appropriate.	1	2
17	"I think that it all depends on the situation . I mean, for instance, it would be ok to hear a student accommodating his/her speech to enhance communication as make themselves understand within their field of interest. It may also be acceptable for non-English teachers who teach content subject through an L2 because they can handle English well enough to communicate. However, I think that for English teachers, we have to be really careful about the way we use language and how we communicate things because we set the example for the others, so we have to try to be as accurate as possible (being that we are not native speakers) and know how language works to deliver good instruction."	2	3
18	Not speaking correct English should not hinder communication, and with practice, we can improve. However, when a teacher uses English to instruct, they should aim to use the language as accurately as possible to avoid conveying negative examples to their students.	1	3
19	<p>"In my opinion, English as a lingua franca has the crucial role and benefit to the research of EMI. They relate each other. English as a lingua franca research will acomodate data about how effective English is used for any contexts or purposes in non-native countries.</p> <p>I do agree that English users accommodate to each other when communicating in the context, rather than just trying to be correct. Because we realize that we can't avoid mistakes. Mistakes make the learners great. We can't make them down and lost their confidence for showing them many mistakes. We are not natives and mistakes are tollerable. The most important thing is to be effective for having the communication. Both of the speaker and audience can catch the meaning.</p> <p>Sometimes as an educator, I have a high expectation of making my English perfect. But no one is perfect. I must learn more deeply about how to arrange sentences correctly. For example, "three pieces of feedback" is</p>	1	3

	something simple but forgot by some learners because of the lack of their knowledge. If they say, "three feedbacks", it's fine in oral language, but when they write that sentence, we must show the correct form."		
20	<p>ELF research is relevant to EMI as it provides insights into the ways in which non-native English speakers learn the language, thus facilitating effective English language instruction.</p> <p>In communication, it is convenient and important to understand one another. The goal of communication is comprehension.</p> <p>While mistakes like using "feedbacks" instead of "three pieces of feedback" may be acceptable in oral English as they can be understood in communication, in written English where grammar is important, such mistakes are not appropriate.</p>	1	1

From the example above, it was found that the first comment (seq.15) was expressing and sharing an opinion (IAM Phase1) from its own culture, bringing contextual experience (TCA Level1).

However, it was initiating a sort of discussion as it was not structured to look like it is only responding to the activity. It seems like it succeeded in triggering the following comment (seq.16) to articulate a strong disagreement (IAM phase 2). The following comment (seq.17) developed negotiation and mediation between English and non-English teachers. It first compared them on a specific level (TCA Level2), then negotiating the meaning and opinions in relation to those two subgroups (IAM Phase3) influenced by the previous comment.

Comment (seq.18) considered previous comments, as it improved the idea and elaborated on it (IAM Level3). However, it was not supported with any contextual or cultural practices rather their own (TCA Level1). By analysing comment (seq.19), the comment considered the previous discussions and added to the knowledge (IAM Phase3) on the topic, but the comment was structured, and the discussion was divided in a way that it looked like it was responding to the activity (the 3 questions). Clearly, the following comment (seq.20) reset the discussion back to the initial levels, where it followed the same structure and only shared an opinion in response to the course content.

This study's observations and findings supported the hypothesis that there is a correlation between TCA and IAM. To further validate this correlation, additional testing was conducted. However, it was not possible to determine the extent to which each factor influenced this relationship (or their components), or determine which factors are significant. Additionally, the type of cause and effect could not be confirmed as the research question was focused on establishing a correlation between the two variables rather than a cause-and-effect relationship.

This positive relationship between transcultural awareness level (measured by TCA method) and knowledge co-construction (measured by IAM method) was confirmed statistically using Spearman correlation coefficient and considered a strong relation as reported in section 5.2.4. It was concluded that high levels of transcultural awareness are significantly associated with higher levels of knowledge construction (see 5.2.4).

The activity design

The other theme that contributes to answering RQ2, puts the emphasis on the pedagogical design of the activities provided in the course. The EMI MOOC was different from other MOOC courses even from the ones on the FL platform in the way it tried through its activities to bring participant voices to its content, which both TCA and CKB needed to develop. P7N recognised that pointing out:

“I took another course one year ago on FutureLearn about biochemistry and I didn’t comment even though I’m a biochemistry student and I could’ve shared my thoughts or my knowledge, but in this course, I felt like people... What attracted me was that they’re writing paragraphs and I enjoy reading paragraphs and knowing information, so I was like, you should go for it, you should like write your thoughts, write them so people can read them. The fact that I should be confident when I talk English, not scared that I may make mistakes... At the end we should experience everything, and we should try every method to make our work or the community that we have a better place, so why not try it, it might turn out to be a good idea.” (Interview, P7N).

The findings of this study suggest developing pedagogical activities that consider diverse perspectives and encourage in depth collaborative discussions beyond individualistic views to promote higher level of TCA and CK. Moreover, these activities should involve clear and explicit instructions and guidelines to satisfy these transcultural goals, as supported by interview participants quotes too (see p.203).

Furthermore, while the course content and structure may have contributed to participants' cultural interactions and discussions, it should not be assumed that this approach would not be effective in more technical or scientific courses. The exchange of collective knowledge and cultural perspectives is always significant in influencing the quality of learning. A participant supported this conclusion and recognized that technical terms are called differently in different cultural contexts, and that this is rooted in cultural differences. Therefore, transcultural

awareness and open mindedness can enhance a multicultural learning experience in any type of course, as P1C commented in the MOOC:

“In Brazil, people did not worry about translating foreign words of computing, so mouse is mouse, in Portugal, it is different, they use ‘Rato’ instead of Mouse.” (Run10 MOOC comment, P1C).

He elaborated on this comment when interviewing him and stated explaining:

“So from this point of view, if you are teaching an EMI course but you don’t know the terminologies of these specific cultural, and you kept saying, you kept saying, “It’s a mouse,” and then you have Portuguese students, some of them, not all of them, but, so you have to consider these cultural uses of different terms.”(interview, P1C).

Moreover, the importance of linking transcultural awareness and CK was identified by P2D who stressed the importance of designing collaborative activities and enhancing co-construction of knowledge and communication between diverse students to overcome diverse cultural boundaries to get a better learning experience and give learners the chance to learn from each other.

“when given a task in an educational situation it's also kind of objective and sometimes even if it's a little bit how to say, provocative or something,, provocative maybe and for one group of people from one cultural backgrounds it's maybe a taboo subject or it's difficult to talk about, for the other it's something normal and they profit or they benefit from each other and observe how the other people handle this topic so I think, it's a perfect way to learn from.”(interview, P2D).

To answer RQ2, comment and interview data were Integrated, and qualitative and quantitative content analysis were triangulated with statistical analysis. Accordingly, this study suggests that for a successful learning experience in multicultural MOOCs there should be successful transcultural communication that represent much more global collective knowledge.

7.6 RQ3: How did learners in a multicultural MOOC perceive their learning experience in terms of cultural communication and co-constructing knowledge?

This research question aims to explore how research participants perceive their learning benefits in relation to knowledge construction in a multicultural online context from a transcultural

perspective. Findings of this study suggest that different perceptions and attitudes were held about the benefits of cultural communication and CK for learning in the MOOC (see section 6.2.2), where some were positive, and the others were negative. Moreover, the varied attitudes and perceptions appeared to be associated with and influenced by the learners' distinct prior experiences, motivations, and goals for enrolling in the MOOC (point e, section 6.2.2.1).

The findings seem to show that participants' transcultural awareness went beyond the basic level while engaging in the practice of reading and posting comments. Interview participants perceived their learning experience as interesting and inspiring, particularly when they found similarities and common ground with other diverse learners (TCA Level2) through communication. This was expressed by P2D in her interview (similarities, Table 6-5), and P1C also as he stated:

"Although it wasn't much, but I was glad to know that somebody from the other side of the planet agrees with me about something, it's very good." (Interview, P1C).

The findings suggest that facilitating discussions that bring diverse perspectives, practices, and experiences together in relation to the learning topic can enhance participation and interaction, as well as promote higher levels of transcultural awareness. This, in turn, can enrich the overall MOOC learning experience.

Other participants demonstrated a significant concern with their communication and commenting practices, as well as their interactions with other diverse learners. Their perceptions of cultural communication moved beyond the traditional approach of sharing and comparing to a more complex and fluid understanding of transcultural awareness in the learning environment. As a result, they made changes to their commenting and participation practices to better facilitate successful cultural communication. These perceptions were drawn from previous experiences in transcultural communication and influence the way they engage with learning.

P5I for example decided to change his cultural attitude and limit his contributions in this multicultural MOOC based on a previous cultural experience and his fear to hinder global participation. He expressed:

"I've been told sometimes in moments of criticism that my enthusiasm might get in the way of other people, it's partly personal, so I think shutting up is good." (Interview, P5I).

Another example comes from a British learner who demonstrated a shift in attitude and stopped correcting language and grammar mistakes while communicating with international MOOC

participants through comments to maintain successful cultural communication. He showed cultural sensitivity and respect to other diverse learners. As expressed by participant P9S:

“Oh, the temptation just to go in and go oh you got that wrong, ooh, to tell them out. No, no. I nearly did that a couple of times, but somebody may have seen that and thought. 'Oh, thank you, oh, yeah, I always get that wrong' but somebody else might have seen it as bullying or, you know, being racist and I thought no, just leave it.” (Interview, P9S).

Another diversity was found in participants' perception in relation to collective knowledge construction through MOOC comments. While some participants appreciated the huge participation in comments to get useful and beneficial information (P5I, Table 6-5), others found it difficult to follow (P2D, section 7.2.2). However, P6L for instance did not identify the process of knowledge co-construction within comments:

“Most of the comments were just repeating, they were repeating the ideas given by the professor” (interview, P6L).

It was also interesting to look at the perceptions of other participants who were new to MOOCs. P6L in the example below saw this type of communication (asynchronous comments) difficult and did not work for her, or even expect that. She did not recognise any cultural forms or practices:

“Clearly did not like the way of interaction; we don't know the person we are dealing with ... in my case I would say that it's the lack of interest, the written exchange of ideas, in my opinion doesn't work very well. It was my first experience in a MOOC, okay. I took other virtual courses, but they were online, I had contact online with the teachers or professors and with other students, they are not a real contact, but at least we can see each other I think there wasn't communication at all.... there wasn't a real interaction among the students, so it was difficult to feel how cultural background or cultural differences were working in this context, only by reading the comments” (interview, P6L).

In addition, P6L could not see any cultural communication through the comments. She was not aware of the contextual and collective cultural experiences and knowledge that were shared by diverse learners, and the only cultural form she observed was through using languages other than English.

Learner's diversity in the MOOC environment was a target to explore in this project, including nationality, gender, age, languages spoken, occupation, current geographical location,

educational level, and even experience with MOOC. Clearly, that was evident from the different data types collected. Additionally, the diversity of learners' transcultural awareness levels and different phases of knowledge co-construction were claimed. Moreover, diversity was found in learners' perceptions in relation to both cultural communication and CK.

These diversities in perception appear to be connected and linked directly to the diverse previous experiences and interactions of participants in many phases and claims in this thesis. This is consistent with Mittelmeier et al. (2018), who found that diverse learners have specific relevance for MOOC materials and activities based on their previous experiences. It is also supported by Shahini et al. (2019) claims that learners' emergent dynamic cultural practices are stemmed from the combined effect of their physical and virtual experiences, as well as course design and content, that affect learners to different degrees.

The findings of this study suggest also that diversity of participants' goals, expectations, and interests influenced their perceptions, peer interaction, and overall learning behaviours. Diversity was identified through all the methods applied in this study. First, MOOC comments, through content analysis of TCA and CK, reflected different levels and representations of transcultural awareness, along with various degrees of CK (section 5.2.1, section 5.2.2). Second, survey data revealed differences in personal and cultural backgrounds (6.1.1), as well as uncovering the diversity of learners' goals for joining the MOOC (Figure 6.3). These goals ranged from general goals, such as improving English language skills, using English as a medium in learning and teaching, upgrading English communication skills, trying free or distance education, and learning new techniques to communicate, to more specific goals, such as increasing their network, being employed, making new friends, getting a certificate, communicating with the world through English, communicating across the globe when travel is not allowed during the COVID pandemic, and evaluating the course.

Third, interviews provided evidence of diversity in perceptions, attitudes (positive Table 6-5, and negative, Table 6-6), and behaviours (discussed above) in relation to participation, reading comments, and diverse interaction towards learning through communication. All these diversities created more complexity, fluidity, and added another layer of diversity regarding whom and in what ways MOOCs can be a beneficial and satisfying learning experience.

Accordingly, it can be said that the MOOC environment is a unique and complex context with dynamic characteristics that involve a much greater diversity in relation to learning processes and participants, even with multiple runs of the same course that has the same structure and design. As concluded by Gallagher and Savage (2016), learning behaviours and performances differed between MOOC runs due to the diverse demographics of learners.

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The findings of this study add that learning behaviours and performances in a MOOC continuously change due to various cultural communicative practices, motivations, experiences (real-life, MOOC), and expectations. Accordingly, evaluating MOOC benefits should not be measured by a limited view of learning outcomes, participation, drop-outs, or any other MOOC measures.

Rather, the focus should be on how this context is empowering participants as knowledge providers and supporters, and welcoming transculturality and inclusion.

In conclusion, it was the researcher's intention to have diverse feedback from diverse learners regarding their overall MOOC learning experience, but by integrating the different data collected from participants, it was found that there was more diversity than it would be expected. These findings tentatively implies that MOOCs represent a super-diverse space. A space of unlimited possibilities of transcended representations, practices, and experiences.

Chapter 8 Conclusion

This thesis has examined transculturality as a phenomenon within the context of multicultural MOOCs, and its potential implications for learning, particularly in developing collective and holistic knowledge. It has been observed that the discussions among MOOC participants did not accurately reflect their actual level of transcultural awareness. Notably, there was a significant variation in learners' attitudes toward transcultural communication, learning, and knowledge construction. This variance was found to be influenced by their diverse expectations, motivations, and prior knowledge and experiences in this global and multicultural MOOC. In this concluding chapter, I will first summarise the key findings and then consider some implications these findings have for MOOC developers and designers.

8.1 Summary of findings

8.1.1 Transcultural awareness

- 1- A Transcultural Approach In Multicultural Moocsconsistent pattern of TCA levels with similar proportions was observed in both runs (Run5, Run10) of the MOOC comments, despite the diverse population, demographics, and cultural backgrounds, highlighting the robustness of the findings. Minor differences in percentages can be attributed to the specific types of diversity (e.g., age, gender, cultural and educational backgrounds) present in each run. While diversity was considered crucial for capturing all three levels of TCA, the effect of diversity on the number of comments represented for each level of awareness was not the primary factor.
- 2- The proportions of different TCA levels varied, showcasing the diverse motivations and prior experiences or knowledge among learners. These variations were not mainly attributed to peer interaction but rather stemmed from the previous multicultural experience participants had beyond the MOOC. Notably, participants frequently moved back and forth between TCA levels, navigating between global and local identities based on the specific context of interaction, topic, and the diversity of individuals engaging in the discussions. This phenomenon was particularly evident in the comments that encompassed Level 2 and 3.
- 3- Higher levels of TCA were not represented in a linear manner, nor did they naturally occur; instead, they required encouragement. There was no clear pattern indicating an increase in TCA levels of the comments throughout the course. On the contrary, there was a general decrease in the appearance of higher TCA levels, suggesting a reduction in social interaction. Towards the end of the course, learners appeared to focus more on individual reflection.

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Interview participants attributed these findings to redundancy in discussion types and structure, time constraints, limited guidance, and lack of feedback.

4- MOOC comments did not necessarily reflect participants' actual level of TCA, as evidenced by the interviews. In interviews, more in-depth and focused discussions took place, with an emphasis on the importance of participants' contributions to the topics.

5- Two-way communication and more in-depth discussions within the MOOC were indicative of higher levels of TCA. It was observed that often a small core group of highly social and engaged learners contributed at higher TCA levels (Level2, Level3), whereas the majority of participants engaged at lower levels.

6- Cross-cultural level (Level1) comments were prevalent, often characterised by generic expressions of opinions based on national or predefined cultural references. These comments tended to involve generalisations and at times stereotyping. Findings reflect a common and convenient approach when initially engaging in environments with individuals do not know each other.

7- Learners who exhibited transcultural awareness at Level3 demonstrated open-mindedness, respect, flexibility, and the ability to cope with the dynamic and diverse nature of communication. These attributes were derived from their prior experiences outside of the MOOC.

8.1.2 Knowledge co-construction

1- The majority of posts occurred in Phase I (88%), followed by Phase III (2.6%), while less than 1% reached Phase II with 21 comments. No posts were found at higher phases (IV and V), indicating a lack of peer discussions involving testing new knowledge, application of this knowledge in a new context, or summarising conclusions. These findings suggest that higher phases of knowledge construction require encouragement rather than occurring naturally in peer discussions.

2- Sharing and comparing phase was the most frequently identified phase throughout the course, with comments generally showing brief opinions, or reflection on the content without encouraging interactivity or motivating peer discussions.

3- Phase II had the least number of comments coded under its category, with only 21 comments. Comments did not show strong or rude disagreements between participants.

Participants showed respect and openminded toward others' opinions, where there were no right and wrong contributions, and no necessity for taking sides like debates.

4- Contributions mainly emphasised welcoming diversity and taking advantage differences to gain holistic and unique knowledge. There was no pressure from course materials or structure to reach agreement or unified conclusions. Negotiation and co-construction of knowledge behaviours were present, initiating voluntarily by participants due to the course's non-graded and free nature.

5- Limited interaction between participants was observed, with comments fluctuating between levels and learners often not considering previous contributions rather sharing their own perspective or experience. However, social learners who read previous comments were motivated to engage and advance the discussion. It was found that learners who advanced to higher phases of knowledge construction were among the most active participants in the course (top 10%).

6- Co-construction of knowledge was viewed as starting with reading others' comments, as expressed by several interview participants.

7- Feedback and support from others were valued as parts of the co-construction of knowledge. This included practical advice on real-world problems, drawing from the experiences of peers. It highlights the extended impact of the MOOC knowledge.

8.1.3 The complex relation between TCA and CK

1- The content analysis revealed similar patterns of transcultural awareness (TCA) and knowledge construction (IAM) levels, suggesting a relationship between these variables. They were both influenced by factors such as motivation to engage, communication (reading and posting in relation to previous comments), goals, and previous experiences.

2- The correlation analysis provided a concise and clear summary of the relationship between TCA and IAM. There was a positive monotonic relationship between the two variables, indicating that as transcultural awareness level increased, the co-construction of knowledge also tended to advance. However, the rate of increase was not equal, highlighting the complex nature of this relationship that can be influenced by various factors.

3- MOOC participants primarily drew on their previous online and offline experiences outside of the MOOC to contribute data related to transcultural awareness. These experiences

were shared through comments (Level1 of IAM), showcasing different levels of awareness depending on how they articulated their previous transcultural experiences.

- 4- Participants often did not express strong disagreement clearly. Comments either brought opposed ideas or opinion drawn from their own context or experience without taking an opposite position from previous comments which make the comments considered sharing and comparing (Phase1 of CK), or they disagree partly with previous comments building on them, comparing on a specific level or finding some similarities between different contextual perspectives, which make the comments considered as part of negotiation and mediation and knowledge co-construction (Phase3).
- 5- There was a strong positive correlation between TCA and IAM, indicating that higher levels of transcultural awareness were associated with higher levels of knowledge construction. The positive correlation between TCA and IAM highlights the importance of transcultural awareness in fostering the quality of knowledge construction.

8.1.4 MOOC participants

What is known about MOOC participants of this study:

- 1- Between 10% and 12% of MOOC participants (Run5, Run10) were identified as social learners, whose contributions and comments were analysed. 40% of social learners posted only once, suggesting limited participation and reduced peer interaction.
- 2- There was an overall awareness of cultural diversity present through the comments, indicating the recognition of diverse cultures and perspectives. Different goals and motivations for joining the MOOC were captured through comments, the survey, and interviews, with a majority expressing a desire for communication with culturally diverse learners. These findings add another dimension of diversity in MOOCs.
- 3- 70% of the survey participants were newcomers with EMI MOOC being their first experience. The survey respondents exhibited diverse cultural and personal attributes in terms of gender, age group, languages spoken, nationality, and living location. 80% of the survey participants reported speaking more than one language, and 20% reported living in a different country than their country of origin, indicating multicultural backgrounds or experiences.
- 4- The interview sample, which was selected from the survey, included learners with various levels of interaction and diverse cultural characteristics. The sample was representative

and heterogeneous. Interview participants demonstrated a variation in attitudes toward cultural communication. While some participants expressed positive views and highlighted the importance of respect in the MOOC, others had negative attitudes towards transcultural communication, citing a lack of time for interaction, not reading, or replying to comments, and a lack of interest in interacting with others.

8.1.5 MOOC course design

- 1- The course supports a decentralised space, facilitating written communication and anonymity. It has the potential to support inclusion and reduce discrimination and bias.
- 2- The course activities encouraged learners to discuss their own opinion based on their context or culture. These opinions often were associated with implications in education or teaching. These were found beneficial for sharing and comparing different cultural perspectives, yet they do not trigger higher transcultural discussions or collective knowledge.
- 3- The absence of higher CK phases (4,5) implies that there were no course tasks designed to motivate and encourage these higher phases (e.g., negotiation, testing, and applying new collective knowledge). Higher phases of CK do not happen naturally as part of peer discussions, rather they need to be encouraged. Although the course encouraged discussions, such as replying to others, liking, and agreeing/disagreeing with other comments in several steps, it misses clear instructions to do so as reported by participants.
- 4- There were no goals set for collaborative work or meaning negotiation with peers. The absence of group dynamic tasks, collaborative discussions, or writing impacted cultural communication negatively according to interview participants.
- 5- The nature and type of discussions encouraged by the course materials have no absolute right or wrong, as participants contributed based on their own experience or point of view. Being judgmental and taking clear opposite positions were minimal in the comments. Therefore, very limited in-depth discussions and direct communication were found in the comments to trigger and elevate more peer interaction that might represent higher levels of TCA or develop higher phases of CK.
- 6- Interviews revealed that learners recognised the potential of the course in promoting communication and integrating practical knowledge with the theory through learners' contributions. The "Like" feature was viewed positively by interview participants as a form

of hidden communication and motivation. They also emphasised the importance of instructors' engagement in facilitating cultural communication.

8.2 Reflection on RQs

1- What are the levels of learners' transcultural awareness that appear in the MOOC discussions?

There is evidence that all three levels of transcultural awareness were represented in comments across different MOOC runs, following the same patterns. The appearance of the three levels evidence that this MOOC attracts diverse participants with various cultural experiences and knowledge. The dominance of the cross-cultural level makes the MOOC not different from other contexts in terms of producing cultural practices in their basic form based on nations with the norm of generalisation in comments.

Intercultural awareness followed by transcultural awareness level were identified in both MOOC runs with minimal representation, indicating that they do not occur naturally. Comments at these levels primarily came from motivated participants sharing prior cultural communication experiences and knowledge. Peer interaction did not significantly contribute to these levels of awareness.

2- In what way do diverse learners in a multicultural MOOC represent and construct transcultural awareness through their discussions?

Participants' goals and expectations from the MOOC, as well as how they perceive the course design play a crucial role in facilitating the representation of transcultural communication. The study stresses the importance of clear instructions and providing guidance to support social practices and cultural communication.

In the MOOC, Higher levels of TCA can be developed indirectly, being exposed to others' transcultural practices or experiences, through reading the comments and observing peer diverse interactions. It is recommended to motivate and incorporate different level of engagements and social activities into the design of the MOOC for more inclusion and benefit all types of diverse learners.

The study highlights the importance of context-aware analysis, and a comprehensive understanding of how transcultural practices are formed, deconstructed, reconstructed, and transcended within this complex learning environment, by integrating findings of different methods.

3- To what extent does transculturality appear in a multicultural MOOC?

MOOC discussions were minimal in demonstrating a transcultural awareness level, with this level seeming to originate from participants' individual prior international experiences rather than from active transcultural communication within the course. It became evident also that these discussions did not accurately reflect or represent participants' level of transcultural awareness.

This observation brings to light the significance of having explicit learning goals and clear guidance to foster meaningful and inclusive intersections and communication.

4- To what extent do discussions reflect markers of knowledge co-construction in a multicultural MOOC?

A small percentage of MOOC participants intend to communicate with peers when reading previous comments or posting their own. This limited active and constructive engagement hinders the progression of knowledge construction to higher phases. The more social learners actively read and engage with previous comments, the more they demonstrate higher phases of knowledge construction, generating valuable collective resource to all MOOC participants.

The course's individualistic and context-based activities may deter reaching the highest phases of knowledge construction, especially when learners are not motivated to contribute beyond sharing different perspectives or opinions. Therefore, it is crucial to explicitly point out and encourage the desired cultural and social features within the MOOC to facilitate higher levels of knowledge co-construction.

5- Is there any association between learners' level of transcultural awareness and knowledge co-construction in a multicultural MOOC?

Even though a higher level of transcultural awareness was strongly associated with a greater contribution to collective knowledge construction, the rates of increase varied between them, highlighting the complex relationship between TCA and CK.

In this multicultural MOOC, both transcultural awareness and co-construction of Knowledge were influenced by factors such as motivation to communicate, active engagement, and building upon previous contributions. TCA was directly influenced by participants' prior transcultural knowledge and experiences from out of the MOOC, while CK was more influenced by peer interactions and the current contributions made within the MOOC. This study suggests that promoting transcultural awareness can enhance the quality of learning and facilitate the co-construction of knowledge in multicultural learning environments.

Furthermore, the study challenges the assumption that cultural interactions are only relevant in certain types of courses, emphasising that the creation of collective knowledge that incorporates diverse cultural perspectives, advice, and experiences is valuable across all subjects.

6- How did learners in a multicultural MOOC perceive their learning experience in terms of cultural communication and co-constructing knowledge?

This study strongly emphasises the critical role that participant diversity plays in the challenges of evaluating and considering the benefits of MOOCs. Diversity in the MOOC environment was an intention for this project to collect, including demographics, cultural and personal background.

However, the integration of data revealed even greater diversity than expected. The study identified various levels of TCA and different phases of CK. Moreover, it highlights diversity in learners' perceptions and attitudes toward cultural communication and CK. In addition to their direct link to previous experiences and interactions, these diverse perceptions are influenced by participants' motivations, goals, and expectations.

All these dimensions of diversity created a more dynamic and complex MOOC that is challenging to understand and evaluate its benefits. That tentatively implies that MOOCs are super-diverse spaces. To evaluate the effectiveness of MOOCs, we should go beyond traditional measures. Instead, to focus on empowering participants and creating an inclusive environment that scaffolds diverse cultural and transcended practices.

8.3 Original contribution

This research has made significant contributions for several reasons. This investigation aimed to better understand how learners' knowledge, skills, and behaviours are represented and constructed in global and multicultural MOOCs, by shedding light on the dynamic and flexible cultural practices that participants adopt in MOOC discussions as part of their learning process.

- This research highlights culture as a significant but often overlooked aspect in the research on the design and the running of MOOCs. It viewed culture as complex, dynamic, fluid, and emergent through discussions and interaction in the global learning environment, beyond characterising knowledge, skills, or behaviours based on cultural references and groupings. This research provided additional evidence for researching cultural dimensions in online global contexts.
- This research addresses a gap in the literature by investigating how transculturality is reflected in the data generated by MOOC participants. It extends understanding of learning

outcomes to include participant collective generated knowledge as a valid and valuable new global co-constructed knowledge.

- This research highlights the role of transcultural awareness in supporting the quality of participant-generated knowledge and the overall learning process, producing updated diverse knowledge that links theory and practice from all over the world.
- It positions the transcultural approach as a beneficial pedagogical approach rooted in social constructivism theory, emphasising the continuous process of diverse peer interaction and co-construction of knowledge through negotiation, and meaning making.
- The potential of learning through MOOCs goes beyond prediction with its complex and dynamic context that consistently changes with each cycle of any MOOC course. MOOCs should provide a flexible and guided decentralised space for learners to engage in deep discussions and incorporate diverse perspectives. In response this will allow articulation, modification, emergence, and transcendence of diverse practices and knowledge.
- The study successfully applied the TCA model, an integrated version of Baker's (2011) model of intercultural awareness, which proved to be an effective tool for assessing and reporting participants' representation of transcultural awareness in MOOC discussions. Despite the model being more than ten years old, its abstraction and the contextual and interactional lens proved to be sufficiently flexible and more suitable to capture participants' fluid and changeable transcultural practices and knowledge. The model could be applied to other MOOC courses or platforms to help determine whether the application could be considered valid for evaluating transcultural elements in MOOC discussions in general.
- The use of the TCA model and its employed terminologies reflect the current globalised and interconnected contexts. It provides a comprehensive approach that extends and integrates previous cultural approaches (cross-cultural, intercultural). Rather than contradicting or denying these approaches, the TCA model serves as a holistic and more representative framework.
 - Using the survey as a methodological tool to reach out to MOOC participants to fulfil ethical considerations and overcome the complexity of permissions between different parties' regulations. Understanding and managing the complexity of conducting research in open online spaces was seen as a step forward.

8.4 Limitations

It is important to note that the findings derived from this research data may be limited to some extent. Each learning context is unique, and the focus on a single context, even with multiple cases in this study, makes it challenging to generalise the findings to other contexts. However, by providing a diverse range of integrated data from this course, it is hoped that some aspects of these findings can be transferable to other MOOC courses or platforms and informative to other researchers and educational designers.

The survey as a data collection method relied on participants self-reporting their behaviours, which can be subjective, impacting the accuracy of the findings. For example, some discrepancies were found between reported social interactions in the MOOC and what the analysis provided about these interactions. Additionally, administrating the survey earlier in the course to increase response rates might have a slight influence on participants' behaviours and interactions. However, the need to get more participants aiming for a wide range of diversity was deemed more important as a researcher.

The format of the course activities, which encouraged contextual opinions and experiences without right or wrong answers, may have influenced how learners engaged with each other and posted their comments. In a more technical topic or course, or a different activity design, different approaches to discussions and learning outcomes would likely be observed.

Conducting interviews with MOOC participants on a complex concept as transculturality posed challenges for participants to fully grasp it during the interviews. Participants' answers often went in different directions, requiring the researcher refocus the conversation. They tended to interpret questions broadly, relating them to communication in general, or sometimes seeking information about other countries.

Finally, it is important to recognise that the data provided by participants through comments in the MOOC primarily reflected earlier diverse communication, rather than actual diverse peer interactions or communication within the MOOC.

8.5 Recommendations

Higher levels of transcultural awareness and communication need to be actively encouraged and incorporated into the design of learning to enable more representation of these levels in the MOOC. This study provides educators and course designers with insights to create inclusive and

engaging learning environments that foster meaningful and culturally diverse interactions and create global collective knowledge.

Managing participants' expectations of the MOOC course is crucial. Participants need to understand the MOOC course design, including its social features ('like', 'post', 'reply'). The study makes the following recommendations to help MOOC learners prepare for transculturality:

First, here are some recommendations for MOOC designers and educators regarding cultural communications to apply at the beginning of the course:

1. Explicitly points out diversity, encouraging open-mindedness, and understanding of culture as relative, unpredictable, and continuously changed as entailed in the concept of transcultural awareness to be able to boost going beyond stereotyping culture.
2. Provide an appropriate kick-off with a pre-course activity to support and help learners move smoothly and effectively to a more complex understanding and application of culture in a short time.
3. Set a certain level of participation and interaction expected or encouraged in the course. Setting out clearly what to discuss, with guidance on how to discuss meaningfully and communicate inclusively, would increase the likelihood of exhibiting social practices. That would facilitate transcultural communication and lead to more co-construction of knowledge.
4. Stress that language proficiency level should not hinder the ability of participants to communicate with diverse learners.
5. point out different desired social features and functions available in the MOOC, and encourage participation and engagement using them to scaffold CK.

Secondly, these are some other practical recommendations for MOOC designers and educators regarding transcultural communications and knowledge construction:

1. Increase inclusion by incorporating examples from diverse settings that consider common grounds, dissonance, tensions, and power dynamics in communication as part of the learning experience.
2. Go beyond individualistic and contextual activities of sharing previous global communication and experiences. Design some learning activities that require in-depth

peer discussions and clarify that it is a desired goal to enhance successful and effective transcultural communication.

3. Design collaborative activities that consider and build upon previous diverse comments, incorporating negotiation, testing an application of new knowledge, and applying this new co-constructed knowledge. For example, summarising collected ideas, coming to collective conclusions, or producing a collective output. That will provide a rich, unique, and collective resource of knowledge.
4. Create a decentralised and welcoming learning space to build a shared sense of contribution and participation in meaning-making.
5. Change the activities structure after a while and change communication mode to motivate engagements in cultural communication, such as arranging a real-time meeting, a real-time writing activity, or designing in-depth group discussions.
6. Motivate and incorporate all types of communications (post, like, reply), starting from reading previous contributions, into the design of the MOOC content and delivery that will benefit all types of diverse learners (active, social, and lurkers).

Furthermore, this research proposed a practical and analytical extension to the third level of TCA model, for facilitating analytical purposes for researchers, and providing general guidelines for MOOC designers. These qualities of awareness are:

- Showing respect and empathy when communicating with others.
- Conscious awareness of possible multiple and transcending perceptions, interpretations, and behaviours.
- Awareness of flexible identities, acknowledging the dynamics of cultures without abandoning own cultural background.
- Engagement in a meaningful dialog with flexibility and confidence in multicultural and uncertain settings.
- Negotiation and participation in meaning making between different cultures.
- Open mindedness, showing more complex understanding of fluid and emergent worldviews beyond biases, stereotypes, and judging.
- Curiosity to explore, experience, and apply different cultural perspectives using cultural reflective manner.

8.6 Future work

Different learning contexts:

Conducting similar research in other multicultural and global learning contexts, such as different MOOC courses which cover different topics or fields. For example, it would be interesting to know if a more scientific course with more facts and right and wrong would produce higher levels of transcultural discussions and results in the same strong relation between TCA and CK.

In addition, the research can be replicated in another MOOC platform that has different structure and provide different social activities and features.

Comparing the results between two courses of a MOOC platform or comparing the same course over two contexts will provide a more comprehensive understanding of the nature of transculturality and may explore more interesting factors that influence learning in these diverse and global learning environments. These venues of research can help validate the findings and determine the extent to which they can be generalised.

Longitudinal research:

Since TCA development occurs over time, it is challenging to investigate the full extent of the development of TCA within the limited timeframe of the MOOC courses. Following learners' discussions over multiple MOOC courses on the same platform and with the same providers may provide valuable insights about the progression of TCA and the factors that influence its development.

A longitudinal approach could be adopted to examine the level of engagement and transcultural construction. A more comprehensive view of the progression of TCA and understanding of factors that contribute to it.

Taking action:

While this study investigated transculturality as it occurred naturally in the context of MOOC. A further step would be designing for transculturality, conducting action research, and producing interventions that build on the recommendations provided in this thesis. Examples of these interventions would be creating in-depth group discussions for social learners; creating collaborative writing tasks; incorporating collaborative problem-based tasks; or even collaborative context-based learning tasks. These interventions may add detailed recommendations on the

Chapter 8

factors may affect successful transcultural communication and generate meaningful and creative collective knowledge.

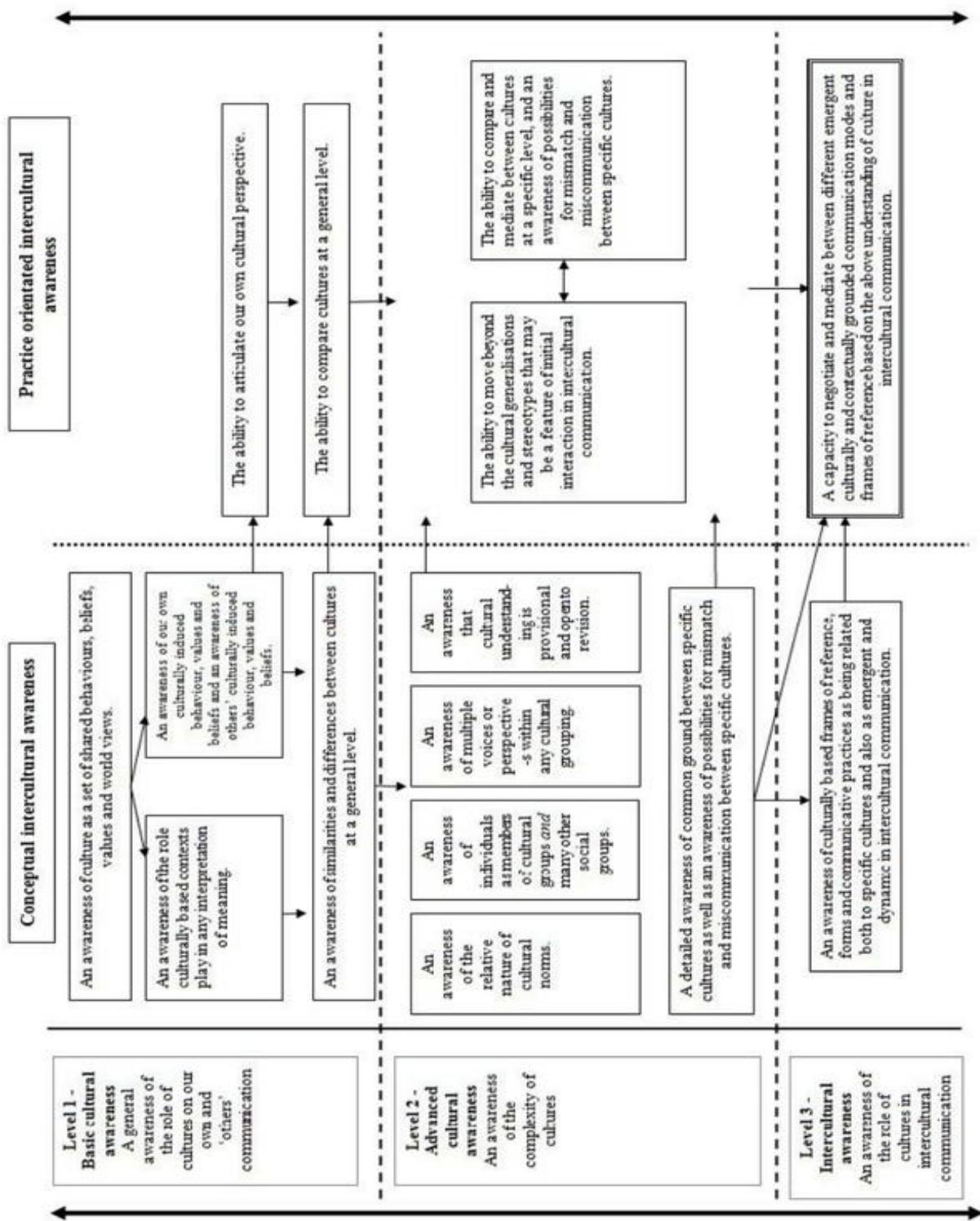
Comparative research:

Comparing the effectiveness of different learning interventions or learning activity designs can help identify which are most beneficial in relation to the quality of diverse learner-generated data that will contribute to a more nuanced understanding of the potential benefits and limitations in global and open learning environments.

This study explored asynchronous discussions in MOOCs. Comparing different modes of diverse peer interactions, such as synchronous (video, audio) and asynchronous communication modes, can lead to more comprehensive knowledge about the nature of transculturality through communication. It would reveal the nature of the relationship between TCA and IAM in different modes of communication and to what extent that affect them.

Appendix A A Detailed Illustration of ICA Model

(Baker, 2015b, p.168)



Appendix B cMOOCs and xMOOCs Comparison

Type of MOOC	cMOOC	xMOOC
Features	<ul style="list-style-type: none"> • Connectivism and student-centric pedagogical approach. • Openness, participatory teaching, human agency, user participation, creativity. • Flexible and nonlinear approach. • Distribution of knowledge between nodes and peers using various social networking platforms. • Loosely structured, dynamic network afforded by online technology. • Focus on collaborative and extended community. • Highly motivated, self-directed, and autonomous learners with active engagement. • mostly content is provided by learners who are capable of navigating and evaluating diverse online resources. • Like-minded 'individuals' who are relatively free from institutional constraints. 	<ul style="list-style-type: none"> • Cognitivist, Behaviourist approach. • Scalability, massive, online, linear approaches. • Tightly structured form of content (video lectures, enhanced learning materials, self- assessment questionnaires, short quizzes). • Time-released via a hosting platform. • Used by major MOOC providers (Udacity, Coursera, FutureLearn and edX). • Content is mainly provided by the instructor. • Individual learning and teacher-centric pedagogies. • New type of "teacher", automated (combination of software and interface to facilitate teaching and learning). • "Drill and practice" instructional methods. • xMOOCs are "open as in door".
positives	<ul style="list-style-type: none"> • Learners not enrolled to an institution. • Flexible study options to engage with social media to assist learning activities depend on learners' social groups enjoying collegiality. • Online communities 'crowd-source' answer problems, creating networks that distribute learning. • A process of generating and linking networks that connect knowledge. 	<ul style="list-style-type: none"> • The ability to track learner movement. • Beneficial to create a "tutor-like" learning space, engaging the learner personally. • Even if interaction is limited to discussion boards, students are afforded opportunities to network with others and share knowledge. • Individualized experience allows multiple routes through material and automated feedback.
challenges	<ul style="list-style-type: none"> • Learners can feel decentralised and less in control. • less able to gain a quality experience through various channels. • Participants motivation are crucial to engage through social media. • meaningful collaboration/ interaction are difficult. • Difficult to manage, organise and have students. • Hard to grant certification (informal learning). • some learners lost and overwhelmed. • confusing with the vast learning resources available. 	<ul style="list-style-type: none"> • The interaction is limited to discussion forums. • Adopt knowledge transmission model technology-enriched traditional Teacher-Centred instruction. • Does not provide a social learning experience. • lack of engagement and activation of learners. • teachers as experts, learners as consumers. • learners duplicate the pre-defined knowledge structure by designers and instructors. • designed for a concrete, homogeneous profile. must be adapted to the organization's course content.

Appendix C The Online Survey



Investigation of Cultural Practices and Co-Creation of Knowledge in MOOCs

Researcher: Rana Shahini
54079

ERGO number:

You are being invited to take part in the above research study. To help you decide whether you would like to take part or not, it is important that you understand why the research is being done and what it will involve.

Please read the information below carefully and ask questions if anything is not clear or you would like more information before you decide to take part in this research. It is up to you to decide whether or not to take part. If you are happy to participate you will be asked to sign a consent form and provide us with your email address.

Please read the Participant Information Sheet Carefully then press Continue if you agree to participate in both the questionnaire and the group activities.

It is essential that you provide us with your name and your email address to associate your answers in the questionnaire with the interview later, and in order to communicate with you directly...Thamks!

***Required**

Email *

Your email address

Full Name *

Your answer

Next **Clear form**

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Google Forms

Appendix C

electronically signed consent form. We will then arrange a time for your interview which will be completed either via MicrosoftTeams or another digital audio call.

You can expect to be interviewed by the researcher for about 45-55 minutes and will be asked about your learning experience in this multicultural context, your contributions in discussions, and what you think about the benefits of developing co-constructed multicultural knowledge. You will be invited to share any other information you would like to raise in relation to this topic.

Please note that the interview will be audio recorded for later data transcription and analysis.

Are there any benefits in my taking part?

Your participation would benefit you by gaining a wider learning experience and deeper knowledge of the course syllabus, and benefit other global and multicultural MOOC learners, providing them with collective dynamic and extended knowledge.

Are there any risks involved?

The project has been designed to provide a pleasant experience for learners. As such, your participation in the research has no effect on your course progress, marks or MOOC profile.

What data will be collected?

- The Survey: Only questionnaire responses which include personal and contact information along with the signed consent forms will be recorded for the study by the researcher. Your email address is retained for inviting you to participate in an interview after the end of the course and make further arrangements. All personal information gathered will be kept confidential for the period of the study and then they will be deleted and destroyed.
- if you are required to provide your name in the questionnaire, this is in order to associate your answers to the questionnaire with those of interviews. Your name will not be disclosed publicly. Other personal data (nationality, country where you live, and other educational and profession-related questions) are cultural identifiers and are needed for research analysis and interpretation of learners' cultural and educational practices and communication beyond cultural boundaries in MOOCs.

Will my participation be confidential?

Your participation and the information we collect about you during the course of the research will be kept strictly confidential.

Only members of the research team and responsible members of the University of Southampton may be given access to data about you for monitoring purposes and/or to carry out an audit of the study to ensure that the research is complying with applicable regulations. Individuals from regulatory authorities (people who check that we are carrying out the study correctly) may require access to your data. All of these people have a duty to keep your information, as a research participant, strictly confidential.

The study is in compliance with The University of Southampton's Data Protection Policy. All the information obtained will strictly be kept confidential by the researcher and stored virtually in a password-protected folder on the researcher's own university account on One Drive with no copies on any personal machine to ensure the highest security. Information will not be shared with anyone except the supervisory team. This information will be later destroyed when it is no longer needed. The researcher might use quotes from the comment sections and the interviews to support the study discussions and findings, but pseudonyms will be used, and some information might be altered to hide any identifiable information.

Do I have to take part?

No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to sign a consent form to show you have agreed to take part.

If you find it interesting and decided to take part, then all that you have to do is to complete the questionnaire, providing us with your contact information, and tick the consent form electronically. then you will be sent a confirmation email with further arrangements.

Are there any benefits in my taking part?

Your participation would benefit you by gaining a wider learning experience and deeper knowledge of the course syllabus, and benefit other global and multicultural MOOC learners, providing them with collective dynamic and extended knowledge.

Are there any risks involved?

The project has been designed to provide a pleasant experience for learners. As such, your participation in the research has no effect on your course progress, marks or MOOC profile.

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The study is in compliance with The University of Southampton's Data Protection Policy. All the information obtained will strictly be kept confidential by the researcher and stored virtually in a password-protected folder on the researcher's own university account on One Drive with no copies on any personal machine to ensure the highest security. Information will not be shared with anyone except the supervisory team. This information will be later destroyed when it is no longer needed. The researcher might use quotes from the comment sections and the interviews to support the study discussions and findings, but pseudonyms will be used, and some information might be altered to hide any identifiable information.

Do I have to take part?

No, it is entirely up to you to decide whether or not to take part. If you decide you want to take part, you will need to sign a consent form to show you have agreed to take part. If you find it interesting and decided to take part, then all that you have to do is to complete the questionnaire, providing us with your contact information, and tick the consent form electronically, then you will be sent a confirmation email with further arrangements.

What happens if I change my mind?

You have the right to change your mind and withdraw at any time without giving a reason and without your participant rights being affected.

If you decided to withdraw after taking the Questionnaire, we will keep the information about you that we have already obtained for the purposes of achieving the objectives of the study only.

What will happen to the results of the research?

Your personal details will remain strictly confidential. Research findings made available in any reports or publications will not include information that can directly identify you without your specific consent.

Where can I get more information?

If you have any further questions, please do not hesitate to contact me Rana Shahini at rs3c16@soton.ac.uk

What happens if there is a problem?

If you have a concern about any aspect of this study, you should speak to the researchers who will do their best to answer your questions.

Rana Shahini rs3c16@soton.ac.uk

Hugh Davis hcd@soton.ac.uk

If you remain unhappy or have a complaint about any aspect of this study, please contact the University of Southampton Research Integrity and Governance Manager (023 8059 5058, rgoinfo@soton.ac.uk).

To view The University Data Protection Privacy Notice follow the link

<https://docs.google.com/document/d/1gnEYjt4VTjVCA6wO7e2QBtaNI0p8lfnSUIS1i14gg0A/edit?usp=sharing>

Thank you for taking the time to read the information sheet and considering taking part in the research.

I have read the Participant Information sheet *

Yes

[Back](#)

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[Clear form](#)



Investigation of Cultural Practices and Co-Creation of Knowledge in MOOCs

*Required



Would you like to continue? *

Yes, I do.

No, I want to quit.

[Back](#)

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[Clear form](#)



Investigation of Cultural Practices and Co-Creation of Knowledge in MOOCs

Cloud

***Required**

Participant Consent

Please read the Consent Form carefully then if you agree to the statements, please check the Box for consent.

to take part in this survey and the google group activities.

- I have read and understood the information sheet (03/12/2020 /version no.3) and have had the opportunity to ask questions about the study.
- I agree to take part in this research project (Questionnaire and interview) and agree for my data to be used for the purpose of this study and agree for the interview to be audio-recorded.
- I understand my participation is voluntary and I may withdraw (at any time) for any reason without my participation rights being affected.
- I understand that should I withdraw from the study after completing the Survey, then the information collected about me up to this point may still be used for the purposes of achieving the objectives of the study only.
- I understand that I may be quoted directly (FutureLearn, interview) in publications but that I will not be directly identified.
- I understand that my name and email address will not be shared beyond the study team.

Please check the box if you agree with the above statements and consent to take part in the survey and the group activities.

Back **Next** **Clear form**



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*Required

Cloud icon

Background Information

Gender *

Male
 Female
 Prefer not to say

Age

Under 20
 20-29
 30-39
 40-49
 50-59
 60+

Nationality

Choose

Where do you live?

Choose

Your First Language

Choose

Do you speak other Languages?

Yes
 No

Back Next Clear form



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languages spoken

How many languages do you speak other than your first language?

1
 2
 Other: _____

The second language

Choose ▾

The third language

Choose ▾

How many MOOC courses have you joined before?

My First
 1-4
 5+

What is the main reason for joining this EMI course?

Your answer

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Professional Information

Highest level of Qualification

Undergraduate
 Master
 PhD
 Other: _____

Your speciality subject is _____

Your answer _____

Profession *

Teacher (School, College, University)
 Other: _____

[Back](#) [Next](#) [Clear form](#)

Teaching experience

Teaching experience in the subject

First Year
 2-5 years
 6-9 years
 10+ years

Teaching experience in an English as a Medium of Instruction setting:

None
 First Year
 2-5 years
 6-9 years
 10+ years

[Back](#) [Next](#) [Clear form](#)

Communication and Engagement					
How often do you engage in MOOC courses activities *					
	Always	Often	Sometimes	Rarely	Never
Read comments	<input type="radio"/>				
Post a comment	<input type="radio"/>				
Reply to comments	<input type="radio"/>				
Use the feature 'Like' for other comments	<input type="radio"/>				

How much do you agree with the following statements: (you can leave it blank if you don't have a view)					
	Strongly Agree	Agree	Undecided/ Do not know	Disagree	Strongly Disagree
I like to communicate with learners from different backgrounds and cultures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is interesting to share my own experience and practices with other learners.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is interesting to discover differences and similarities in different learning and teaching settings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look forward to participating with diverse learners in collaborative activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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I think it is important to discuss different perspectives and experiences with others in any group activity.

I think it is important to understand other learners' background and cultures in order to learn with them effectively.

I think it is challenging to communicate with learners from different backgrounds and cultures.

I think it is beneficial to share discussions of an activity with others.

I am willing to apply my learning experience with diverse learners to another MOOC course in the future.

I am willing to apply my learning experience with diverse learners in the MOOC to my future practice.

Will you agree to do a post-course interview?

Yes

No, Thanks.

Do you have any other comments about working with learners from different cultures and backgrounds in MOOCs? Share your ideas here, or use the space to explain any of your answers above.

Your answer

Thank you for taking the questionnaire and considering taking part in the interview.
The End

[Back](#) [Submit](#) [Clear form](#)

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The FL invitation to the research on the platform

Be Active and extend your learning experience! (optional)

During this run of EMI for Academics, we are conducting a research project. We invite you to take part and get involved in some fun, practical, free activities researching cultural collaboration!

Rana Shahini, a Web Science research student at The University of Southampton, is carrying out research seeking to understand how learners from different cultural backgrounds interact and learn together via a MOOC.

We invite all active learners on the course to take part in several **optional collaborative activities** that will take place at the same time as the MOOC. And also, to answer a **questionnaire** aimed at understanding cultural aspects of MOOC learning.

If you agree to take part in this research, you will be allocated to groups to collectively discuss and then co-construct a brief document aimed at producing practical considerations and suggestions in EMI settings. The document would be re-shared via the MOOC for further discussion by the international cohort of learners.

We will observe group interactions and practices (chats, discussions and the final group document presented) to explore how different pedagogical activities can enhance learners' communication and extend their knowledge beyond their cultural experience.

If you are happy to take part in this research, please click the link below and it will take you to an online survey. This should take no longer than 15 minutes to complete. The survey will ask you for some personal information so that we can contact you directly (by email) in order to allocate you to a group, send you the link to the private group document and send you some guideline information.

We promise to keep your data securely. Our findings will only publish anonymised data, and all personal identifiers in the data will be removed. Data relating to this study will be kept confidential. All the information collected during this study, will be stored and handled according to University of Southampton's Privacy Policy [Read here](#). This research has been through the University of Southampton's ethics governance process (ERGO ID 54079).

Thank you very much for helping us!

Click here to [take part in the study and extra group activity](#)

Please note that this is an independent research carried out by University of Southampton and your participation is subject to the University's own policies and terms. FutureLearn takes no responsibility for the contents or the consequences of your participation in this study. Your participation in the research has no effect on your course progress, marks or FutureLearn profile.

Appendix D Consent forms

- The survey consent form

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CONSENT FORM (Questionnaire)

Study title: *Transculturality: A collaborative pedagogical approach for multicultural MOOCs.*

Researcher name: *Rana Shahini*
ERGO number: *54079*

Please initial the box(es) if you agree with the statement(s):

• *I have read and understood the information sheet (20/01/2020 /version no.1) and have had the opportunity to ask questions about the study.*

• *I agree to take part in this research project (Questionnaire and GoogleDoc group activity) and agree for my data to be used for the purpose of this study.*

• *I understand my participation is voluntary and I may withdraw (at any time) for any reason without my participation rights being affected.*

• *I understand that should I withdraw from the study after participating in the activities, then the information collected about me up to this point may still be used for the purposes of achieving the objectives of the study only.*

• *I understand that I may be quoted directly in reports of the research but that I will not be directly identified.*

• *I agree to take part in the GoogleDoc group activities for the purposes set out in the participation information sheet and understand that these will be recorded and saved.*

• *I understand that my anonymity cannot be guaranteed within these group activities but that any information collected by the researchers will be kept confidential and participants will also be asked to keep discussions confidential.*

• *I understand that only my group final document will be available publicly to other MOOC learners.*

• *I understand that I must keep the group's discussions confidential.*

• *I understand that I must keep the discussions within the set topic and have respect for other members.*

• *I understand that I must use GoogleDoc features only to communicate with other members of my group.*

• *I understand that personal information collected about me such as my name and email will not be shared beyond the study team.*

Please tick (check) this box to indicate that you consent to taking part in this survey and activities.

[20/01/2020] [Version 1] [54079]

- **The interview consent**



CONSENT FORM (Interviews)

Study title: *Transculturality: A collaborative pedagogical approach for multicultural MOOCs.*

Researcher name: *Rana Shahini*
ERGO number: *54079*

Please initial the box(es) if you agree with the statement(s):

- *I have read and understood the information sheet (10/01/2020 /version no.1) and have had the opportunity to ask questions about the study.*
- *I agree to take part in this research project and agree for the interview to be audio-recorded.*
- *I understand that I may be quoted directly in publications but that I will not be directly identified.*
- *I understand my participation is voluntary and I may withdraw (at any time) for any reason without my participation rights being affected.*
- *I understand that my name and email address will not be shared beyond the study team.*

Name of participant (print name).....

Signature of participant.....

Date.....

Name of researcher (print name)..... *Rana Shahini*

Signature of researcher

Date.....

Appendix E TCA awareness suggested practical components found in data

Component	From comments	From interview
Respect	A learner in a MOOC comment advised diverse students to "show respect for everyone in the class because we are all there for the same purpose, which is learning. We all have our differences, otherwise, life would be boring, and we have to be respectful and tolerant with everyone".	<p>When asked about what contribute to a successful learning communication between different backgrounds?</p> <p>"I think the first thing is respect, mutual respect, even if someone comments a thing and she or he wasn't sure about, but we all need to be very welcome and have respect for him or her, so I think the most important thing is to have mutual respect."(P3E)</p>
Empathy "Think from other's perspective"	The term 'accuracy' is highly contextual and subject to individual variation. To create an effective communication environment, it is important to have empathy for others and understand the dynamic nature of language. Instead of focusing on learners' mistakes, instructors should create a supportive and positive environment in which participants can self-correct and improve. I encourage learners to use English even if they make mistakes, and I believe that words of encouragement can greatly enhance their curiosity to improve.	
Cultural sensitivity Awareness of own and other's possible different perceptions, interpretations, and behaviours,	The comment showed awareness how cultural sensitivity and accommodation were in the example provided by the content "the first video with his original voice, it was kind of a little difficult to understand because of the speed he used in a few moments of the interview. I could get the meaning from the context and maybe a word or two I understood in these cases. He got a strong accent (kind of French from what I understood), which made it harder... However, I think he was	"I had to be culturally sensitive and culturally aware. And that's also with some of the topics sometimes you had to look at it, if I went searching on the internet something from an American website might not be appropriate to in this case, an Islamic audience shall I say.". (P9S)

	<p>sensitive enough to understand that to get everyone, who are not native, to understand, he has to accommodate his speech and even neutralize his accent. I think he was sensitive enough to realize it... and he is not a teacher... sometimes teachers think that students just have to understand the way they speak because they have to if they want to learn English, and that is not the point at all.</p>	
<p>Conscious awareness of multiple, flexible, and transcending identities as continuum, acknowledging the dynamics of cultures without abandoning own cultural roots</p>	<p>I make an effort to be welcoming and inclusive, and I regularly review and assess the effectiveness of my methods in order to ensure that they are fair to all students. If there is a way to improve the learning experience for everyone, I try to be as flexible as possible while still considering the educational value. However, any changes I make must be reasonable and provide educational benefits. Overall, cultural diversity should be embraced and not seen as a threat.</p>	<p>"I am moving backwards and forwards all the time because things need change. It cannot stay the same all the time. (communication) I think it's flexible. Changeable is coming from a judgment. They need to change. Flexible means we are having a conversation and we see that can work for all of us" (P4H)</p>
<p>Using previous cultural experience</p>	<p>"I agree very often; we need to adapt and adjust our language according to group level and their understanding, especially if we are in the multicultural environment. Our first objective is to use English effectively in intercultural communication contexts. Unfortunately, in my country people tend to focus more on your errors when you are practising a new language, this not just limited to English, even with French, which is the first foreign language in Algeria. Thus, for Algerian who has a certain mastery of English, this kind of errors (three feedbacks) is not tolerated, I was always unconfident to speak English because I was afraid that people would focus on my pitfalls rather than my progress."</p>	<p>"There was a Saudi gentleman, very nice gentleman to me but some students would always sit in the same seats, he would sit right in front of me, and a young Egyptian woman would sit next to him so when you're having the activities and I would say, 'Okay with your partner in pairs' this Saudi gentleman would never speak to the Egyptian woman next to him. And she would look at me like that and I would politely go [shrugs shoulders] and then... and I didn't want to make it obvious by moving people so some of the other students realised what was happening and without saying a word it was carefully done not to offend anybody but I did think this Saudi gentleman I thought he was in the wrong but I had to be culturally sensitive and culturally aware." (P9S)</p>

		<p>-----</p> <p>“I also told them from my experience what I have used, what I have done, and most of them also found it really helpful” (P10T).</p>
Being proactive or motivated in multicultural and uncertainty settings	<p>The learner has 73 contributions in the MOOC and the following example demonstrates how this learner is active in communication with students and that communication was unique each time</p> <p>“I think that we would have to negotiate here. I would talk to this group of students. I would ask them what situations they uncomfortable about, and I would ask them what they are used to doing to understand their position. Then, I would negotiate with them by yielding to some of their requirements, but also making them understand that tolerance is key to human interaction, and as I respect their customs, they also have to respect mine and their classmates' because we are all different.”” I think that it all depends on the situation.”</p>	<p>“In terms of their participation, their contributions to the course, and the replies to my comments and my replies to their comments, no, not really. I respected what they told me and maybe if I disagree on something I try to be very respectful in telling them the best way possible why I didn't agree”. ” I think I received a very good contributions to my comments. Some of them gave me very good ideas or resources to follow the research on something, and I found it very helpful, yes. And then also, well, I also told them from my experience what I have used, what I have done, and most of them also found it really helpful too. Some of them thanked for the suggestions, and so did I. So yes, it was very productive”. (P10T)</p>
Ability to engage and interact in meaningful dialog with flexibility and confidence (Communication)	<p>“In my previous teaching post in Egypt, the use of contractions was emphasised to promote more natural speech. My students would sometimes ask how they could get a British accent. To which I would reply don't bother, you have a beautiful accent of your own, just speak clearly and concentrate on your pronunciation which will be more natural. Many of my students (and colleagues) had an American accent due to their studying at local American schools or university.</p> <p>With pronunciation, some students made common mistakes that a lot of Arabic speakers make, such as pronouncing the letter 'e' in 'ed' when speaking the past simple of regular verbs and making a 'z' sound when pronouncing 'es' as in the word</p>	<p>“With people from different cultures I observed in my groups with people when they discussed something or for example” “I don't know the name of the ladies, the first one suggested that we all write down our ideas and then combine them together. And it was not my way how I would start but because I'm from the Polish culture we never say the other people how they have to do it, but I've readjusted this, I saw this and I also tried to start something.” (P2D)</p>

	'clothes', thus saying 'clothez'. Occasionally, beginners might have the difficulty between the 'b' and the 'p' sounds too.”.	
Negotiation through engaging and associating in meaning making between different cultures.	“I think that we would have to negotiate here. I would talk to this group of students. I would ask them what situations they uncomfortable about, and I would ask them what they are used to doing to understand their position. Then, I would negotiate with them by yielding to some of their requirements, but also making them understand that tolerance is key to human interaction, and as I respect their customs, they also have to respect mine and their classmates' because we are all different”	“When I did some other MOOC, someone asked in the comment box and then somebody answered but answered back to me” (P3E). “it's like negotiating and getting to know your students' needs, getting to know how they work better, how they feel better, and how they actually are getting the knowledge better I need to adapt” (P10T).
Open mindedness with more complex understanding of the world oneself, and others without judging.	“EMI in (higher) education is useful, it opens our minds , broadens our horizons, because gaining knowledge in a different language than our mother tongue always shows new and different perspectives, and this is always a gift. On the other hand, we should also, simultaneously, enhance the access to education in our mother tongues and improve the quality of teaching in these languages, as well as in minority languages. This maintains our cultural identity, which matters at the end.”	“I became open minded, more open minded . So, I wasn't narrow minded but maybe you could say I was because of my experiences, my opinion and perception was open minded and it became more open minded and welcoming.” (P9S)
curiosity to explore, experience, and apply different cultural perspectives	“As for comments it improves my confidence and curiosity towards this course” “I encourage the learner's effort to speak English even if is in negligible measure. I believe encouragement would do wonders enhancing their curiosity level”	“I think the curiosity is the first step to communicate successfully so it means you want to know something about the other people, or you want to know something about the other culture, you are interested in. If you are not interested in, you are interested only in yourself either in your country or your language there will never be successful communication. So, the communication you have to want this, no-one can force you to do this, forcing

		doesn't bring you anything and the curiosity about what the other people think or are or represent and the knowledge and also the wish to communicate in a language." (P2D).
Holistic cultural knowledge as a fluid and dynamic way	<p>"I would not directly challenge others' stereotypes and I assume that is not the intent of this essay. Because it would be hard to change them. Mutual communication by giving each other more information about how and where they grow and live would definitely remove the gap between "who I am" and "I assume that you are". In an EMI setting, teachers could use their own stories to tell and shape students' understanding of a fluid and changing nature of any cultural or racial concept rather than based on texts."</p> <p>Some classrooms have different languages and cultures, but one can influence overall. In this dynamic situation, teacher introduces politeness questions or asking to the student and collect the students' ideas and change into his/her point of views."</p>	
Critical Cultural Reflective questioning own biases, avoiding stereotypes, judgmental attitude, resist oppression	<p>In this multicultural MOOC "Reading participants' comments has forced me to reflect on some fundamental issues that I did not pay attention to or ignored them before".</p>	"I'm not taking it to making any assumptions, but I'm just making the awareness to learners, to know that there are differences, and you have to be careful and reflect on that while interacting with other people" (P1C)

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