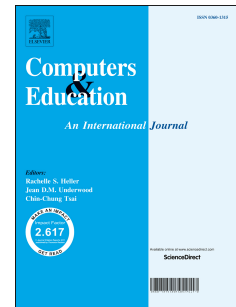


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Beyond the process: A novel analytical model to examine knowledge construction in MOOC forums

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Beyond the process: A novel analytical model to examine knowledge construction in MOOC forums

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These author contributions are based on the CRediT taxonomy.

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Availability of data and materials

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Beyond the process: A novel analytical model to examine knowledge construction in MOOC forums

Abstract

The analysis of learners' discussions in the forums of massive open online courses (MOOCs) often prioritises the socio-cognitive processes that learners mobilise to construct knowledge. This study goes beyond the analysis of process to study the knowledge constructed. We examine learners' MOOC forum discussions ($N=300$) to uncover the potential dialogues that emerge and identify the key features of the concepts discussed. All discussions centre on essentially contested concepts (ECCs). To analyse learners' discussions, we introduce and evaluate a novel analytical model. Using a case-study approach, we applied our Learners' Online Discussions Analysis Model (LODAM) to analyse learners' discussions across two MOOCs. Discussions are analysed in relation to the pedagogical design of the forums. In addition, we employ a corpus linguistic technique to study the key features of the ECCs discussed. Results show that learners do not engage in competition when discussing the key contested features of ECCs. Instead, discussions are characterised by collaboration and explanation. Furthermore, specific features are regularly discussed whereas others are largely ignored. To some extent, the design of the forums can help learners engage in collaboration. This study offers new insights into the construction of conceptual knowledge in MOOC forums. This study also illustrates how computational tools and frameworks like LODAM can help to enhance the pedagogical design of technology-enhanced learning environments.

Keywords

Learners' discussions, MOOC forums, essentially contested concepts, conceptual knowledge

1. Introduction

Is an igloo a house? The answer to this question depends on how learners understand the concept of "house". Conceptual knowledge involves understanding a concept (i.e., its meaning) within a specific domain (Rittle-Johnson & Alibali, 1999). For Bechberger and Liu (2021), this knowledge enables learners to "understand and reason about the world" (p. 1). Carey (2000) emphasizes that understanding a concept implies recognising both its key and peripheral features. For example, the key features of the concept *house* may include that it is a residential building, contains different rooms, and provides shelter; whereas peripheral features could involve its building materials or size. Key conceptual features help learners draw conclusions and derive meaning (Lei et al., 2017); for instance, "houses have bathrooms; igloos do not. Therefore, igloos are not houses".

Conceptual knowledge is not static; it develops through interactions with people and objects; making it deeply embedded within the cultural context where it emerges (Lee & Seel, 2012). Forums in massive open online courses (MOOCs) offer learners from different cultural backgrounds the opportunity to interact and discuss varied concepts. As such, these forums serve as a space where conceptual knowledge can be constructed. As explained by Rivera et al. (2023), when discussing in MOOC forums, learners "explain and clarify concepts, answer questions, and negotiate meaning. These social and cognitive processes may contribute to restructure knowledge and enhance understanding" (p. 586). A large body of research highlights the pivotal role of MOOC forums in facilitating learning (Anderson et al., 2014; Gillani & Eynon, 2014; Wang et al., 2016; Wise & Cui, 2018). However, the few interactions that occur in these forums generally involve limited knowledge construction (Galikyan et al., 2021; Onah et al., 2014; Tawfik et al., 2017).

Previous studies analysing learners' discussions in MOOC forums have focused on the socio-cognitive processes involved to construct knowledge (e.g., expressing opinions, asking questions, etc.); yet, the knowledge constructed has been largely overlooked. This paper addresses this gap by shifting the focus to the types of dialogues that emerge from learners' discussions in MOOC forums. We study essentially contested concepts (ECCs) and employ

computational tools in the field of linguistics to analyse how the key features of ECCs are discussed. By doing so, this interdisciplinary study situates itself within the field of technology-enhanced learning leveraging digital tools utilizing a corpus linguistic technique to examine learners' MOOC forum discussions.

To analyse learners' discussions, we develop a novel analytical model. Our Learners' Online Discussions Analysis Model (LODAM) portrays the dialogues emerging from learners' discussions based on the cognitive and social dimensions that characterise them. By doing so, we seek to reveal how learners refine their understanding of concepts through discussion. This study examines learners' discussions in two MOOC forums, which serve as case-studies to evaluate the applicability of our novel model. While the findings are contextualized within these MOOCs, we propose LODAM as a framework that could be applied to other contexts in future research. Through this approach, the study provides new insights into the construction of conceptual knowledge in technology-enhanced learning environments, offering practical implications for the pedagogical design of MOOC forums. In the following section, we examine the role of MOOC forums in knowledge construction. We then introduce our model (section 3) and analyse the impact that the pedagogical design of the forums can have on the nature of the discussions.

2. Theoretical framework

Research shows that learners develop new concepts by building on prior knowledge (Schelles & Valcke, 2006). According to Piaget's (1932, 1936) theory of cognitive development, when learners encounter information that contradicts their prior knowledge, they experience a cognitive imbalance. This imbalance prompts learners to adjust or revise their knowledge in order to form new understanding (Boom, 2009). For example, learners who think that houses can only be made of wood, brick, or concrete might experience a cognitive imbalance when they encounter houses made of snow blocks. This imbalance can be resolved when learners understand that the building materials of a house can depend on environmental conditions. By resolving the cognitive imbalance, learners potentially enrich their conceptual knowledge (van Boxtel et al., 2000).

However, in the social sciences and humanities, several concepts (such as democracy, justice, or art) are essentially contested; that is, they do not have a single canonical definition. Instead, several definitions can be adopted depending on how their key features are perceived (Garver, 1990). Because of their multiple definitions, essentially contested concepts (ECCs) "inevitably involve endless disputes about their proper uses" (Gallie, 1955, p. 169). To reconcile conceptual disputes, learners must revise their conceptual knowledge and critically evaluate divergent arguments. This allows them to integrate novel key features into previous conceptual knowledge (Bourgeois & Buchs, 2011).

2.1 Knowledge construction in MOOC forums

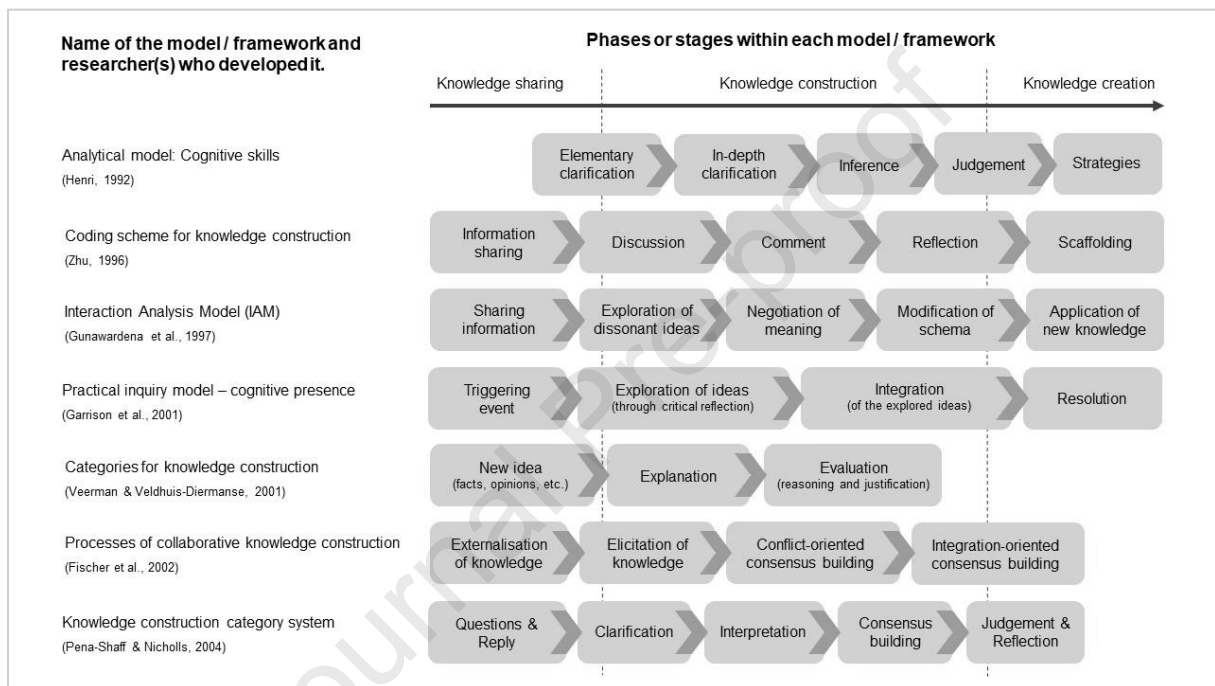
MOOC forums offer a space for learners from diverse cultural backgrounds to exchange and evaluate divergent arguments. Culturally diverse discussions about domain-specific concepts can potentially challenge learners' understanding of the key features that define the concepts (Zou et al., 2021). Thus, MOOC forums can provide an appropriate platform for constructing knowledge of ECCs. According to Murphy et al. (1998), the massive, multicultural, and asynchronous nature of the discussions is often seen as an advantage because learners can encounter several divergent arguments and have time to reflect on them. However, discussing in such a learning environment also presents challenges (He et al., 2018). The large number of forum posts can create a disorganised environment where learners spend an inordinate amount of time finding relevant information (Almatrafi & Johri, 2019). In addition, the asynchronous nature of the communication in MOOC forums can impede discussions due to delayed responses (Dringus & Ellis, 2010).

Participation in MOOC forums is often correlated with course completion and higher learning gains; yet, studies also report limited knowledge construction (Galikyan et al., 2021; Tawfik et al., 2017; Wang et al., 2015). Knowledge construction in MOOC forums is commonly

analysed using several models, frameworks, and taxonomies (e.g., Bonafini et al., 2017; Cohen et al., 2019; Li et al., 2023; Liu et al., 2022; Wang et al., 2015). Although these models and frameworks originate from different theoretical bases, they all focus on the process of social learning; that is, the process leading to developing and enhancing understanding (Reed et al., 2010). As shown in Figure 1, this process commonly involves presenting information, exploring ideas through meaning negotiation (i.e., asking questions, providing explanations, etc.), and integrating the information by modifying previous knowledge to construct new one. Van Aalst (2009) summarised this process into three modes of discourse, namely knowledge sharing, knowledge construction, and knowledge creation (see Figure 1).

Figure 1

Current analytical models and frameworks used to analyse MOOC forum discussions.



Note. More recent frameworks are based on the models shown in Figure 1 and incorporate similar socio-cognitive processes (e.g., Van der Meijden, 2005; Volet et al., 2009; Ye & Pennisi, 2022).

Viewed through the lens of the models and frameworks presented in Figure 1, learning occurs through the socio-cognitive processes used to structure arguments, critically evaluate information, and reach a shared understanding of concepts. Nevertheless, although such processes have been found to promote learning, Chinn and colleagues (2016) showed how misconceptions can also be hidden in well-structured arguments displaying those processes. For instance, an argument in which a learner shares an opinion or critically analyses a concept can include grounds, warrants, qualifiers, and rebuttals; yet still present unscientific claims, such as 'vaccines cause autism'. Therefore, socio-cognitive processes alone might be insufficient to determine how learners restructure knowledge or enhance their understanding of concepts. Biggs and Tang (2011) argue that, besides structural complexity, knowledge can also be measured based on correctness. Yet, knowledge of ECCs cannot be evaluated based on correctness because they do not lend themselves to a single correct definition. Instead, they welcome multiple reasonable definitions based on how their most salient characteristics (i.e., their key features) are perceived (Garver, 1990). We posit that knowledge construction of ECCs in MOOC forums ought to be analysed through their key features and the type of dialogue that emerges from the discussion.

2.2 Analysing conceptual knowledge and dialogues in MOOC forums

Backman et al. (2023) argue that when concepts are not critically analysed, inaccurate reasoning may go unnoticed, which can hinder the construction of conceptual knowledge. However, studies analysing MOOC forum textual data have focused on discussion topics rather than the concepts themselves (e.g., Atapattu & Falkner, 2016; Brinton et al., 2014; Vytasek et al., 2017; B. Yang et al., 2022). Although useful to discover thematic information, discussion topics such as “small talk” or “course logistics” provide no information regarding the concepts discussed or their key features. A potentially more effective method to delve deeper into the concepts discussed in MOOC forums and their key features is keyword analysis. This corpus linguistic technique identifies the lexical items (e.g., words) that are statistically characteristic of a text; as such, they reflect what the text is about (Scott & Tribble, 2006). For example, in a discussion about what constitutes a house, words like “roof”, “walls”, or “bathroom” would likely emerge as key features, indicating the core elements learners associate with the concept of a house.

Using keyword analysis, Collins (2019) identified the word *face* as key to the concept of business communication in the MOOC “How to read your boss”. He found that learners expressed doubt and asked questions around this term (e.g., “I don’t feel I fully understand the difference between personal and social face”). Collins’ results suggest that learners engaged in the process of knowledge construction; yet, the dialogue that emerged from the discussion was not analysed. Other researchers also employed keyword analysis to examine MOOC forum posts (e.g., Chua, 2018, 2022; Jiang et al., 2017). Nevertheless, none of these studies explored the key features of the concepts discussed or the type of dialogues in which these keywords were discussed. We argue that to understand the knowledge resulting from MOOC discussions, it is essential to analyse the key conceptual features discussed and the type of dialogue that emerges from the discussions.

MOOC forum discussions typically begin with an initial post followed by threaded replies. Via threaded discussions, MOOC learners engage cognitively with the course content and socially with one another to sustain dialogue. Thus, dialogue emerges within these two dimensions. Monteil (1987) referred to the cognitive dimension as the idea. This dimension shows learners’ position on a concept; thus, dialogues are characterised by the convergence or divergence of opinions. The social dimension for Monteil was interrelated with the affective dimension. This dimension, referred to by Monteil as the affect, pertains to the feelings and attitudes that learners adopt during interactions. The affect dimension analyses how courteously learners sustain dialogue. According to Monteil, these dimensions produce four types of dialogues that reflect the socio-cognitive engagement of learners in discussions (see Figure 2). The present study builds on Monteil’s (1987) work to introduce a novel analytical model that addresses the need to examine the knowledge constructed through discussions about domain-specific concepts.

Figure 2

Types of socio-cognitive interactions according to Monteil (1987)

	Discourtesy	Amenity
Contradiction	I	II
Approval	III	IV

Note. Translated from Monteil (1987) – original in French. On the left, the dimension of the idea characterised by the approval and contradiction of ideas (i.e., agreement and disagreements). On the top, the dimension of the affect, characterised by the amenity and discourtesy of social interactions.

3. The Learners Online Discussion Analysis Model (LODAM)

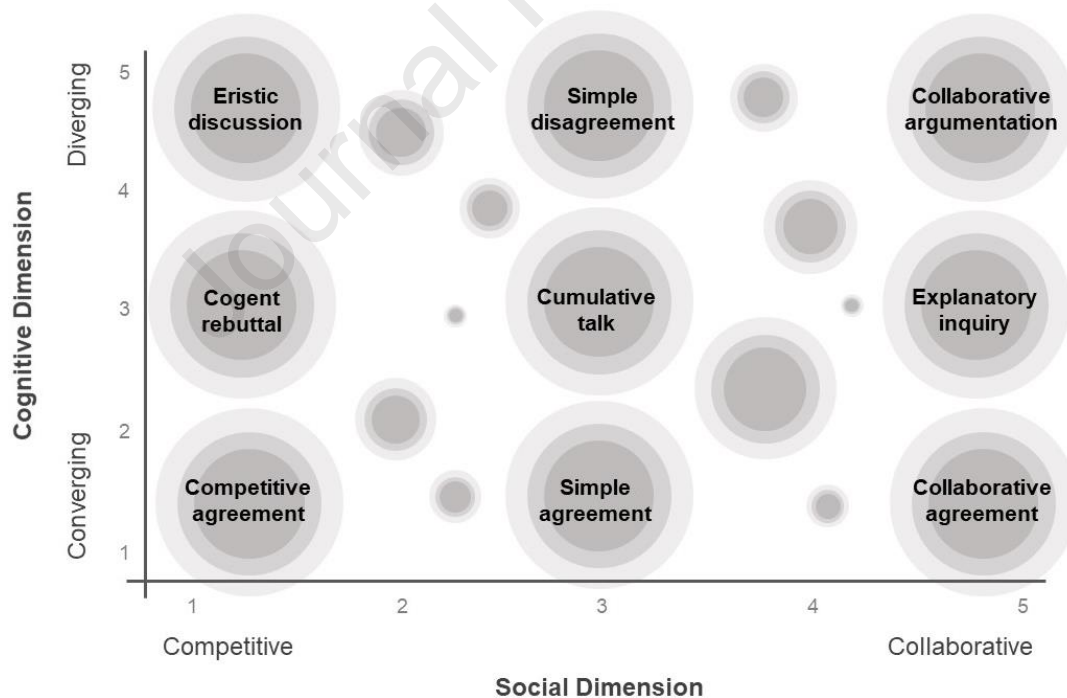
3.1 A novel analytical model

Unlike Monteil, we treat the cognitive and socio-affective dimensions of learner engagement as a continuum rather than discrete categories. Within this continuum, different dialogues can emerge depending on the dimensions characterising them. Both the social and affective dimensions help shape the climate of the discussion (Bowden et al., 2017; 2021; Redmond et al., 2018). Although we acknowledge their interrelated nature, we conceptually dissociate the social and affective dimensions based on recent research (Li & Lerner, 2013). Affective engagement relates to learners' emotional response to learning activities (e.g., feeling happy, bored, frustrated, etc.), while social engagement pertains to their interactions with peers (Deng et al., 2020; Martin & Borup, 2022). Accordingly, this dimension reflects how collaborative or competitive learners engage in discussions to construct knowledge. This latter dimension is particularly relevant for analysing learners' online discussions because of its role in developing a social presence (Rourke et al., 1999).

Our Learners' Online Discussions Analysis Model (LODAM) integrates different types of educational dialogues¹ identified in previous studies and organises them into the cognitive and social dimensions that characterise them (see Figure 3). These dialogues, however, are only referential. Unlike traditional models that classify discussions into predefined dialogue types, LODAM does not classify learners' discussions into fixed, discrete categories. Instead, our novel model aims to highlight the spectrum of potential dialogues that may emerge from learners' socio-cognitive engagement in discussions, capturing the fluid and multifaceted nature of learners' socio-cognitive engagement in online forums.

Figure 3

Learners' Online Discussions Analysis Model (LODAM)



Note. On the horizontal axis (X-axis), the social dimension. This dimension focuses on how competitive or collaborative a message is in relation to previous message(s). On the vertical axis (Y-axis), the cognitive dimension. This dimension measures the degree of convergence or divergence of the ideas expressed in relation to previous message(s). Both dimensions are measured in a 5-point Likert scale.

¹ Dialogues that occur in educational contexts.

As LODAM shows, dialogue characterised by the convergence of ideas can unfold into different types of agreement. Agreement reflects the shared understanding of a concept (and its key features) that does not require restructuring. When learners express agreement, this type of dialogue occurs along a social continuum, ranging from collaboration to competition. Agreement predominantly characterised by collaboration extends beyond simple agreement (e.g., “I agree”) and includes a more elaborated alignment with a previous position. Clouder et al. (2011) exemplify this with the following comment written by a learner in a discussion: “As [previous commenter] said, these remarks were made out of frustration, and probably some ignorance. It is easier to blame others than examine your own lifestyle.” (p. 115; see also Kuo, 1994). As the example shows, the learner did more than agreeing by providing an explanation, thereby demonstrating deeper engagement with the concept under discussion. This elaboration arguably signals active participation in meaning-making rather than passive acknowledgment of another's viewpoint. Thus, this type of dialogue can be potentially identified as *collaborative agreement*.

We emphasise the word *potentially* (and the rationale behind referring to all dialogues in our model as *potential dialogues*) because a single dialogue can exhibit varying degrees of collaboration within the collaborative spectrum. This variability is represented in our model by circles, each depicting a different type of dialogue.

Contrary to agreements, dialogue expressing divergent opinions can give rise to simple disagreement. When driven by competition, such dialogues can escalate into disputes and potentially result in *eristic discussions* (Keefer et al., 2000, p. 57). Eristic discussion is a type of dialogue marked by personal attacks that focus on defending a position rather than collaborating to construct knowledge. When engaging in this type of dialogue, MOOC learners “may risk offending others” (Zou et al. 2021, p. 10). To avoid eristic discussions, learners can ignore divergent arguments, dismiss them as irrelevant, or seek to reach quick consensus. Unlike reflective consensus, which involves thoughtful consideration, quick consensus accepts arguments without critical evaluation (Asterhan, 2018; Baker, 2009). Due to their competitive and aggressive nature, eristic discussions do not contribute to learners' understanding of ECCs (Asterhan & Babichenko, 2015).

On the collaborative spectrum of the social continuum, dialogues expressing divergent opinions (i.e., conceptual disputes) can develop in “*collaborative argumentation*” (Chinn & Clark, 2013, p. 314). This type of dialogue is characterised by critical discourse (i.e., inquiry dialogue or exploratory talk) and reasoned debate, both of which encourage conceptual dissociation and association (Baker, 2002; Barnes, 2008; Mercer, 1996; Reznitskaya & Wilkinson, 2017). According to Jonassen and Kim (2010), collaborative argumentative interactions help learners restore a cognitive balance rather than persuade them of a single opinion. In collaborative argumentation, divergent opinions are confronted with an epistemic goal (i.e., focused on learning). Learners advance and critically evaluate divergent arguments, which allows building on each other's ideas and increasing the understanding of the concepts discussed. In other words, learners engage cognitively and socially to restructure previous knowledge and enrich their conceptual knowledge (Biggs & Tang, 2011). Through collaborative argumentation, learners can integrate different features of a concept and enrich their conceptual knowledge (Lappi, 2013).

Collaborative argumentation is important for improving conceptual knowledge (Baker, 2002; De Vries et al., 2002; Nussbaum & Sinatra, 2003; Schwarz et al., 2000). However, as our model shows, other types of dialogue can emerge when learners engage in discussions to exchange arguments. Mercer (1996) identified a type of dialogue in which learners express uncritical arguments to accumulate knowledge. He referred to it as “*cumulative talk*” (p. 369). This type of dialogue is neither competitive nor collaborative. During cumulative talk, learners do not justify or further explain their arguments, but simply confirm each other's statements. Knowledge is built from accumulating and repeating information; however, such information is not warranted by external sources (Atwood et al., 2010). In simple words, knowledge is not constructed but simply exchanged.

Analysing the quality educational dialogues, Keefer et al. (2000) found that learners can neither converge nor diverge in a point of view, but only express a lack of knowledge.

When addressing such a lack of knowledge collaboratively, learners provide explanations and engage in *explanatory inquiry* (p. 57). As its name indicates, this type of dialogue unfolds from the need for explanation (Grimm, 2008). Through explanatory inquiry, learners may improve their conceptual knowledge as long as explanations are simple, sufficient, and coherent (Liquin & Lombrozo, 2022). Conversely, when discussions are characterised by persuasion (on the competitive spectrum), learners are likely to rebut arguments without critically evaluating them (Buchs & Butera, 2015). This produces a type of dialogue that we call *cogent rebuttal*.

As van Eemeren et al. (2014) record, there are other types, subtypes and mixed-types of dialogues (e.g., inquiry dialogue, persuasive talk, debate, etc.), which are implicitly portrayed in LODAM, though not explicitly presented because, as previously stated, our model does not seek to categorise discussions into limited dialogue types. Examples of the different types of dialogues displayed in our model are presented in the Appendix 01 of this paper.

3.2 The educational context for applying LODAM

LODAM goes beyond informing researchers and instructors whether learners engage in what Gao et al. (2009) call “productive online discussions” (p. 65). This model expands the focus of analysis to the different types of potential dialogues that may emerge from learners’ cognitive and social engagement in online discussions, providing thus a novel view of learners’ socio-cognitive engagement in discussions. However, because the type of dialogue in which learners engage is closely related to the nature of the learning task (Bennett & Dunne, 1991), it is important to consider pedagogical design of the MOOC forum task. Recent MOOC research has found that the delivery mode (self-paced, instructor-paced, etc.) and instructional paradigm (behaviourism, constructivism, etc.) can significantly affect how learners engage in the course (e.g., Huang et al., 2023). Research has also pointed to a possible relation between the quality of learners’ engagement in MOOC forums and their pedagogical design (Galikyan et al., 2021; Liu et al., 2022; Rivera et al., 2024). However, such studies have not considered how the pedagogical design of the forums can affect the type of dialogue that learners sustain.

Research Questions

This study analyses the knowledge resulting from learners’ socio-cognitive interactions in MOOC forums. To this end, we focus on the dialogues that emerge when learners discuss ECCs in MOOC forums as well as the key features of the ECCs discussed. We argue for the need to analyse learners’ discussions within the context in which they occur. Therefore, discussions are analysed in relation to the pedagogical design of the forums. By doing so, we show how the design of MOOC forums contributes to the potential dialogues that emerge from discussing ECCs and to their conceptual richness. Our research questions (RQs) are:

- RQ01:** What types of dialogues emerge when learners discuss ECCs in MOOC forums with different pedagogical designs?
- RQ02:** What key features of ECCs do learners discuss in MOOC forums depending on their pedagogical design?
- RQ03:** Do learners discuss more key features of ECCs in MOOC forums designed to promote social interactions?

4. Methods

To evaluate LODAM, this study adopts a case-study approach, focusing on discussions in two MOOCs. These MOOCs were selected through convenience sampling (Stratton, 2021), as the instructors had implemented significant changes in the pedagogical designs of the forums. Thus, the MOOCs provided an opportunity to analyse learners’ discussions under different pedagogical conditions. To answer our RQs, we employ mixed-methods through an integrated research design. As explained by Srnka and Koeszegi (2007), an integrated design treats data hermeneutically and statistically by combining qualitative and quantitative phases of analysis. The subsections below describe our data and analysis procedure.

4.1 Data description

Our data comes from two edX MOOCs, namely Communicating Corporate Social Responsibility - CSR (MOOC01) and Psychology of negotiation (MOOC02). These courses taught the ECCs of CSR and negotiation respectively. CSR deals with the relationship between business and society and involves environmental, economic, societal, legal, and ethical key features (Rahman, 2011; Wood, 1991). While the economic feature of CSR focuses on financial performance, the environmental and societal features are oriented towards reducing ecological harms and increasing benefits for society (Mitnick, 2021). Negotiation can be viewed as a discussion between two or more independent parties who seek to resolve divergent views (Demoulin, 2020) and involves, among others, social, economic, and communication essentially contested features (Brett, 2000; Filzmoser et al., 2016). We focused on one specific forum in each MOOC that invited learners to share their opinions regarding the meaning of these concepts.

From the two forums, we extracted 3.656 posts starting a discussion thread (759 posts from MOOC01 and 2.897 posts from MOOC02). In MOOC01, 143 from the 759 posts starting a discussion received at least one reply (i.e., 19%). In MOOC02, 15% of the 2.897 forum posts starting a discussion (439 posts) received at least one reply. In MOOC01, we analysed all 143 forum posts. In MOOC02, however, due to the high number of posts and time restrictions, we randomly selected a similar number of posts for analysis ($n=157$). Thus, our data consisted of 300 initial posts and their threaded replies.

MOOC01 was delivered in English and French. The language of instruction in MOOC02 was French. Both MOOCs released five editions (from 2015 to 2019) before design changes were implemented in the following two editions (from 2020 to 2021). Pedagogical design changes created two conditions (i.e., before and after changes). In the first condition (C01), the design of the forums focused on learners' cognitive engagement. That is, forums invited learners to share their opinions regarding the concepts without social engagement. In the second condition (C02), forums were designed to invite learners to discuss with peers who might hold divergent ideas regarding the concepts. In addition, guidance was provided to support learners' interpersonal skills. The pedagogical design of the forums in both conditions can be found in the Appendix 02. The number of discussions analysed in each condition is displayed in Table 1.

Table 1

MOOCs, discussion topics, and total discussions analysed.

MOOCs	Discussion Topics	Discussions		Total
		C01	C02	
MOOC01 – CSR	What does CSR mean?	74	69	143
MOOC02 – Negotiation	What does negotiation mean?	79	78	157
Total		153	147	300

Although forum participation was encouraged in both pedagogical conditions, it was neither mandatory nor graded. Thus, learners could choose to engage in (or disengage from) discussions at any time without affecting course completion grades. Both forums were placed at the beginning of the course (i.e., during the first week) and MOOC instructors periodically checked learners' forum activity to answer questions or encourage participation. Forum posts from previous editions were not available to the learners.

4.2 Analysis of learners' discussions

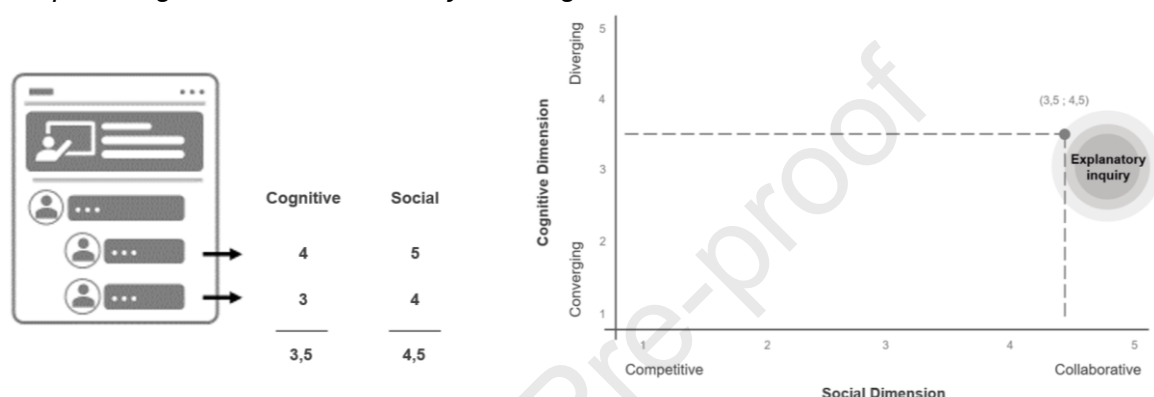
To answer our RQ01, we analysed learners' MOOC forum discussions using digital conversation analysis (Giles et al., 2014). Digital conversation analysis first examines the content of each forum post within a discussion thread. Then, it considers how each post builds on preceding posts. Accordingly, our analysis involved two analytical levels, namely the

individual post, which is the suggested unit of analysis in several studies (e.g., Garrison et al., 2001; Gunawardena et al., 1997; Rourke et al., 1999), and the posts within the discussion as part of a train of discourse.

In our analysis, we focused on the replies within the forum thread, which mark the onset of dialogue. We excluded the initial post that starts the thread, as this post alone does not constitute a discussion (see Figure 4). For example, if a learner started the discussion thread with the following post: *"I am not sure but I think that CSR involves the responsibility of a company towards society"*, we identified this post as the topic under discussion. Subsequent responses were then analysed using LODAM to determine their cognitive and social dimensions characterising the dialogue.

Figure 4

Example of digital conversation analysis using LODAM



Note. In this example, learners potentially engaged in explanatory inquiry.

As shown in Figure 4, each forum post replying to a discussion thread was analysed at the cognitive level to determine its cognitive function (e.g., agreement, elaboration, critique, etc.) and at the social level to evaluate how collaborative or competitive it was. To continue with our previous example, if the post replying to the discussion starter read: *"Not only the responsibility towards society is important, but ethical responsibilities need be considered too because..."*, this response was analysed as both providing an explanation and demonstrating collaboration, potentially leading to explanatory inquiry.

LODAM provides two ratings for each individual post: one for the cognitive dimension and one for their social dimension of learners' discussions. Ratings are based on a 5-point Likert scale (see Figure 4). The ratings of individual posts are then averaged to obtain global scores for each dimension, which serve then to identify the type of dialogue that potentially emerged from the discussion (our second analytical level). These scores serve as coordinates in a Cartesian plane. The place where the scores meet marks the potential type of dialogue sustained. This methodology enabled us to identify patterns of interaction and engagement in learners' discussions.

We used chi-square tests for independence to examine the relationship between the pedagogical design of the forums and the potential dialogue types.

4.3 Inter-coder reliability

All discussions in MOOC01 were analysed by two independent coders (one of the authors and an external coder). None of the coders had an educational background on CSR or negotiation. Given the ordinal nature of the coding (i.e., a Likert scale), we conducted an intra-class correlation coefficient (ICC) analysis in SPSS using a 2-way mixed-effects model with absolute agreement to determine inter-coder reliability. The average ICC was .79 with a 95% confidence interval from .70 to .85, which represents substantial agreement according to Landis and Koch (1977). Discrepancies between coders were resolved through discussion and

consensus. After having reached agreement on the discussions in MOOC01, the external coder coded the discussions in MOOC02.

4.4 Keyword analysis

Once dialogues were identified into potential types, we studied the key features of CSR and negotiation that learners discussed (RQ02). To this end, we conducted a keyword analysis. Keyword analysis computes the frequency of words in a corpus and compares it to its frequency in a larger reference corpus (Costas, 2018) using computational tools. For comparison in English, we used the British National Corpus (BNC2014 Baby+), which includes various registers (academic writing, fiction, newspaper, speech, etc.). Due to the lack of a corpus like the BNC in French, we used the Frantext corpus, which only includes literary texts. Nevertheless, keywords in the areas of CSR and negotiation are arguably under-represented in this genre, thus, the Frantext possibly served as a “strongly contrasting reference corpus” (Tribble 2001, p. 396).

Keyword analysis helped us identify the lexical items characteristic of learners’ forum posts, reflecting the keyness (i.e., statistical prominence) of specific concepts within the discussions. This automated computational technique demonstrates how technology can support scalable, data-driven insights into learners’ discussions, further integrating computer-based methods into the study of education in digital environments. The analysis was performed using Brezina et al.’s (2020) LancsBox tool. The keywords identified in both MOOCs are shown in Table 2.

Table 2

Keywords found in the ECCs discussed

MOOCs	Keyword		Related words		
MOOC01 – CSR					
1	Environment	Planet	Nature	Climate	Ecology
2	Ethical	Moral			
3	Society	Quality of life	Humanity	Well-being	Public (n.)
4	Shareholder	Investor			
5	Stakeholder	Customer	Client	Employee	Worker
6	Economic	Revenue	Income	Profit (n.)	Finance
7	Sustainability	Sustainable development			
8	Legal	Legislation	Law		
MOOC02 – Negotiation					
1	Compromis	Consensus	Accord	Solution	Entente
2	Compétition	Persuasion	Convaincre		
3	Confrontation	Conflit	Mésentente	Divergence	Désaccord
4	Communication	Échange	Interaction	Dialogue	
5	Economie	Vente	Achat	Prix	
6	Collaboration	Coopération	Constructif	Gagnant-gagnant	

Note. (n.) means the noun form of the word.

From the list of keywords obtained, we selected those that could potentially reflect the key features of each concept. For instance, in MOOC01, the words *CSR* and *stakeholders* were identified as key; yet, the word *CSR* does not reflect a feature of the concept of corporate social responsibility. The word *stakeholders*, conversely, is commonly used to define the concept of CSR (Dahlsrud, 2008). Our selection criteria was guided by discussion with the MOOC instructors. Thus, the selection of words representing key features of the concepts was based on linguistic analysis and informed by experts.

We created a computer programme that automatically identified the keywords found in each forum post. Our programme also identified inflectional affixes of the keywords. In other words, it did not only identify *environment*, but also *environmental* and *environmentally*, for instance. As shown in Table 2, we identified 8 keywords for the concept of CSR and 6 keywords for the concept of negotiation. We considered these words as main keywords; that is, words that represent the key features of the concepts. However, results from the keyword analysis yielded words conveying a similar idea to these main keywords. For instance, when learners mentioned the words *planet*, *nature*, or *climate*, they arguably discussed the environmental feature of CSR. Thus, these words were analysed as part of the key feature *environment*. We refer to these words as related words. After identifying the key features of CSR and negotiation, we studied the number of key features discussed (RQ03). We conducted a quantitative analysis of the keywords (i.e., word count).

The mixed-methods employed in this study allow us to identify the types of potential dialogues that emerge from learners' discussions (by means of our novel analytical model) as well as key features of the concepts discussed (by means of keyword analysis). In addition, by counting keywords, we can explore the conceptual richness of the dialogues. Last but not least, by considering the pedagogical design of the forums, we can also draw conclusions regarding how MOOC forum design affects learners' socio-cognitive engagement in online discussions.

5. Results

Table 3 shows the total number of potential discussion types found and their average rating for each dimension. As shown in Table 3, eristic discussions, cogent rebuttals, and competitive agreements did not arise. In other words, learners' MOOC forum discussions were not characterised by competition. Because these three types of dialogue did not occur, we do not report them in our subsequent analyses.

Table 3

Potential dialogues and average LODAM ratings

Potential dialogue types	Total	Dimensions			
		Cognitive		Social	
		Mean	SD	Mean	SD
Eristic discussion	0	-	-	-	-
Simple disagreement	1	4	0.00	3	0.00
Collaborative argumentation	15	4.09	0.39	4.48	0.58
Cogent rebuttal	0	-	-	-	-
Cumulative talk	30	2.77	0.35	3.49	0.71
Explanatory inquiry	118	2.65	0.49	4.07	0.55
Competitive agreement	0	-	-	-	-
Simple agreement	70	1.34	0.45	3.19	0.37
Collaborative agreement	66	1.56	0.60	4.24	0.40
Total	300				

5.1 Types of potential dialogues (RQ01)

In MOOC01, teaching CSR, 22% of dialogues in the first pedagogical condition (C01) were characterised by the convergence of ideas without collaboration or competition. Thus, the type of dialogue that emerged was classified as potential simple agreement. In the second condition (C02), which provided guidance to support learners' interpersonal skills, the percentage of potential simple agreements decreased to 4%. Instead, dialogues that can be potentially described as exploratory inquiry and collaborative agreement mostly arose. In MOOC02, the exact opposite occurred. During C01, the percentage of simple agreement was 16%; however, in C02, this percentage increased to 50%.

A chi-square test of independence revealed a significant association between the pedagogical design of the forums and the potential dialogue types for both MOOCs; MOOC01

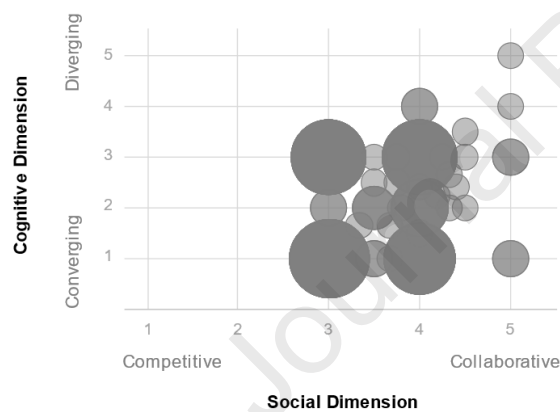
χ^2 (5, $N=143$) = 16.11, $p<0.001$, MOOC02 χ^2 (4, $N=157$) = 32.19, $p<0.001$. The total and percentages of potential dialogues that occurred under each condition is reported in Table 4 and visualised in Figures 5 and 6.

Table 4
Potential dialogue types

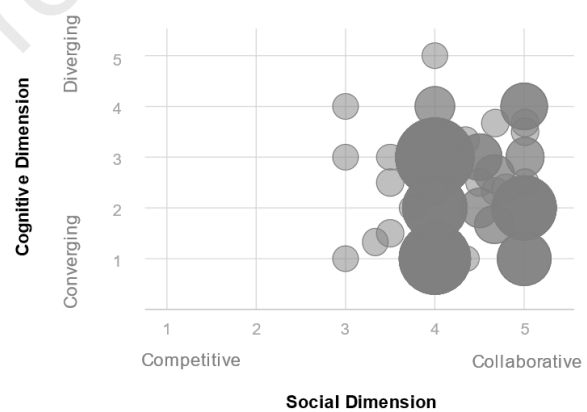
Potential dialogue types	MOOC01 – CSR				MOOC02 - Negotiation			
	C01		C02		C01		C02	
	Total	%	Total	%	Total	%	Total	%
Simple disagreement	0	0%	1	1%	0	0	0	0%
Collaborative argumentation	4	5%	7	10%	1	1%	3	4%
Cumulative talk	12	16%	4	6%	13	16%	0	0%
Explanatory inquiry	20	27%	27	39%	43	54%	29	37%
Simple agreement	16	22%	3	4%	12	15%	39	50%
Collaborative agreement	22	30%	27	39%	10	13%	7	9%
Total	74		69		79		78	

Figure 5
Potential dialogues in MOOC01 – CSR

First pedagogical condition (C01)

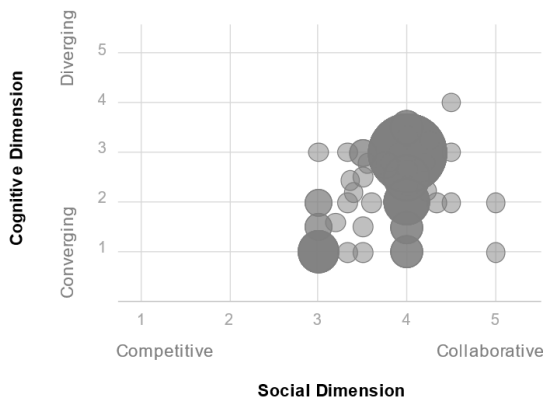
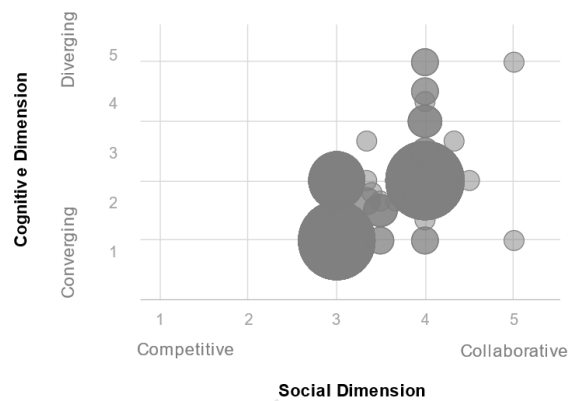


Second pedagogical condition (C02)



Note. The size of the circles represents the amount of dialogues.

Figure 6
Potential dialogues in MOOC02 – Negotiation

First pedagogical condition (C01)**Second pedagogical condition (C02)**

Note. The size of the circles represents the amount of dialogues.

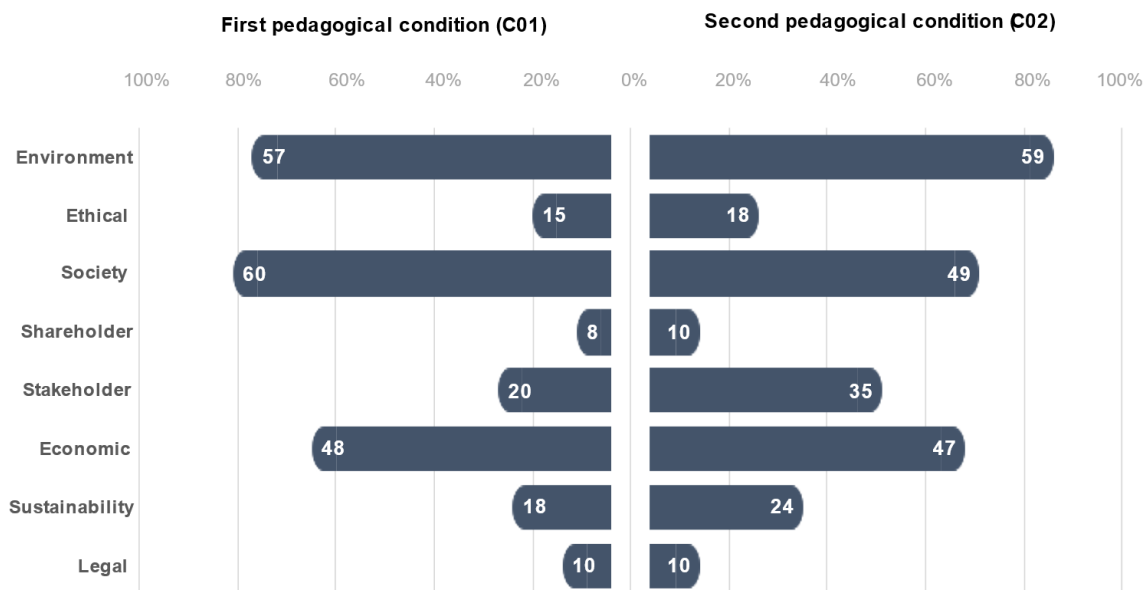
As shown in Table 4, Figure 5, and Figure 6, learners rarely expressed disagreements. Instead, discussions were characterised by a rather collaborative social climate. In MOOC01, forums designed to promote interactions (i.e., C02), arguably promoted such climate. In MOOC02, this design seems to have promoted more agreement.

5.2 Features discussed (RQ02)

Figure 7 shows that the key features of CSR discussed the most in both pedagogical conditions were the social and environmental features. These features were discussed in more than half of the discussions regardless of the pedagogical design of the forums. The social feature of CSR was discussed in 81% of discussions in C01 (i.e., 60 out of 74) and 71% of discussions in C02 (49 out of 69). The environmental feature of CSR was discussed in 77% of discussions in C01 (i.e., 57 out of 74) and 86% of discussions in C02 (59 out of 69). Other features frequently discussed were the economic, stakeholder, and sustainability aspects of CSR. The key features of CSR discussed the least were the shareholders and the legal aspect of the concept.

Figure 7

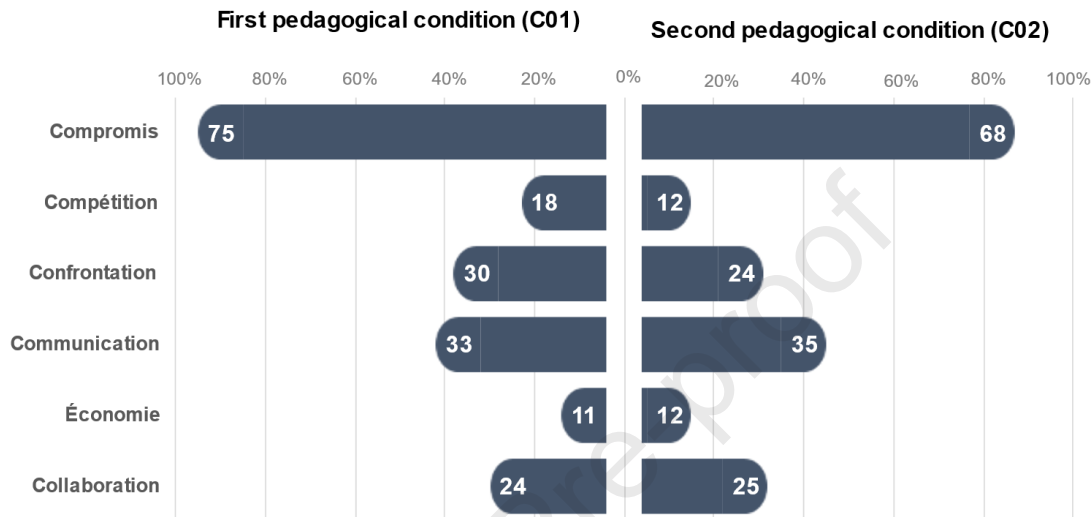
Key features of CSR discussed.



In MOOC02, the key feature of negotiation discussed the most was compromise. This feature was discussed in 95% of discussions in C01 (i.e., 75 out of 79) and 87% of discussions in C02 (68 out of 78). Other features frequently discussed were confrontation, collaboration, and communication. The features seldom mentioned during learners' discussions in MOOC forums were economy and competition. Results for all features are shown in Figure 8.

Figure 8

Key features of negotiation discussed.



5.3 Number of features discussed (RQ03)

The average number of features discussed in MOOC01 was 3.19 (SD = 1.48) during the first pedagogical condition and 3.65 features (SD = 1.65) during the second pedagogical condition. In MOOC02, the average number of features discussed was 2.42 (SD = 1.22) during the first pedagogical condition and 2.26 features (SD = 1.09) during the second pedagogical condition. That is, learners discussed between 2 to 3 features regardless of the forum design. We took these results as a baseline and considered that dialogues including more than 3 key features in MOOC01 (i.e., +3ft.) and more than 2 key features in MOOC02 (i.e., +2ft.) possibly enriched learners' conceptual knowledge because, in such dialogues, learners' discussions included a higher coverage of key conceptual features.

In MOOC01, 39% of the dialogues (i.e., 29 out of 74) in the first pedagogical condition (CO01) included +3ft. In the second pedagogical condition (CO02), the percentage increased to 54% (i.e., 37 out of 69 dialogues). In MOOC02, 38% of dialogues in C01 included +2ft. During C02, this percentage decreased to 36%. A Chi-square test of independence was conducted to examine the association between the pedagogical design of the MOOC forums and the inclusion of above average features in the dialogues (+3ft. and +2ft. respectively). No statistically significant association was found in any of the MOOCs. Results for the numbers of features included in every type of possible dialogues are shown in Table 5.

Table 5

Number of conceptual features discussed per type of potential dialogue.

MOOC01 – CSR	C01			C02		
Potential dialogue types	Total	-3ft.	+3ft.	Total	-3ft.	+3ft.
Simple disagreement	0	0	0	1	1	0
Collaborative argumentation	4	4	0	7	2	5
Cumulative talk	12	8	4	4	2	2

Explanatory inquiry	20	12	8	27	12	15
Simple agreement	16	9	7	3	2	1
Collaborative agreement	22	12	10	27	13	14
Total	74	45	29	69	32	37
%		61%	39%		46%	54%

MOOC02 – Negotiation	C01			C02		
Potential dialogue types	Total	-2ft.	+2ft.	Total	-2ft.	+2ft.
Collaborative argumentation	1	1	0	3	2	1
Cumulative talk	14	7	7	0	0	0
Explanatory inquiry	42	26	16	29	17	12
Simple agreement	12	9	3	39	28	11
Collaborative agreement	10	6	4	7	3	4
Total	79	49	30	78	50	28
%		62%	38%		64%	36%

Note. -2ft. and -3ft. include dialogues with only two or three features (or less) respectively.

6. Discussion and limitations

This study analysed learners' discussions in the forums of two MOOCs teaching CSR and negotiation. We sought to answer three research questions that distinguished the types of dialogues emerging from learners' discussions (RQ01), identified the key conceptual features discussed (RQ02), and determined the number of features discussed in each potential dialogue type (RQ03). Our analysis considered whether the pedagogical design of the forums affected learners' discursive behaviour in the forums. We present below a discussion of the findings for each research question, their implications, and limitations of this study.

6.1 RQ01 – Potential dialogue types

Results concerning our first research question show that learners mostly engaged in explanatory inquiry when discussing the meaning of CSR and negotiation. According to Grimm (2008), explanatory inquiry "characteristically begins with a certain puzzlement" (p. 481). Thus, MOOC forum discussions about these ECCs arguably caused confusion and required collaboration and explanations. Keefer et al. (2000) argue that the goal of explanatory inquiry is "the acquisition of correct knowledge" (p. 56). However, this study shows that, in the context of ECCs, the goal of explanatory inquiry might be the improvement (i.e., enrichment) rather than the correction of conceptual knowledge.

Because it elicits puzzlement, explanatory inquiry can cause a cognitive disequilibrium that contributes to learners' cognitive development (Piaget, 1985). This study found very few forum discussions expressing disagreements leading to possible collaborative argumentation. Although we acknowledge disagreement as a powerful drive for social learning, our results show that learners might not always explicitly disagree when discussing key features of ECCs. Indeed, disagreement was almost non-existent in learners' MOOC forum discussions; instead, learners engaged in explanatory dialogue to achieve a better understanding of the concepts and their key features. Thus, we consider this type of dialogue productive because it engages learners in interactions that promote the social construction of knowledge (Gao et al., 2009). Other types of potential dialogues that frequently emerged were simple and collaborative agreement. Thus, MOOC forum discussions were mostly characterised by the convergence of ideas in a collaborative social climate. Such climate is believed to help learners work together to achieve a common learning goal (McInnerney & Roberts, 2004).

Regarding the pedagogical design of the forums, we report mixed results. In MOOC01, before design changes, forums mostly contained potential simple agreements. After design changes, the percentage of simple agreements decreased and learners engaged more in potential explanatory inquiry and collaborative agreement. In other words, discussions were characterised by collaboration. In MOOC02, however, pedagogical design changes did not

promote collaboration. In fact, half of the discussions after design changes expressed potential simple agreement. For Joksimović et al. (2015), learners who merely agree with their peers are only “superficially engaged” (p. 650). However, Rourke et al. (1999) argue that expressing agreement contributes to the formation of a social presence. This presence supports the exchange of ideas and is critical for learning in online environments (Aragon, 2003; Garrison, 2011). Pedagogical designs that balance the encouragement of agreement with mechanisms to prompt explanatory inquiry and critical dialogue may better support both the social and cognitive dimensions of learning in MOOCs.

6.2 RQ02 – Key features discussed

Keyword analysis helped us delve deeper into learners’ discussions. By identifying keywords, we were able to discern the features of CSR and negotiation that learners prioritized in their discussions. This corpus linguistic technique not only provided insight into the content of learners’ cognitive engagement but also supports a computational method for analysing large-scale text data without relying solely on manual coding.

When analysing the key features of CSR and negotiation, we noticed that, regardless of forum pedagogical design, some features were predominantly discussed (RQ02). In the case of CSR, learners seem to place particular emphasis on the societal, environmental, and economic features, which are the three pillars of the concept (Rahman, 2011; Wood, 1991). The legal and ethical features were hardly discussed. Concerning negotiation, learners defined it mainly as a compromise. The absence of disagreements suggests that learners concur with the idea of negotiation as a compromise between two or more people. Seldom do learners see negotiation as a competition or discuss its economic feature.

By switching the focus of previous studies from discussion topics to the key conceptual features discussed, this study makes an important contribution by identifying how learners understand the ECCs of CSR and negotiation; this approach, however, is transferable to other domains. Similar analyses could be conducted for scientific, historical, or ethical concepts in MOOCs, offering a framework to understand and improve learners’ engagement with complex topics in technology-enhanced learning environments. This generalizability underscores the relevance of our second research question (RQ02), as it highlights how forums can support the construction of conceptual knowledge across various educational contexts.

In particular, our results provide actionable insights for instructors designing MOOCs and other online learning environments. Understanding which conceptual features learners prioritize allows instructors to address gaps in their conceptual knowledge through tailored instructional materials and activities. Nevertheless, an important limitation is the lack of contextual information within the discussions. For example, both the societal and economic aspects of CSR were frequently discussed. However, do learners suggest social activities that increase profits for a company? Or do they see the social and economic aspects of CSR as opposing? Similarly, our results show that learners see negotiation mostly as a compromise; yet, we do not know whether negotiation is seen as individuals arriving to a compromise or refusing to compromise. Thus, more research is necessary to better understand how these features are discussed, as well as how different features may contribute to enriching learners’ conceptual knowledge.

We believe that, by analysing the key features of concepts, this study takes an original approach to study the quality of learning in MOOC forums. Except from very few studies, the knowledge that results from learners’ interactions in computer-mediated communication is largely ignored. Damşa (2014), for example, investigated the temporal dimension of knowledge construction in a context outside MOOCs. She focused on how knowledge is transformed at certain moments during learners’ interactions. We believe that the temporal dimension is important to consider because learners’ discussions can start as simple agreements, then develop into cumulative talk, and finally culminate in as explanatory inquiry. Thus, a temporal dimension could provide a richer picture of the potential dialogue types that can emerge from learners’ socio-cognitive engagement in online discussions. Recent work by Xiang et al. (2025) on capturing the temporal dynamics of learner interactions offers valuable methodologies for further exploring the evolution of MOOC discussions over time.

6.3 RQ03 – Conceptual enrichment

The analysis of the number of key conceptual features discussed (RQ03) revealed mixed results. Learners discussed more key features of CSR when the forum was designed to encourage interactions. This, however, did not occur with the concept of negotiation. If we only considered these results, we could conclude that changes in the pedagogical design of MOOC forums helped learners discuss more features of CSR, but not of negotiation. Therefore, on the surface, learners' conceptual knowledge of negotiation might not have been enriched. Nevertheless, results from our RQ02 revealed that, regardless of pedagogical design conditions, specific key features seemed to dominate the discussions. This poses the question of why specific key features are mostly discussed, whereas others are largely ignored. More research is necessary to answer this question.

To our knowledge, this study is pioneer in the analysis discussions around ECCs in MOOC forums. The internal complexity of these concepts, reflected by the multiple key features that define them, undoubtedly represents a challenge for teaching and learning ECCs. MOOC forums designed to engage learners socially and providing guidance for this type of engagement contributed to a more collaborative social engagement in one MOOC, but not in the other. Research shows that the appropriate design of learning tasks, including MOOC forum discussion tasks, is crucial to help learners engage socially and facilitate the exploration of divergent arguments (Wang & Wang, 2015). However, our results provide evidence that pedagogical design works differently in different contexts. Thus, more research is necessary to understand how the pedagogical design of the forums contributes to the types of potential dialogues that emerge.

7. Major contribution and conclusion

To examine learners' discussions in MOOC forums, we developed a novel analytical model (LODAM). Unlike existing models, LODAM does not focus on the socio-cognitive processes that promote socially constructed knowledge. Instead, it focuses on the different types of potential dialogues that arise when learners engage in discussions. This focus, we believe, provides a novel understanding of learners' engagement in online discussions. Traditionally, the analysis of learners' discussions has followed a single road and focused on the socio-cognitive processes mobilised to construct knowledge. Nevertheless, the analysis of learners' discussions can diverge in two roads. Echoing Frost (1915), in this study we took the road less travelled, which allowed us to make two significant contributions. Theoretically, our work extends previous frameworks by considering how conceptual knowledge is discussed and likely enriched. Practically, we provide an assessment tool that instructors and researchers can use to evaluate learners' discussions.

One of the major advantages of using LODAM is that it does not constrain learners' online forum discussions to predetermined categories. Instead, it shows the potential dialogues that emerge from learners' discussion and the extent to which such dialogues are converging, diverging, competitive, or collaborative. However, we acknowledge that learner's engagement entails more than cognitive and social dimensions. Therefore, future work needs to capture other dimensions of learner engagement to have a holistic comprehension of this complex construct. The recent work of Yu (2025) and Y. Yang et al. (2024) could be used to enhance LODAM by incorporating an emotional dimension into the analysis of learners' online forum discourse.

Another limitation of this study is the reliance on manual tagging to apply the LODAM model. While this approach allows for a nuanced and detailed analysis of learners' discussions, it is not feasible for large-scale MOOCs, where thousands of forum posts are generated. We recognize that the broader applicability and scalability of LODAM would greatly benefit from the development of automated tagging methods. Future work could focus on integrating AI-empowered mechanisms or techniques and such as machine learning algorithms, topic modelling, sentiment analysis, and dialogue act classification to classify forum posts according to the categories and dimensions outlined in LODAM.

All in all, LODAM provides a critical advancement in analysing complex learners' interactions in digital forums, offering a novel perspective that goes beyond socio-cognitive process. By shifting focus from the processes to the potential dialogues that emerge from engaging in knowledge construction, LODAM aligns with the goals of technology-enhanced learning (TEL) to enhance understanding and foster deep learning in digital environments. Furthermore, LODAM extends TEL theory and practice because it does not only uncover the dynamics of collaborative dialogue in digital forums but also offers practical implications for the design of technology-enhanced learning environments. As TEL evolves, frameworks like LODAM that combine manual rigor with the potential for automation will play a pivotal role in shaping personalized, scalable, and collaborative learning experiences.

Nevertheless, the findings of this study are contextualized within the discussions of two specific MOOCs. While these cases demonstrate the applicability of LODAM and its potential to analyse learners' socio-cognitive engagement, the results should be interpreted with caution regarding generalizability. The pedagogical designs of the MOOCs studied likely influenced the types of dialogues that emerged, and these may differ in other contexts. Future research should examine the applicability of LODAM across diverse MOOCs with varying cultural, disciplinary, and pedagogical characteristics to further explore its robustness and adaptability. Despite these limitations, we believe that our model can serve as a complement to current analytical frameworks that focus on the process of social learning. In addition, although we used LODAM to analyse learners' discussions in MOOC forums, our model can be applied to educational discussions outside MOOCs. Thus, it constitutes a versatile tool that goes beyond the process of knowledge construction to uncover the result of this process.

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Random examples of different types of dialogues found.

II Simple disagreement	
	RSE : Responsabilité sociétale des entreprises : Les actions menées par une entreprise afin de prendre conscience et de maîtriser ses impacts sur l'environnement, la biodiversité et les individus. Cette prise de conscience doit conduire à la mise en œuvre d'actions concrètes : 1) de réduction des impacts négatifs (réduction des déchets, charte RSE avec partenaires de l'entreprise...). 2) d'amélioration de l'existant (solution de stockages des données moins énergivores, politique de recrutement inclusive et promotion de la diversité...). Par ailleurs, une politique RSE même fortement développée peut-elle compenser une industrie dont l'activité principale est en contradiction avec le DD (usage massif de plastiques, d'énergies fossiles...) et ceux mêmes si d'autres axes RSE sont développés ? A cet égard, je prendrai l'exemple de Cameco : société canadienne d'extraction de gaz de schiste dont la politique RSE est très développée mais dont l'activité principale est extrêmement polluante et les relations avec les communautés amérindiennes (site de Saskatchewan) sont difficiles. Site de Cameco and 2020 Sustainability report : https://www.cameco.com/about/sustainability
	Reply01: C'est intéressant de prendre un cas aussi complexe et plein de contradiction comme exemple !
	Translation :
	CSR: Corporate Social Responsibility The actions taken by a company to become aware of and manage its impact on the environment, biodiversity, and individuals. This awareness must lead to the implementation of concrete actions: 1) Reducing negative impacts (e.g., waste reduction, CSR charters with the company's partners). 2) Improving existing practices (e.g., adopting less energy-intensive data storage solutions, inclusive recruitment policies, and promoting diversity). Furthermore, can a CSR policy, even if highly developed, compensate for an industry whose primary activity contradicts sustainable development principles (e.g., massive use of plastics, fossil fuels...), even if other CSR initiatives are undertaken? In this regard, I would take the example of Cameco: a Canadian shale gas extraction company whose CSR policy is highly developed but whose primary activity is extremely polluting, and whose relationships with Indigenous communities (e.g., the site in Saskatchewan) are strained. Cameco site and 2020 Sustainability Report: https://www.cameco.com/about/sustainability
	Reply01 : It's interesting to use such a complex and full-of-contradictions case as an example!
III Collaborative argumentation	
	la RSE est l'ensemble des impacts que peut engendrer une organisation ou entreprises. La RSE s'applique à toutes organisation ou entreprises, qui genere du business, de la valeur ajoutée et qui s'engagent à identifier et tracer l'impact global de son activité social, environnemental, culturelle, local, mondial.
	Reply01: Bonjour, je pense aussi que la notion d'impacts fait partie du concept de RSE. En revanche je ne pense pas que seuls les impacts puissent la résumer. En effet, il y a aussi une notion d'amélioration continue, car tous les impacts ne peuvent être évités et aussi de créativité et d'innovation dans la poursuite d'objectifs environnementaux et sociétaux.
	Translation
	CSR encompasses all the impacts that an organization or company can generate. CSR applies to any organization or company that generates business, added value, and is committed to identifying and tracking the overall impact of its activities—social, environmental, cultural, local, and global.
	Reply01: Hello, I also believe that the notion of impacts is part of the concept of CSR. However, I don't think that impacts alone can fully define it. Indeed, there is also a notion of continuous improvement, as not all impacts can be avoided, as well as creativity and innovation in the pursuit of environmental and societal objectives.
V Cumulative talk	
	CSR starts with our self-consciousness about sustainable development and it is about how to integrate it into the business world of companies
	Reply01: Well said. I like your definition.
	Reply02: I also included the individual "responsibility" in my definition since I believe in shared responsibility. Nor that individual actions does not count, I truly believe each person can impact their surroundings but the impact that companies have are greater just due the financial, human muscles they have and therefore social responsibility become an important corporation matter, that also help them to build reputation .
VI Explanatory inquiry	
	CSR is an international business self-regulation. The main points are the same, but different companies solve the problems differently. Some people thinks that is a marketing tool, but it is more than this.
	Reply01: Hi! I think that CSR should be more than a marketing tool, as you said. But do you think that companies in general terms are using CSR because they really believe in it or just as a mean for greenwashing? Do you think that companies are really applying correctly the concepts of CSR?
	Reply02: Does it matter if a company really believes in it, if the outcome would be the same? (from an ethical perspective it of course matters, but if the higher goal is met, i.e. better sustainable pace of progress - whatever that means or looks like - does it matter if the company itself does it merely because it also increases profit/marketability?

VII	Simple agreement		
	For me this CSR means exactly that, a company has a responsibility to society and that responsibility comes in threefold, through economic return, adding to social welfare and maintaining/improving environmental sustainability.		
	Reply01:	i couldn't agree more.	
IX	Collaborative agreement		
	As I understand, CSR, or corporate social responsibility is a concept, when a business should do something useful and worthy for people. The company voluntarily takes measures to improve the quality of life of employees, their families, the local community, and so on. It is debatable whether to use this concept. Many feel that this concept detracts from the main purpose of the business, while others feel that the concept is necessary. One of good examples of company which enacts positive change is Starbucks. This company helped military people with hiring so people could find a job.		
	Reply01:	I totally agree with that point of view. In my opinion, CSR is a self-regulating business model that helps one company to bear social responsibility towards itself, its stakeholders and the public. Such company not only pays taxes, produces high-quality and safe products, but also invests in its employees and the environment. Let me provide you with some more examples. IKEA undertook special CSR initiatives to protect and support the health and livelihoods of workers, customers, business partners, and communities during the COVID-19 pandemic. In total, more than 1.7 million facemasks, gloves, bedding, and food supplies were donated to medical facilities across the world. Besides, about 60% of all IKEA products are based on renewable materials and 10% of products contain recycled materials	
	Reply02:	I strongly agree with you! In my opinion either, corporate social responsibility (CSR) is a vivid indicator of company being efficient not only economically and useful not only providing it's audience with some unique product or service but also of it being willing to really improve life conditions of its clients and employees and add to conscientiousness level of the society.	
	Reply03:	Right you are, dear colleagues. I also share this viewpoint. CSR is not only created for bettering the business practices, but it also ensures prosperity and stability of the company in the long haul. I also share this viewpoint. I also think this approach is interwoven with the ESG strategy.	

Appendix 02

MOOC 01 – Communicating Corporate Social Responsibility (CSR).
Forum “What does CSR mean”

Pedagogical design BEFORE our intervention.

Discussion forum

In your opinion, what does Corporate Social Responsibility (CSR) mean?

Your participation in this discussion forum is designed to help you list the **main characteristics of the CSR concept**.

Pedagogical design AFTER our intervention.

What does CSR mean to you?

Before starting this course, what does "corporate social responsibility" (CSR) mean to you?

1. In what terms would you define it? Write a **minimum of 3 lines** that summarize your understanding of CSR and the associations you make with this concept.

2. Is CSR linked to the purpose of the company? Explain what you think the purpose of a company is and whether or not you perceive a link between CSR and the company's purpose.

3. Finally, take ten minutes to read the contributions of **at least two other participants**. What do you notice? **What do they have in common? What are the differences? React, in writing, to at least two posts** that spark your interest and engage in conversation with these learners to broaden your perspective.

Be sure to follow the discussion to see how other learners react to this exercise!
For more tips, read the [Guide of best practices in forum](#).

Remember: participation in the discussion forums is designed to get you to discuss the main features of the concept of CSR and thus help you build your knowledge on the subject.

MOOC 02 – Psychology of Negotiation.
Forum “What does negotiation mean”

Pedagogical design BEFORE our intervention.

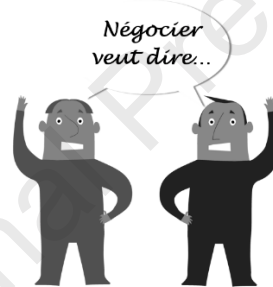
What does negotiation mean to you?

Negotiation is something we hear about every day. Whether through the media or in everyday life, we have all been confronted with an episode of negotiation at one time or another. But what does it mean to negotiate? Depending on our experience or degree of expertise, we don't necessarily all share the same vision of the concept of negotiation. To familiarise ourselves with the subject, we're going to start this MOOC with a little reflective exercise. In particular, I'd like you to think about what negotiation means to you and fill in the short questionnaire below.

Once you've completed the exercise, I invite you to use the discussion forum below (CAUTION, don't forget to do this once you've completed the exercise...) to share your thoughts on the subject with the other MOOC participants.

Pedagogical design AFTER our intervention.

What does negotiation mean to you?



Negotiation is something we hear about every day, but what does negotiation mean? Is it a debate? A relationship? Or rather a transaction? To familiarise ourselves with the subject, I suggest a little reflective exercise. In the questionnaire below, choose 3 to 5 words that you think best represent the concept.

Once you have completed the exercise, I invite you to use the discussion forum below to say the words you have chosen (in the title of the message) and to explain your choice to other learners (in the body of the message).

Read the messages from at least 3 other learners who have chosen one or more words that you have not. Do you agree with their explanations? Please leave them a message to let them know what you think. Pay attention to the guidelines for using the forums.

Acknowledgments

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Beyond the process: A novel analytical model to examine knowledge construction in MOOC forums

Highlights

- This study introduces LODAM, a new model to analyze learners' online discussions
- Learners' online discussions are characterized by collaboration and explanation
- Discussions revolved around specific conceptual features, while ignoring others
- Forum design influenced discussion depth, but effects varied across MOOCs
- Findings offer insights to improve the design of technology-enhanced environments