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Analyzing Dialogicity in Online and Face-to-Face Settings: The Influence of Teaching Modality

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Abstract
This study examines the development of dialogicity in two distinct learning modalities—face-to-face and online—during a 10-session cultural literacy intervention involving 10th-grade high school students. Dialogicity refers to the quality of dialogue in terms of the degree to which student interactions promote sustained discussion and the co-construction of meanings. We analyzed and compared four sessions in each learning modality. The results indicated no significant differences in the overall frequency of dialogic moves between the two modalities. However, there were differences in the degree of dialogicity. High-dialogicity moves were significantly more frequent in the face-to-face classroom. Furthermore, metadialogue, a critical component for guiding and reflecting on discussions, was used more frequently in the face-to-face modality. Students employed it to guide discussions toward achieving the session objectives. In the online classroom, students encountered technical difficulties that disrupted the flow of dialogue, which made metadialogue even more important to overcome these problems. The findings suggest that future dialogic teaching interventions for online classrooms should be designed specifically for this modality. The design should include a scaffolding process for dialogicity — whereby students were progressively introduced to dialogic skills across sessions — to help students navigate these challenges and foster higher-quality discussions.
Keywords: *dialogicity, comparative case study, online learning, cultural literacy, metadialogue*

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1. Introduction

Dialogic teaching is a pedagogy focused on learning through dialogue (Kim & Wilkinson, 2019). Several researchers have studied its potential to promote students' learning. Educators employ this method to promote students' deeper understanding of content and their knowledge construction. It encourages students to express their ideas clearly and collaborate meaningfully (Mercer et al., 2019). Dialogic teaching not only helps students to understand new knowledge but also fosters communication and higher-order thinking skills (Wegerif, 2023). Therefore, it has been shown to be a powerful tool for co-constructing meaning among students.

However, the effectiveness of dialogic teaching is influenced by contextual factors that shape how dialogue unfolds in the classroom (Baker, 2022). The extent to which ideas emerging from dialogue are shaped by the learning setting rather than by learners' individual characteristics remains an open question. Hence, understanding how different contexts shape dialogicity is essential for the effective implementation of dialogic teaching (Wegerif et al., 2023). Previous research has examined variations in dialogic teaching across countries (Li & Wegerif, 2014) or socio-economic school contexts (García-Carrión et al., 2020). Yet, one of the most pressing contextual shifts in recent years has been the transition to online learning environments.

The rapid expansion of online learning, accelerated by the COVID-19 pandemic, has created an urgent need to understand how dialogic teaching develops in digital settings. Despite growing interest in digital pedagogies, most research on dialogic teaching continues to focus on traditional face-to-face interactions (Wegerif et al., 2023). Nevertheless, the shift to online platforms introduces new challenges, such as reduced spontaneous interaction and technological barriers that may affect dialogicity (Farooq & Benade, 2019; Major et al., 2018). These differences raise a crucial question for our study: To what extent does the learning modality influence dialogue in student discussions?

An essential concept for addressing this question is dialogicity, which refers to the degree to which dialogue promotes sustained interaction among participants and the co-construction of meaning (Macagno et al., 2022; Makkonen-Craig, 2014). Dialogicity can be assessed by examining the degree to which student interactions promote sustained discussion and reasoning (Rapanta et al., 2023). Previous studies have distinguished between low and high dialogicity interactions. For instance, simply rejecting an idea ("I disagree") is less dialogic than providing a reasoned justification ("I disagree because we have already written that in the first question"), as the latter contributes to shared meaning-making (Macagno et al., 2022). Studying dialogicity across modalities allows us to understand how different learning environments shape students' engagement in dialogic processes during collaborative activities.

Beyond its pragmatic function of supporting collaboration, dialogicity entails the presence and interplay of multiple voices within an interaction. This includes not only the perspectives of physically

present speakers, but also the perspectives evoked or represented through language—such as societal discourses, absent others, or institutional positions (Bakhtin, 1981). In this sense, dialogic exchanges are not merely about turn-taking or verbal coordination, but about the presence of diverse and sometimes conflicting viewpoints. Understanding dialogicity in this broader sense allows us to capture both the interpersonal and ideological dimensions of student dialogue, particularly when learners bring in voices that challenge dominant narratives or express minoritized perspectives (Matusov, 2009).

Accordingly, this study explores and compares the development of dialogicity in face-to-face and online learning modalities during an intervention aimed at fostering cultural literacy through dialogic teaching. More specifically, we analyzed student discussions in two secondary school classrooms over a 10-session intervention: one face-to-face and the other online via video chat. Our analysis focuses on four specific sessions of the cultural literacy classes (3, 5, 7, and 9), where students engaged in the same type of task using different content (discussion questions about cultural literacy topics). This selection allows for a more precise comparison between modalities, as these sessions shared the same task structure — answering and discussing open questions — whereas other sessions involved substantially different activities such as artistic creation or role-playing, which would have introduced confounding variables into the comparison. By examining differences in dialogicity across these settings, this study contributes to understanding how learning environments shape dialogic interaction and provides insights for future pedagogical designs in online education.

1.1. Dialogicity in online learning

Despite the benefits of dialogic teaching, its presence in schools remains limited, and improving it continues to be a significant challenge for educators (Netz & Lefstein, 2016; Reznitskaya et al., 2012). Various factors, including technology, can influence dialogic interactions (Farooq & Benade, 2019; Major et al., 2018). Research shows that the success of online programs is closely linked to high levels of interaction and collaboration between students and teachers (Dooly & Tudini, 2022). In online environments, dialogic teaching offers educators and researchers a valuable opportunity for enhancing learning in online environments, as it could foster meaningful student learning (Meskill & Anthony, 2018).

Researchers have examined how technology can be integrated into dialogic teaching classrooms (Littleton & Mercer, 2013; Major et al., 2018). In particular, the literature has often focused on asynchronous written interactions. Examples include discussion forums (Xu et al., 2023), social networks (Friedman & Friedman, 2013), and collaborative spaces (Pifarré & Staarman, 2011). But these educational models do not always align with the interactive and responsive nature of oral dialogue that dialogic teaching requires (Farooq & Benade, 2019). This is because written and/or asynchronous chat discussions lack the flexibility and spontaneity of verbal dialogue (Keynan et al., 2022; Mansour, 2024), which makes them less effective at fostering social interaction and active participation (Fabriz et al., 2021). For this reason, our study focuses on a videochat platform to enhance learning through dialogue.

Research on synchronous verbal dialogue in online educational contexts has grown considerably in recent years, driven by its recognized pedagogical potential (Eklund & Isotalus, 2024; Koester, 2022; Meskill & Anthony, 2018). A recent study conducted in Denmark with primary school students found that satisfaction levels in synchronous dialogic teaching were comparable to those of traditional face-to-face settings (Schou-Juul et al., 2024). Furthermore, the study indicated that students were more satisfied with online dialogic teaching than with other online modalities involving less verbal interaction. One possible explanation for this increase in satisfaction is that online environments may provide a less intimidating platform for shy students, since previous research has suggested that synchronous online dialogue can reduce public speaking anxiety (Stewart, 2008). However, despite this potential benefit for shy students, research also suggests that in synchronous online settings, the general tendency is for students to be more

engaged in listening and thinking with others rather than actively elaborating on their ideas or reasoning (Wang et al., 2025).

While online dialogue can be engaging and effective, it does not fully replicate the dynamics of face-to-face interaction. In face-to-face settings, non-verbal communication, such as eye contact and facial expressions, play a crucial role in facilitating understanding and engagement (Eklund & Isotalus, 2024). Additionally, teachers' body posture and orientation toward classroom materials can serve as implicit signals that structure student participation and influence classroom communication (Ishino & Watanabe, 2025). In contrast, non-verbal communication is often restricted or entirely absent in online environments, which can lead to feelings of alienation and reduced motivation among students (Lin & Gao, 2020). Furthermore, unstable internet connections complicate communication by interrupting the flow of dialogue and making it challenging for participants to follow speaking turns (Murphy et al., 2020). These differences highlight key challenges in replicating the fluidity and immediacy of face-to-face dialogue in online settings.

Research suggests that dialogic quality in online synchronous environments is not automatically guaranteed by the medium itself but largely depends on how interaction is structured and facilitated; for instance, dialogic features such as authorship, polyphony, and openness are more likely to emerge in synchronous group formats than other online exchanges (Bang-Larsen & Qvortrup, 2022). The difficulties of online dialogue may stem from the challenges of designing pedagogical strategies that foster effective dialogic interactions in digital environments (Eklund & Isotalus, 2024; Major et al., 2018). In this regard, pedagogical design plays a crucial role in the development of dialogic teaching in online learning, as it directly influences the quality and effectiveness of these interactions (Godwin-Jones, 2019; Slakmon & Schwarz, 2014). The COVID-19 pandemic further highlighted these challenges, revealing that students often failed to achieve the intended learning outcomes, probably due to insufficient preparation of online educational programs (Keynan et al., 2022; Koh & Daniel, 2022). This situation underscored the importance of adapting tasks and materials originally designed for face-to-face learning modalities.

For instance, the digitization of graphic materials, such as fictional stories, was found to effectively stimulate student dialogue (Schou-Juul et al., 2024). Online platforms that support chat-based discussions can also enhance dialogic teaching (Heron et al., 2021; Mansour, 2024). Moreover, clearly communicating dialogue objectives, participation expectations, and shared lesson plans is crucial, as these practices often differ from face-to-face instruction (Bender, 2012). Finally, it is also relevant to create interactive online environments, which require careful planning with a particular focus on effectively scaffolding dialogic practices — that is, gradually introducing students to dialogic norms and participation structures that support meaningful discussion (Slakmon & Schwarz, 2014). While some of these practices may not be inherently dialogic in nature, together they contribute to creating the conditions under which meaningful dialogue can emerge.

1.2. Cultural literacy in online dialogic learning

Cultural literacy was the curricular framework of the intervention analyzed in this study. Examining this construct in online settings is particularly relevant, as online environments have the potential to connect students across different cultural contexts, thereby enriching intercultural dialogue and expanding the opportunities for cultural literacy learning beyond what is possible in a single face-to-face classroom. Dialogue thus plays an essential role to learn cultural literacy as a means through which students can explore diverse realities and collaboratively negotiate new interpretations and shared understandings (Maine et al., 2019).

Some researchers defined it as the knowledge that learners must acquire to live and adapt to a specific culture (Hirsch, 1983). Nevertheless, as societies become increasingly interconnected and

migratory flows intensify, the idea of societies having a single and distinct culture is losing relevance. This highlights the need to embrace interculturality. Recent literature defines cultural literacy as the competencies that a future citizen needs to live in a constantly changing, intercultural society (Maine et al., 2019; Maine & Vrikki, 2021). Several studies have been conducted in the area of cultural literacy, focusing on a wide range of aspects including the concept of belonging (Maine et al., 2021), artistic practices (Lähdesmäki et al., 2022), local wisdom (Rubingah et al., 2023), teachers' professional development (Hofmann et al., 2021), or dialogicity learning (Garcia-Mila et al., 2021; Rapanta et al., 2023; Rizal et al., 2024).

Many researchers highlight the crucial role of dialogicity in the learning of cultural literacy competencies (Maine et al., 2019; Rapanta et al., 2023). It is through dialogue that students can have opportunities to develop an empathetic point of view, a tolerant attitude and an openness to inclusion, though this depends on how dialogue is structured and facilitated (Lähdesmäki et al., 2020). Dialogue allows students to comprehend people with different cultural, religious, ethnic and linguistic backgrounds (Council of Europe, 2008). It also helps students recognize their own identity and engage with others (Rapanta & Trovão, 2021). Furthermore, viewing cultural literacy as a dialogic practice emphasizes its dynamic nature, in which cultural identities and understandings are co-created and continuously evolve through meaningful social interactions (Maine et al., 2019).

The online teaching modality may serve as a means to develop students' cultural literacy, though its effectiveness is not guaranteed and depends on how dialogue is structured and facilitated (Bietti et al., 2021). Although little is known about cultural literacy in online environments, a growing body of evidence suggests that online dialogue has the potential to foster meaningful cultural exchanges. Researchers have found that online dialogue can facilitate language learning and foster intercultural communicative competence by encouraging students to reflect on cultural differences (Godwin-Jones, 2019). Other studies highlight how online dialogue can increase students' sensitivity to cultural backgrounds, with a particular focus on affective aspects that contribute to deeper intercultural understanding (Gutiérrez-Santiuste & Ritacco-Real, 2023). Furthermore, an online professional development program involving US and Spanish participants demonstrated that pre-service teachers enhanced their reflective practices, critical thinking, and problem-solving abilities, all of which were fostered through dialogic interactions (Dooly, 2011).

In exploring how online contexts contribute to cultural literacy, it is important to consider the nature of dialogue that emerges when students from diverse cultural backgrounds interact. Dialogue in these contexts can foster a more open attitude towards diversity and shift the perception of "us" versus "them" towards a more collective identity (Wegerif, 2017). While existing research primarily focuses on online dialogue about cultural topics rather than cultural literacy per se, it also suggests that such exchanges have specific characteristics. For instance, these dialogues often require students to adjust their communication styles to accommodate diverse cultural perspectives, thereby enhancing their intercultural competence (Oggel et al., 2022). Moreover, online dialogues can encourage students to actively listen and engage with diverse perspectives, which shapes interaction dynamics to better address cultural complexities (Godwin-Jones, 2019). These insights suggest that fostering online pedagogies in which such dialogues can thrive may be key to promoting deeper understanding and learning of cultural literacy.

Although dialogic teaching helps students learn, a significant research gap remains in assessing dialogicity in online teaching. One exception is the study by Briones and Lara (2016), which examined a cultural exchange program in higher education between Spain and Chile. The findings showed that students who participated in online dialogue sessions between countries not only achieved better grades but also improved their argumentation skills. However, this study focused solely on student argumentation within the program, without comparing how dialogicity develops in online versus face-to-face settings. This distinction is crucial, as the strengths and limitations of online dialogue remain underexplored. Our research

seeks to fill this gap by directly comparing dialogicity in face-to-face and online learning modalities, identifying their respective challenges and advantages to inform future pedagogical practices.

Research questions

We addressed the following research questions:

1. Are there differences in the overall frequency of dialogicity moves (the total number of student contributions to the dialogue) between face-to-face and online learning modalities?
2. Are there differences in the degree of dialogicity (the proportion of high- vs. low-dialogicity moves) between the two learning modalities?
3. How does the development of dialogicity (changes in dialogicity levels across sessions) differ during the intervention between face-to-face and online modalities?

2. Method

2.1. Research Design

This study employs a comparative case study design (Goodrick, 2014) to examine dialogicity across two learning modalities during a 10-session intervention aimed at fostering cultural literacy through dialogic teaching. A mixed-methods approach with an explanatory sequential structure (Creswell & Plano Clark, 2018) is used, in which quantitative results on the frequency of dialogic moves are complemented by a qualitative sociocultural discourse analysis to interpret the significant differences observed in student interaction. The study involves two independent variables: time (sessions) and learning modality (face-to-face and online), and one dependent variable: dialogicity.

The comparative case study method is well-suited for this research as it enables an in-depth comparison of dialogicity development across learning modalities. This method helps identify key moments of change and the factors behind them by examining how different contexts influence dialogic interactions (Goodrick, 2014). Its flexibility allows for the examination of complex phenomena, highlighting both commonalities and variations in dialogic interactions across educational settings. This approach is particularly relevant during the shift to online learning, offering insights into how to effectively adapt dialogic teaching to digital platforms.

2.2. Participants

Forty-two 10th-grade students (aged 15–16 years) from an urban public high school in Catalonia participated in the study. The students belonged to two separate classrooms, and each classroom group remained together to preserve a natural educational setting. The learning modality (face-to-face or online) was randomly assigned at the classroom level, meaning that all students from one classroom participated in the face-to-face intervention, while all students from the other classroom participated online. In the online classroom, all students had access to personal laptops provided by the school, and the institution ensured that they could work from separate locations. Both groups followed the same curriculum and belonged to the same academic track (10th grade, social sciences), ensuring comparability. Each classroom was further divided into small discussion groups of 4-5 students, forming five face-to-face and four online groups.

Regarding students' prior experience with online learning, it is worth noting that students had already been exposed to this modality during the COVID-19 pandemic in the previous academic year. Also, during the period of the present research, they took an Ethics course, which involved discussion-based activities on topics related to social issues. As a result, students in the online modality were already familiar with the virtual learning environment, including the Zoom platform used in this study. No specific rules were imposed regarding language use in the online platform. Students were given the same dialogic scaffolding as the face-to-face group, consisting of the progressive introduction of dialogic skills through prompt cards

presented at the beginning of each session. These cards included examples of each dialogic strategy and remained visible to students throughout the session. The skills ranged from basic moves such as respectful agreement or disagreement to more complex ones such as reasoning and counterargumentation, without additional restrictions on their interactions.

2.3. Procedure

Both classrooms participated in a 10-session cultural literacy intervention program adapted from the DIALLS Horizon 2020 European project (DIALLS, 2018). Out of these ten sessions, we focused our analysis on sessions three, five, seven, and nine. These sessions were selected because the students performed the same type of task during each session, and previous research has shown that task type influences dialogicity (Luna et al., 2025). The activity involved answering and discussing questions about cultural literacy topics, with the complexity of the questions increasing over the course of each session. The sessions focused on two objectives (Table 1): one on promoting cultural literacy, and the other on increasing dialogicity.

Table 1. Sessions and objectives

Session	Topic	Cultural Literacy objective	Dialogue objective
3	Gender identity	Students allow other students to express themselves	Students justify their own opinions
5	Immigration	Students reflect on the difficulties of inclusion	Students redirect the dialogue to the purpose of the session.
7	Diversity	Students identify and analyze examples of tolerance and empathy	Students add evidences to their justifications
9	Sense of belonging	Students understand the idea of sense of belonging and the interpersonal differences	Students reason about the group's own dialogue

At the start of each session, the teacher introduced the lesson objectives and provided cards illustrating an example of the dialogue objective. In collaboration with the students, the teacher discussed how this dialogue skill could enhance their group discussions. The cards remained available to the students throughout the session. Afterward, a wordless video was presented to foster dialogue on a dilemma related to cultural literacy. The absence of verbal language in these videos encouraged diverse interpretations and fostered deeper engagement, due to the inherent ambiguity (Serafini, 2014). Following the video, the teacher asked questions for students to discuss in small groups. Finally, each group shared its insights with the whole class.

The four sessions analyzed each focused on a specific cultural literacy topic, prompted by a wordless multimodal text. Session 3 addressed gender identity through Super Grand (Perreten, 2014), an animated film following a giant whose attempts to help humans cause unintended panic, exploring themes of misunderstanding and good intentions. Session 5 explored immigration and inclusion through Bon Voyage (Friedli, 2011), a short film depicting refugees on a perilous journey toward Europe, highlighting the harsh realities of forced migration. Session 7 examined diversity, tolerance, and parental expectations through Papa's Boy (Lemmetty, 2011), a film about a young mouse who dreams of becoming a dancer

against his father's wishes. Finally, Session 9 addressed sense of belonging and displacement through Meidän Piti Lähteä (Pelliccioni, 2018), a picture book narrating the journey of a family forced to leave their home due to war. The absence of verbal language in these materials introduced interpretive ambiguity, inviting students to collaboratively construct meaning around the cultural literacy topics.

The intervention was carried out by a face-to-face group in a physical classroom, where students were organized into small groups around tables to complete the tasks. The online sessions were conducted via Zoom, with students working in small groups in breakout rooms. Each group was instructed to engage in verbal discussions through video chat while one student shared their screen with a text document to collaboratively write their responses. Students could also use the chat function for clarification, but the primary mode of interaction was verbal discussion. Some technical difficulties arose, including unstable internet connections and occasional issues with students' access to the session. Despite these challenges, the intervention was successfully carried out as planned.

To ensure consistency across modalities, the first author served as the teacher during the intervention sessions in both modalities. The teacher played a similar role in both learning modalities, facilitating discussions and encouraging dialogue in small groups. In the face-to-face classroom, the teacher moved between groups, while in the online setting, the teacher joined breakout rooms to provide guidance, except when students faced technical issues, which were managed in person. The same dialogic strategies were employed in both settings[1]. Efforts were made to ensure that each small group received an equal amount of attention. This facilitated equitable participation across all groups.

2.4. Data analysis

We recorded, transcribed and coded small group discussions from sessions 3, 5, 7 and 9 in both modalities. The transcribed data were organized into separate lines, with each line corresponding to a student's utterance. Subsequently, we coded all the dialogue moves. A move is any student contribution that can influence the level of dialogicity, either by addressing the topic of the sessions—cultural literacy, in our case—or by contributing to task management. We applied a code to each idea-unit (Kuhn, 1991) and allowed each utterance to have multiple codes assigned. The coders were two authors from the paper. The inter-rater reliability, measured by the Krippendorff's alpha coefficient, was 0.92.

The data coding was conducted by merging two coding systems (Table 2). The coding framework was primarily based on Macagno et al. (2022), which distinguishes dialogic moves according to their level of dialogicity (high or low). This framework provided the foundation for categorizing student contributions based on their potential to foster meaning-making during a collaborative task. However, to ensure that the classification captured a broad spectrum of dialogic interactions, we also incorporated elements from Bouton & Asterhan (2023). This second framework synthesizes the most commonly used categories, such as *challenge* and *simple* moves, across different dialogue analysis systems. It allowed us to integrate additional relevant categories that were not explicitly highlighted by Macagno et al. (2022).

The study was approved by the Ethics Committee of the University of Barcelona. All students signed an informed consent form to indicate their consent to participate in the intervention and to be recorded for research purposes. The students' dialogues were anonymized, and the names that appear in the examples are pseudonyms.

[1] Dialogic strategies were based on Fisher's (2007) framework of dialogic questioning — encompassing informational, critical, creative, and affective questions — and Alexander's (2017) five core principles of dialogic teaching: collectivity, reciprocity, cumulation, support, and purposefulness

The analysis was twofold. On the one hand, we conducted a nonparametric statistical analysis to compare the frequencies of moves and of each type of dialogicity code between the two educational modalities. These results guided the second phase of the analysis, which focused on a sociocultural discourse analysis (Johnson & Mercer, 2019) to explain the significant differences observed in the quantitative data. Sociocultural discourse analysis was particularly suitable for this study because it examines how language functions as a medium through which meaning emerges jointly and learning within specific social contexts, aligning with our interest in how dialogicity unfolds differently in face-to-face and online settings. For this purpose, we examined all student dialogues and identified distinct patterns in the application of the categories that showed significant differences between learning modalities. We then selected representative excerpts that illustrated these patterns. The analysis was conducted iteratively, with the research team collaboratively reviewing the selected excerpts to ensure consistency in interpretation.

Table 2. Codes, definitions, dialogicity level, and examples (in bold: specific coded moves)

Codes	Definitions	Dialogicity level	Example
Simple	Short reactions or comments, usually accepting or rejecting an idea	Low	Xavi: Emotions and feelings are different. Ricard: **Yes**.
Stating	Making a value judgment, but without justification	Low	Pau: **He doesn't respect him.**
Managerial	Establishing the rules of the activity	Low	Paula: We are going to make that person taken from that thread, **in this case, since there is no red, either pink or orange.**
Inviting	Asking questions or inviting others to join the conversation	High	Carles: **Real life examples, has this ever happened to you Pau?**
Individual expansion	Extending or clarifying your own contributions	High	Mohamed: A home is an environment, it's... Aida: Of course, but… Mohamed: **It's something more abstract.**
Others expansion	Extending or clarifying other's contributions	High	Pere: I don't think it's the boy's home. Paula: **It could be their workplace.**

Challenge	Explicitly challenging the ideas of another student	High	Anna: What example can we give of what occurs in the video happening in real life? Carla: Something that has happened to us. Anna: But it doesn't happen. Joel: Yes, it happens. Anna: **Yes, it happens but no one can give me an example**.
Reasoning	Expressing justification of your own point of view	High	Aina: **He doesn't tolerate it; he respects it because he doesn't say no, but he teaches him how to make little punches, he respects it, but he doesn't like it...**
Metadialogue	Regulating, structuring, or redirecting the discussion by explicitly reflecting on the dialogue process.	High	Sara: I prefer the other character. Pol: **OK, but we must talk about an alternative ending.**

3. Results

The results are organized according to the three research questions. For the first and second questions, we conducted quantitative analyses, and for the third, we conducted qualitative analyses.

RQ1: Are there differences in the frequency of moves between the face-to-face and online learning modalities?

To compare the rate of moves across the two learning modalities, and given that the data were not normally distributed, we conducted the Mann-Whitney U test. Table 3 presents the distribution of the mean frequencies and standard deviations of total moves across sessions for both learning modalities. There were no statistically significant differences in the frequency of moves between the face-to-face and online modality ($Z = 0.717$, ns, $p > 0.1$) (Table 4).

Table 3. Mean frequencies and standard deviation of face-to-face and online modality moves

Sessions	Face-to-face	Online
3	145 (69.91)	122.25 (45.34)
5	34.2 (18.86)	23.5 (13.29)
7	91.4 (25.37)	97.75 (59.66)
9	167 (114.27)	86.25 (13.64)
Total	109.4 (82.27)	82.44 (51.09)

Table 4. Statistical results comparing face-to-face and online modality moves (Mann Whitney U Test)

	Z	*p*	*Bonferroni correction*
Interventions	0.717	.479	>1

Note: * indicates significance at the .05 level

RQ2: Are there differences in the degree of dialogicity between the two learning modalities?

To compare dialogicity between the two learning modalities, we first assessed whether there were differences in moves by level of dialogicity—high and low (Table 5)—and then assessed differences between modalities for each specific dialogicity code (Table 6 and Figure 1). We decided to use percentages to obtain a more accurate picture, as the number of moves varied across groups. Then we present the sociocultural discourse analyses of the moves whose comparisons yielded significant differences: *simple*, *managerial*, *individual expansion,* and *metadialogue*.

We calculated the percentages for each dialogicity code in each modality by dividing the frequency of a specific code in a particular session by the total number of moves in that modality and session. This approach allowed us to determine the proportion of each type of dialogicity code within the overall dialogue. Additionally, we applied the Bonferroni correction to tests involving multiple comparisons to account for the increased risk of Type I errors. Specifically, the correction was applied to the analysis of dialogicity categories (Table 6), in which multiple pairwise comparisons were performed.

Our results showed significant differences between the mean percentage of high dialogicity moves between the two learning modalities (Z = 2.581, p = .036) (Table 5). The mean percentage of high dialogicity moves in the face-to-face modality was 9.21 (6.22), while for the online modality, it was 4.64 (1.97). In contrast, we did not observe significant differences regarding the low dialogicity moves. Additionally, there were some specific codes that yielded significant differences between the learning modalities: *simple* (Z = 2.89, p = .012), *managerial* (Z = 3.98, p = .004), *individual expansion* (Z = 3.18, p = .004), and *metadialogue* (Z = 2.75, p = .002) (Figure 1 and Table 6). The mean percentage of *simple* moves in the face-to-face modality was 18.43 (4.61), compared to 12.94 (5.24) for the online modality; the mean percentage of *managerial* moves in the face-to-face modality was 11.5 (10.33), compared to 25.7 (9.6) for the online modality; the mean percentage of *individual expansion* moves in the face-to-face modality was 5.9 (3.6), compared to 2.46 (2.45) for the online modality; and the mean percentage of *metadialogue* in the face-to-face modality was 5.05 (2.62), compared to 2.55 (1.82) for the online modality.

Table 5. Mean percentages, standard deviation, and statistical comparison (Mann Whitney U test) of face-to-face and online modality high dialogicity and low dialogicity moves

	Face-to-face classroom		Online classroom		Mann Whitney U test	
	Mean	SD	Mean	SD	Z	p
High dialogicity	9.21	6.22	4.64	1.97	2.581	.036*
Low dialogicity	22.48	13.45	23.04	9.83	0.653	>1

Note: * indicates significance at the .05 level. The p-value was adjusted using a Bonferroni correction.

Figure 1. Mean percentage of face-to-face and online modality dialogicity codes

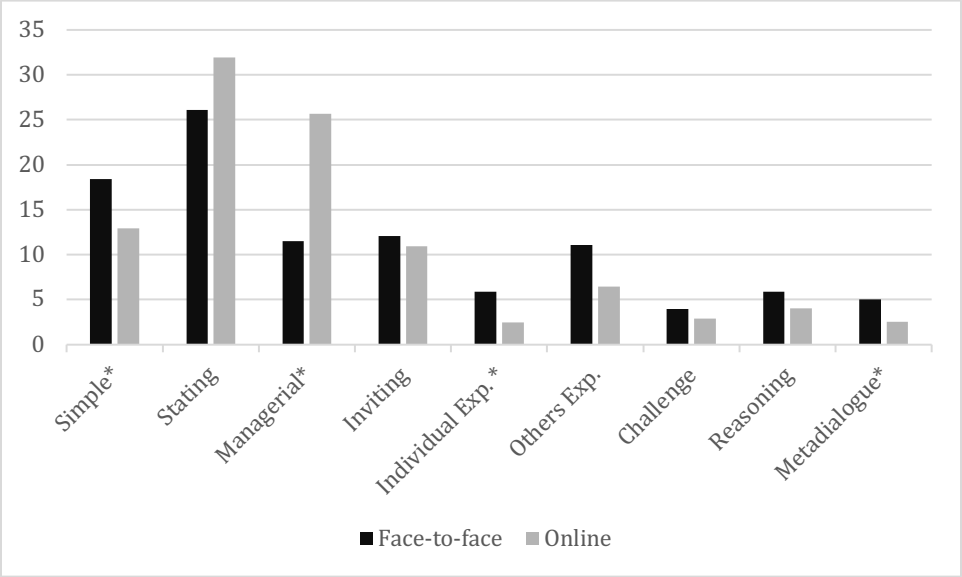


Table 6. Statistical results for the face-to-face and online modality comparison of dialogicity codes (Mann Whitney U test)

	Z	*p*	*p after the Bonferroni correction*
Simple	2.89	.003	0.012*
Stating	2.01	.046	0.184
Managerial	3.98	.001	.004*
Inviting	1.01	.320	>1
Individual expansion	3.18	.001	.004*
Other expansion	2.03	.042	0.168
Challenge	1.06	.290	>1
Reasoning	1.59	.110	0.44
Metadialogue	2.75	.005	0.02*

Note: * indicates significance at the .05 level.

For the *simple* category, the main difference was observed during the teacher's interventions. In the face-to-face modality, students often responded to the teacher's questions with brief and immediate responses. For example, in Session 3, the teacher asked, "Can there be violence in a non-tolerant action?" Several students promptly responded: "Maybe," "Yes," and "Yes, but it's wrong to do so." In contrast, in the online modality, fewer students tended to respond to the teacher's questions, but their answers were more

elaborate. For instance, in Session 7, the teacher asked, “Is the child a boy or a girl?” Several students provided elaborated justifications: Marta replied, “Because his father doesn't want him to, he won't let him,” Marc added, “Because his father expects him to be a boxer,” and Marta further reasoned, “It's more of a boys' thing... well, it's not that it's more for boys, but more boys practice it than girls.” Students in the online modality provided more elaborate responses than in the face-to-face modality. This may reflect the teacher's use of follow-up questions to sustain the exchange, though it may also suggest that online students took more time to formulate their ideas, partly because the risk of overlapping voices — technically more difficult in video chat settings — may have encouraged more careful and deliberate turn-taking.

Regarding *managerial* moves, we observed a lower occurrence in the face-to-face modality. On the one hand, the students in Session 3 of the face-to-face group used managerial moves to organize task performance. For example, Ignasi said, “Why are you going to write down the question if we already have it written there?” or Sara told Pau, “Wait until I get a piece of paper.” In Session 5, the utterances remained focused on task performance but shifted towards addressing content. As Carlos said, “Let's start with the last questions so we can hear what the other groups say first and use their ideas.” On the other hand, in Sessions 7 and 9, the utterances were very different from the previous sessions, as most of them focused on clarifying their understanding of the task with the teacher. In Session 7, Martina said, “Teacher, one question: we don’t understand the last question,” or Victor, in Session 9, said, “Well, we wait for the teacher to come [to answer a question]. What was the next question? What happens at the end, and what else?”

In the online modality, *managerial* moves were different from those observed in the face-to-face modality. In Sessions 3 and 5, most of these moves focused on solving technological issues. Three topics stood out: finding an option to share a document among the group members, as Marc mentioned, “Share your screen; it won't let me”; dealing with audio problems, as Quim complained, “You are muted, Carla; we can’t hear you”; and figuring out how to enter the online session, as Biel said, “They are no longer there; they have entered and left.” In some cases, students highlighted the resolution of technical issues as a positive aspect, which allowed them to perform the task effectively, as Júlia said, “Today we have listened well.” In Sessions 7 and 9, managerial moves related to technical management decreased, but other comments appeared, such as reproaches about how the task was being performed among peers. For example, Marta said to Paula, “We have to do the work together; you can’t answer the questions again,” or Xavi reproached his colleagues for not writing the answers to the questions, saying: “Here (in the chat) we can write them, here!” Both the accusations and the technical difficulties may have led to a higher incidence of managerial moves in the online classroom compared to the face-to-face modality.

Individual expansion moves in the face-to-face modality were more detailed and frequent than those in the online modality. For example, in Session 3 of the face-to-face modality, Izan said, “There are people with intolerant viewpoints that I cannot tolerate.” Maria added, “Obviously, there are things that cannot be tolerated,” and Izan further elaborated on his previous idea: “It’s like during the Franco era [the last Spanish dictator, a period in Spanish history marked by the suppression of dissenting voices] when anyone who did not follow the same discourse was persecuted (...).” In Session 7, Mohamed provided an example to justify why parents might force their children to do certain things: “Many people don’t want to study, but their parents force them to do it anyway. This behavior is normalized.” Berta disagreed: “You gave a modern-day example, but I still don’t see it that way,” and Mohamed elaborated: “I mean, your father can’t force you to do boxing, but if it’s about extra math classes, he can.”

In contrast, *individual expansion* moves in online modality were less elaborated. For instance, in Session 3, Marta responded to the question of why they treated the protagonist of the story differently: “It’s because he’s different,” to which Raul replied, “So I'll delete it (the written answer).” Marta then continued to expand on her previous idea: “This makes his help unrecognized.” In Session 9, for example, Xènia said, “Home can also be where you feel comfortable,” but her peers did not quite understand, so Xènia expanded:

"I mean, like we said the other day, your own town can also be your home." Again, students seemed to find it more challenging to participate in the online modality since they did not go back and revisit their earlier ideas.

Finally, the students' use of *metadialogue* was also higher in the face-to-face modality. In this modality, we observed an improvement in the quality of the *metadialogue* moves along sessions. We saw in session 3 *metadialogue* reflections on the dialogue itself. For example, David said, "Sometimes you shouldn't talk. If someone asks you what you think about a topic, but you have no idea about it, I would at least tell them I can't talk." Carles, in the same session, said, "I attack you because you have given solid arguments in which you gave reasons for what you think, and I don't agree with you." Most of the *metadialogue* moves in the first sessions did not alter the course of the dialogue. In contrast, in Sessions 7 and 9, students contributed statements like Josep's: "What you are saying is all very well, but the question we have to answer is what is the sense of belonging," or Victor's: "We have already said what the girl's sense of belonging is, but what is belonging? How is it defined?" In these utterances, students steered the discussion towards the objectives of the session.

In the online modality, we found that students did not use metadialogue to improve the discussion, and the quality remained consistent throughout the intervention. For example, in session 3, Alex said, "No, Abel, we need to discuss the first question a bit more." In session 7, Maria said, "Let's see what you wrote. Okay, but you did not add what we discussed earlier," while Pau added, "But let us give our opinion on some questions." Most utterances focused on reprimanding peers for managing the dialogue without offering constructive suggestions, unlike the face-to-face modality, where metadialogue moves were more focused on cooperation. In the online environment, challenges in fostering cooperation may have led metadialogue moves to focus on criticizing the handling of the dialogue rather than working toward common solutions.

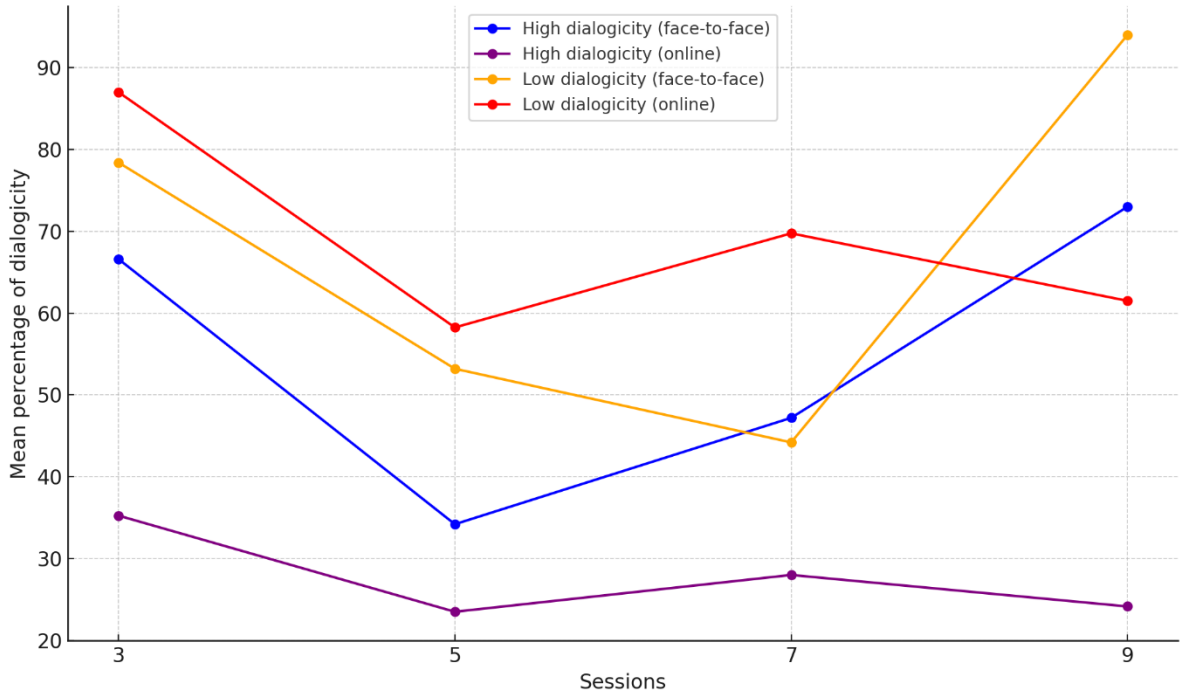
RQ3: How does the development of dialogicity differ during the intervention between face-to-face and online modalities?

This section provides an overview of high and low dialogicity moves observed across sessions and student dialogues, aiming to capture how dialogic engagement developed over time through the lens of sociocultural discourse analysis. Figure 2 illustrates the percentage of high and low dialogicity moves made by students during discussions in the two teaching modalities across sessions 3, 5, 7, and 9. We computed the mean percentage of low dialogicity by averaging the number of the three low-dialogicity types of moves over the total moves, along with the mean percentage of high dialogicity by averaging the number of the five high-dialogicity types of moves over the total moves.

In the face-to-face modality, the proportion of high dialogicity moves ranges from 34.2% to 73%, with a notable increase in session 9, where the percentage reaches its peak. By contrast, in the online modality, the percentage of high dialogicity moves remains consistently lower, fluctuating between 23.5% and 35.25%. This more uniform pattern in the online environment points to fewer high dialogicity exchanges overall.

For low dialogicity moves, the face-to-face modality shows greater variability, ranging from 44.2% to 94%, with a significant decrease in session 7 that coincides with a rise in high dialogicity. This shift suggests a momentary improvement in the quality of dialogue. For example, in session 7, Laura asked, "Uh... What is the message of the video?", prompting her peers to refocus on the central theme of the task. Later, Marc elaborated, "The father wants his son to be a *machote*, to be tough and not show emotions" (using the Spanish expression *machote*, often associated with traditional or exaggerated masculinity).

Figure 2. Mean percentages of high and low dialogicity moves through sessions



These utterances reflect a greater tendency to develop shared understanding, articulate personal interpretations, and promote collective meaning-making.

Session 9 illustrates a further step in the development of dialogic competence in the face-to-face modality. For instance, Sara remarked, “This one ends well because it involves the whole family,” offering an interpretative justification for the narrative’s conclusion. Later, the same student protested, “But I’ve already said it — I’ve said it twice,” drawing attention to the group’s listening practices. These moves exemplify how students became more aware of the importance of justifying their ideas and managing the dialogue as a shared space of meaning-making.

Meanwhile, the online modality presents a more stable pattern of low dialogicity moves, ranging from 58.25% to 87%, reflecting a consistently higher proportion of low dialogicity utterances. Many of these were managerial or minimal responses, lacking expansion or constructive engagement. In session 5, for example, Xavier asked, “Where do we put the questions? Professor, where do we answer the questions?” keeping the exchange focused on procedural clarification rather than on engaging with peers' ideas or advancing conceptual understanding. In the same session, similar limitations were observed in the face-to-face modality. For instance, Sonia stated, “I don’t understand how this is related to the video,” and Pol remarked, “That’s not from the video.” While these utterances identified potential issues with the task, they did not lead to elaboration or mutual exploration of ideas, remaining at a corrective but superficial level.

In session 7, Daniel said, “Come on, Marta. Stop dropping out of the call already!”, focusing on regulating participation rather than contributing to the task content. Similarly, Elisabet replied, “Fine, whatever you say,” with an ironic tone that signaled resignation rather than genuine agreement, reflecting frustration at not being able to express her own opinion. Still, although no consistent upward trend was observed in the online environment, students did incorporate some dialogic strategies as the intervention progressed. In session 9, for instance, Carla offered a brief but reasoned contribution: “Because that way you have a place to live,” justifying a prior statement with a causal explanation. While these elaborations

were generally short and not always followed up, they point to a more marked effort to support ideas with basic reasoning.

Overall, the results suggest greater variability in the face-to-face modality, where students tend to demonstrate slightly higher levels of dialogicity as sessions progress. In contrast, online discussions show less fluctuation and a consistently lower proportion of high dialogicity moves. Still, neither modality reveals a clear upward or downward trend across sessions.

4. Discussion

The study compared the development of dialogicity between synchronous face-to-face and online learning modalities during a cultural literacy intervention. There were no significant differences in the frequency of moves between the two modalities. However, we found significant differences between the mean percentage of high dialogicity moves and in specific codes: simple (low), managerial (low), individual expansion (high), and metadialogue (high). These findings indicate that in the online modality, students provided more elaborate responses to the teacher's questions. They had difficulty deepening discussions or effectively redirecting the dialogue, often due to technical challenges. In particular, they demonstrated lower proficiency in metadialogue than their peers in the face-to-face modality. This suggests that while the type of modality did not affect the frequency of moves, it seems to have influenced students' dialogicity (Eklund & Isotalus, 2024; Farooq & Benade, 2019; Major et al., 2018; Wang et al., 2025). These findings support the idea that the technological context can influence students' discussions (Wegerif et al., 2023) and, with it, their learning of cultural literacy (Rapanta et al., 2023).

The findings can be interpreted as instances of tensions between centripetal and centrifugal forces within classroom dialogue (Bakhtin, 1986). Centripetal forces, understood as tendencies toward unified and monologic discourse, were more evident in the online modality, where technical difficulties and fragmented communication pushed students toward brief, task-focused exchanges that left little room for diverse perspectives. Centrifugal forces, understood as the pull toward diverse and multivoiced exchanges, characterized moments of high dialogicity in the face-to-face setting. In the face-to-face modality, the presence of more elaborated justifications and metadialogical awareness suggests moments where students begin to recognize the other as a voice that must be responded to, which would be considered genuinely dialogic interaction (Matusov, 2009). This dynamic was particularly evident in exchanges related to cultural literacy, where students occasionally challenged dominant meanings — for instance, by questioning traditional masculinity or assumptions about belonging — thereby allowing minoritized voices to emerge. Conversely, the online modality appears more monologic, with utterances often lacking responsive orientation or failing to engage with the diversity of perspectives evoked by the task. These dynamics illustrate the fragility of educationally designed dialogic spaces when they are not intentionally scaffolded, particularly when students are not physically together, and the conversation becomes harder to follow, as often happens in online environments.

Simple moves, indicative of low dialogicity, were more frequent in face-to-face modality, likely due to the immediacy of in-person communication. In contrast, they were less common in online modality, where students provided more elaborate responses. Such results suggest that online environments also present new learning opportunities compared to face-to-face teaching, since students tend to avoid short answers and instead think through and develop their ideas further. This may indicate that online contexts encourage less impulsive responses, thereby reducing mutual interruptions and overlapping voices during dialogue turns (Meskill & Anthony, 2018). Nevertheless, longer utterances do not necessarily mean better dialogicity. Since online participation was more challenging, it also had negative effects. *Individual expansion* moves showed significant differences between modalities, with more frequent and detailed expansions observed in the face-to-face modality. In contrast, in the online environment, *individual expansions* tended to be

shorter and less elaborated. In this case, the difficulties of online communication could have limited the students' ability to retrieve and expand their ideas during dialogue (Murphy et al., 2020).

Lastly, a difference between modalities was also found in *metadialogue* moves. This move is crucial for focusing and redirecting the discussion toward the task's main objectives (Macagno et al., 2022; Rapanta et al., 2023). In the face-to-face environment, *metadialogue* was used more constructively to guide the discussion toward relevant topics. Conversely, in the online modality, the lack of effective metadialogical interventions led students to focus primarily on criticizing the dialogue process rather than working toward common solutions. The inherent difficulties of the online learning modality, such as challenges in maintaining fluent communication (Murphy et al., 2020; Wang et al., 2025), led students to use *metadialogue* to criticize dialogic behaviors rather than constructive ones.

Technological constraints in video conferencing, such as turn-taking limitations and reduced non-verbal cues, may hinder students' ability to regulate dialogue effectively (Koester, 2022). The fragmented nature of breakout rooms and the teacher's intermittent presence could further limit sustained metadialogic engagement. Without effective *metadialogue* regulation, discussions often shift toward task management rather than content. This may explain the higher frequency of managerial moves online, where students focused on technical issues, participation, and peer reproaches. In contrast, managerial moves decreased over time in face-to-face settings, suggesting better organization as the activity progressed.

The challenge of designing pedagogical approaches in online environments (Godwin-Jones, 2019; Koh & Daniel, 2022; Slakmon & Schwarz, 2014), combined with the inherent difficulties of dialogic teaching (Netz & Lefstein, 2016; Reznitskaya et al., 2012), seems to have prevented online students from fully developing dialogicity during the cultural literacy intervention. In this study, digitizing materials (Schou-Juul et al., 2024), enabling discussion chats (Heron et al., 2021; Mansour, 2024), and sharing dialogue and task objectives (Bender, 2012) proved insufficient to achieve the levels of dialogicity observed in face-to-face modality. The results suggest that simply adapting the intervention to the online modality is insufficient to achieve high levels of dialogicity. Some researchers emphasize the need to develop specific digital tools to foster dialogic teaching (Wegerif & Major, 2018).

Online educational programs that facilitate interaction among students from different cultures have proven effective in promoting cultural learning (Briones & Lara, 2016; Dooly, 2011; Godwin-Jones, 2019; Gutiérrez-Santiuste & Ritacco-Real, 2023). However, these programs often do not prioritize developing high-quality dialogue, a critical component of fostering cultural literacy (Maine et al., 2019). This requires online environments to be carefully designed to foster deep, reflective interactions that enable students to connect meaningfully with their peers, rather than limiting interactions to surface-level communication (Slakmon & Schwarz, 2014; Wegerif, 2017). Without a deliberate focus on creating opportunities for authentic dialogue and intercultural reflection in this study, the potential benefits of an online cultural literacy program may not have been fully achieved. Therefore, simply creating virtual meeting spaces is not enough. These spaces must be pedagogically structured to promote dialogue and, with it, the co-construction of meaning (Major et al., 2018; Littleton & Mercer, 2013). Even though the online learning modality offers unique opportunities for intercultural learning, designing thoughtful scaffolding programs to promote higher levels of dialogicity becomes a prerequisite.

This research has some limitations that should be considered. Firstly, the sample size is relatively small and limited to a specific cultural context. This results in high variability across sessions, which makes it difficult to identify clear patterns in dialogicity progression between modalities (see Figure 2). Additionally, even though materials and resources were adapted from a face-to-face intervention to an online environment, we were not able to create resources specifically designed to learn cultural literacy entirely for the online learning modality. Therefore, in future interventions, a more interactive online environment

should be designed with additional features to promote smoother interactions. Future studies could analyze these differences by paying special attention to implementing an effective scaffolding process of metadialogical skills. In addition, to validate the findings presented here, researchers could explore the reported differences in a range of cultural contexts, ideally across countries and with a larger number of participants.

5. Conclusion

In conclusion, while online modality facilitated a comparable frequency of dialogue moves to the face-to-face modality, this study revealed that the quality of dialogue, in terms of dialogicity, differed significantly. In particular, *metadialogue* emerged as a key move. In the online modality, metadialogue tended to promote reproaches rather than reflect on the main concepts expressed by the interlocutors and redirect the discussion towards the task's goal. *Metadialogue* is a key skill that could help reduce the difficulties encountered in online dialogue due to technical issues, as students could redirect their discussion. However, achieving this requires both pedagogical and technological adaptations. From a pedagogical perspective, educators should be trained to model and scaffold metadialogic engagement in fragmented online settings, ensuring students develop strategies to regulate their discussions. From a technological perspective, it is crucial to develop online learning platforms that actively promote interaction and collaboration, reducing the barriers imposed by the digital medium. Additionally, while fostering students' metadialogic skills is essential, a stable, reliable internet connection remains a fundamental requirement for effective online collaboration. Educators and instructional designers should take these differences into account when implementing online dialogic teaching to maximize its learning potential.

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Also, the coded student dialogue transcripts in Catalan are openly available at https://doi.org/10.5281/zenodo.14901498. These data can be freely accessed and reanalyzed by other researchers for non-commercial purposes, provided that the original authorship is acknowledged.

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