Exploring Zoom as a Platform for Language Learning: An Interactionist Approach

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ABSTRACT

Video Conferencing tools like Zoom have provided new avenues for authentic learner interaction in second language (L2) learning, supporting research that highlights the role of interaction in facilitating L2 acquisition. For instance, according to the Interactionist Approach, it is hypothesized that learners acquire language most effectively when they engage in meaningful communication and negotiate meaning with others. Zoom aligns with this approach by providing authentic virtual interaction opportunities. Following the Interactionist Approach, this study conducted an exploratory analysis of how Zoom's features can be leveraged to promote interactions by providing learners with access to the L2 input (e.g., listening) and promoting opportunities for output (e.g., speaking) and negotiation of meaning (e.g., to solve a communication breakdown). Our feature-based analysis found that most Zoom features fulfil its criteria, demonstrating the tool's potential to provide comprehensible input, foster meaningful output, encourage negotiation of meaning, and facilitate interactive feedback. Our discussion highlights Zoom's potential as a versatile platform, offering benefits for synchronous and asynchronous L2 learning.

Keywords: Zoom, Interactionist Approach, online learning

Introduction

Online learning has gained prominence due to technological progress and the demand for adaptable education. The growing ubiquity of computers and internet technologies in personal and professional lives makes it important to investigate the efficacy of online learning in aiding learners' growth. Technology-based learning tools such as Zoom, Microsoft Teams, and Artificial intelligence (AI) tutors have provided learners with tailor-made learning experiences, especially in language learning. Educators' use of these digital resources is key for achieving efficacy and efficiency in language learning (Chapelle, 2003), allowing tailored teaching approaches that respond to diverse learner needs (Al-Jarf, 2022). This strategic utilization of digital tools became essential during the pandemic, as educational institutions (including

schools and universities) relied on online learning via Video Conferencing tools such as Zoom and Skype to continue functioning (Massner, 2021).

Interaction among learners is crucial in both online and traditional learning settings. According to the Interactionist Approach (e.g., Loewen et al., 2018; Mackey et al., 2012), social interactions are crucial for effective language acquisition (Long, 1996; Swain, 2005) and for learning in general. This necessity for effective social interaction is precisely where digital tools like Zoom prove to be highly valuable. With its adaptable video conferencing features, Zoom is consistent with the interactionist theory's focus on social interaction in language acquisition. Zoom's interactive capability supports various types of computer-assisted language learning (CALL) by integrating tools such as automatic speech recognition (ASR) to provide immediate feedback, and text-to-speech synthesis (TTS) for opportunities of exposure to the L2 input (Chapelle, 2003). Zoom can facilitate an environment that promotes the provision of comprehensible input, opportunities for output practice, and interactive feedback, all essential for effective language learning. Furthermore, this technology offers cultural and linguistic immersion, breaking geographical barriers and fostering a global learning community.

This study uses an Interactionist Approach to explore Zoom's affordances and pedagogical potential in the L2 learning context. As such, it draws on Cardoso' (2022) chronological framework for investigating language learning with technology, which consists of four stages: (1) software/tool development, (2) technology exploration, (3) assessing suitability for learning, and (4) assessing pedagogical effectiveness. Given that Zoom is already fully developed (stage 1), this study focuses on stage 2 of Cardoso's framework to explore Zoom's affordances and pedagogical potential within an Interactionist Approach to L2 learning. The study highlights how Zoom can enhance online L2 learning through synchronous and asynchronous interactions (including communication, collaboration, and feedback), incorporating interactionist principles into educational technology design. The findings provide valuable insights for educators, curriculum designers, and technology-enhanced material developers, and contributes new insights into how Zoom can be leveraged as a theoretically informed tool for sustained L2 pedagogy.

Background and Literature Review

Online and Blended L2 Learning

The integration of technology in language learning has revolutionized educational methodologies worldwide, significantly impacting how languages are taught, learned, and practiced (Başar & Şahin, 2021). The onset of the COVID-19 pandemic accelerated its adoption in education, pushing language learning into a more digital sphere, where applications, online platforms, and virtual classrooms became the norm (Smith & Doe, 2021).

What is pedagogically interesting in this online environment is that Web Conferencing tools such as Zoom and Microsoft Teams can provide L2 learners with an engaging and interactive environment without the space constraints imposed by the walls of a classroom. This includes access to authentic materials and fluent L2 users, facilitating collaboration and thus contributing to effective language acquisition. Moreover, the flexibility and accessibility of online learning allow students to access educational materials and participate in classes from any location. This

is particularly beneficial during health crises such as the COVID-19 pandemic or when weather-related events disrupt in-school teaching. As such, online learning environments enhance accessibility to educational materials, enable asynchronous learning, and support diverse learning paces and styles. As a result, it can provide personalized learning experiences that enable students to engage with content at their own pace, making education more inclusive and adaptable to individual needs, consequently enriching students' overall learning experience.

Building on the benefits of online learning, blended learning combines digital media with traditional classroom methods, leveraging virtual and in-class contexts. In an ESL blended classroom, for instance, students can use online platforms to learn and practice their grammar and vocabulary, while classroom time is reserved for interactive speaking activities and collaborative projects that require direct communication and peer and instructor feedback (Neumeier, 2005). By combining synchronous and asynchronous interactions, blended learning enhances engagement, motivation and promotes language use in authentic contexts. It also increases personalization by addressing the unique needs and learning styles of each student, thus facilitating customized instruction.

To summarize, while traditional classrooms are constrained by space and time limitations, online platforms like Zoom, with their capacity for collaborative projects and access to authentic language, provide an interesting ground for L2 learning through meaningful interaction. As will be discussed next, this scenario aligns well with the interactionist hypothesis, which assumes that language learning is most effective when learners actively negotiate meaning and co-construct knowledge through social interaction.

Interaction in L2 learning

Swain's interactionist approach (2005) focuses on the mechanisms of language acquisition through interaction. It considers language learning through communication and interaction with individuals within the learning environment rather than as an isolated, personal cognitive process. An Interactionist Approach to learning (Long, 1996; Swain, 2005) involves several important factors for comprehending the dynamic interplay between individuals and their surroundings. Within the context of online learning, this discussion focuses on four key factors within this framework: Input, output, feedback, and social interaction.

According to Gass and Mackey (2006), input encompasses the data, stimuli, or information received from the environment. Such input is the basis for subsequent processing and response by individuals. Output, on the other hand, refers to the reaction or behavior produced (e.g., from input processing) or the language produced orally or in writing during communication. As such, it reflects an individual's ability to apply the knowledge or skills acquired. Feedback informs and modifies the behavior of learners by providing corrective and/or reinforcing responses. This dynamic process of receiving feedback, adapting, and refining output is essential for continuous improvement in language development. Finally, social interaction emphasizes that learning is not merely a product of input, output and feedback, but it is also shaped by the social interactions in which learners engage with their peers, teachers and/or others.

In ESL classrooms, interaction plays a crucial role, emphasizing equality and mutuality as key to effective learning. Learners engaging in collaborative dialogue negotiate meaning, provide

feedback, and co-construct knowledge. Consider, for example, research by Mackey (1999), who provides empirical support for the interactionist hypothesis by demonstrating that active participation and negotiated interaction significantly enhance her participants' grammatical skills. This concept was further broadened by Loewen and Sato (2018) by including various facets of interaction, such as input and output, which collectively support L2 acquisition. Their research found that the role of negotiation for meaning, where learners and their interlocutors work together to resolve misunderstandings, is a key mechanism that facilitates language learning, helps learners notice gaps in their language proficiency and pushes them to modify their output, thereby refining their linguistic competence. These studies collectively highlight the importance of interaction for language learning in classroom settings.

When incorporating technology into ESL classrooms, learners gain access to a variety of interaction types. CALL enables three primary forms of interaction: interaction with the computer, interaction around the computer, and interaction through the computer (Chapelle, 2003; Egbert & Shahrokni, 2018). Interaction with the computer involves learners directly using software or applications to practice language skills, receive feedback, or engage in language-based activities (e.g., a web-based quiz, ASR or TTS practice). Interaction around the computer focuses on collaborative tasks involving technology that encourage peer support and dialogue among learners (e.g., discussing a video or an image shown on a monitor). Interaction through the computer encompasses communication between learners and others, such as teachers and peers, via online platforms, such as Chat rooms or Video Conferencing, providing opportunities for authentic communication in the target language. These types of interaction made possible by technology, as described by Egbert and Shahrokni (2018), provide learners with opportunities to engage socially and cognitively with digital tools, thus reinforcing language acquisition in diverse contexts. These diverse interaction types enhance learner autonomy, offer immediate feedback, and provide access to a wider range of language learning opportunities, complementing traditional classroom-based interactions.

An Introduction to Zoom

One of the most common applications for interacting in a foreign language is Zoom, which gained widespread adoption during the pandemic. Zoom is a software application for video calls, providing free messaging services. The application is available on multiple OS platforms and offers three paid plans, allowing users to upgrade, with the highest pay plan permitting up to 1,000 participants for a maximum of 30 hours. The application provides excellent video, audio, and screen-sharing quality, as well as Chat, Polls, Quizzes, and Breakout Rooms.

In recent years, Zoom has developed several features to facilitate learning, interaction, and meetings via its Web Conferencing capability, which is its primary function. Via Zoom, users can initiate and participate in virtual meetings (or classes) with high-quality video and audio. Considering the Interactionist Approach adopted in this study, Zoom includes a number of pedagogically interesting interactive features. These include:

- Chats: This feature lets users send text messages, exchange files, and create contact lists. It is helpful during meetings, allowing users to share side conversations and additional information without disrupting the speaker. In the CALL literature, the use of Chats has

been shown to increase the quality of writing, including greater linguistic complexity and lexical diversity in the L2 output, particularly when learners are engaged in pre-writing planning (Fredriksson, 2014).

- Polls: This feature can be used for polling or administering multiple-choice quizzes. Hosts can create Polls within Zoom meetings to gather feedback, make group decisions, or engage participants. Polls can be set up in advance or on the fly during a meeting, and the results can be shared with participants immediately, making this an excellent tool for interactive sessions or quick decision-making activities. Zoom's polling is the equivalent of learner response systems, which have been shown to enhance L2 learning, increase student engagement, and provide immediate feedback in physical classrooms (Sénécal & Cardoso, 2024).
- Quizzes: Quizzes facilitate real-life student interaction and offer the flexibility of conducting assessments synchronously and asynchronously. They enable real-time assessments and foster interactive discussions in virtual classrooms. Quizzes have also been associated with improved academic performance, highlighting their effectiveness as a tool for enhancing learning outcomes.
- Breakout Rooms: This Zoom capability allows hosts to split meeting participants into smaller groups in separate sessions. This is particularly useful for workshops, training sessions, and classes where group work may be needed. Hosts can split participants automatically or manually and switch between rooms to monitor and participate in discussions.
- Digital Whiteboard: This is a Zoom option that allows participants to collaborate and draw during classes. This feature allows users to draw freely, add text, and include shapes and lines. Additionally, users can keep the content created on the Whiteboard for future reference, making it more useful for brainstorming sessions or visual explanations.

Although Zoom was developed for Web Conferencing, the application is constantly evolving to include new technologies that can potentially enhance learning. Consider the recent incorporation of AI capabilities (e.g., via the automatic transcription of speech), which allows teachers and students to access whatever is orally discussed on the platform. From the interactionist perspective adopted in this study, these features hold great promise for language learning.

Zoom in Language Learning

The widespread use of Zoom during the pandemic prompted researchers to explore it for pedagogical purposes. Kohnke and Moorhouse (2020) examined the transition from in-person to online language instruction because of the COVID-19 pandemic, explicitly focusing on Zoom. Their study found that using Zoom to teach English to young learners in Hong Kong during the COVID-19 pandemic helped continuous student engagement and interaction, enabling learners to practice their English skills actively. Feedback from students and reflections from teachers in this study highlighted that while the transition was demanding, it provided valuable lessons on the effective use of technology in education.

In another study, Cheung (2021) found that the transition to Zoom during the Pandemic reduced the level of interaction between the teacher and students compared to face-to-face lessons. Despite this, the study found that the platform allowed the teacher to leverage certain online features to enhance the assessment of students' listening comprehension skills. Features such as Screen Sharing, and Breakout Rooms were effectively used to simulate a classroom environment and maintain student engagement. Further expanding on the potential of Zoom in language education, Dharmawati (2022) found substantial improvements in students' speaking scores on post-test assessments, indicating that Zoom can effectively enhance the development of certain language skills (see also Mpungose, 2023 and Wang et al., 2024 for similar findings).

Despite the growing body of research on the use of Zoom and other digital tools in language learning, there is limited investigation into how specific Zoom features—such as Breakout Rooms, Polls, and digital Whiteboards—can facilitate meaningful interaction and language development. Addressing these gaps is crucial for developing an understanding of how Zoom and its capabilities can be optimized for language learning.

The Current Study

The goal of the study is to examine the extent to which Zoom's features align with the core dimensions of the Interactionist Approach: input, output, feedback, and social interaction. To analyze these dimensions, a feature-based analytical method was employed, systematically assessing each of Zoom's interactive tools against these criteria to determine their potential for supporting L2 learning. Guided by Cardoso's (2022) chronological framework for conducting CALL research, the analysis focuses on the second stage of the framework, which involves *exploring* the affordances and pedagogical potential of an established tool: Zoom.

Methods

The methodology for exploring Zoom's features applied the Interactionist Approach to analyze how Zoom features can help ESL learners interact within various contexts. The initial phase of this exploration involved a comprehensive review and examination of all available resources and features provided by Zoom. This encompassed widely recognized functions such as Video Conferencing, Screen Sharing, and Chat options, as well as exploring other less utilized capabilities like Polling, Breakout Rooms and Virtual Backgrounds. This analysis, grounded in interactionist theories, assessed how Zoom's functions support L2 learning by facilitating or constraining user interactions.

Results and Discussion

The current section presents the analysis of the study, examining Zoom features in ESL environments and emphasizing how its features align with Long's (1996) Interactionist Hypothesis. The features are then examined through the framework of Egbert and Shahrokni (2018), which categorizes user interactions with computers into three specific types: working *with*, working *through*, and working *around* the computer. Since this study draws upon stage 2 of Cardoso's (2022) framework for examining L2 learning tools, the analysis will focus on assessing the pedagogical potential of Zoom to promote interaction.

Zoom and Comprehensible Input

An important principle of SLA, articulated in Long's Interactionist Hypothesis, emphasizes the importance of comprehensible (i.e., modified) input in facilitating learning and language development. These modifications, like rephrasing what someone said or asking for clarification, help learners connect with the language in a meaningful way. This, in turn, boosts their understanding and ability to pick up new language structures.

Zoom and Comprehensible Input: Chat

The first feature that was analyzed for its ability to provide comprehensible input is the Chat. As a direct tool for collaboration, Chat aligns with Egbert and Shahrokni's (2018) model of working *with* computers, which emphasizes interpersonal connections, such as team discussions. As such, Zoom's Chat can fit into various dimensions of interaction to enhance language learning, serving as a medium for modifying and consequently enhanced the L2 input.

In line with Long's Interactionist Hypothesis (1996), modified input occurs naturally in Chat. Written communication allows speakers to simplify language, rephrase statements, and slow down the exchange of information. Since the immediate nature of spoken language does not bind Chat, participants can take more time to compose their messages, often leading to simplified sentence structures and more explicit word choices tailored to the learner's proficiency level. Furthermore, the written (and lasting) nature of Zoom's Chat enables learners to review modified input, strengthening their comprehension of the vocabulary and language structures utilized. In contrast to spoken conversations, where input is transient, written Chat logs empower learners to analyze the changes made and assimilate new linguistic forms at their rhythm, in line with Long's (1996) emphasis on the significance of modified input for language acquisition. In addition, the Chat can improve listening and speaking skills by offering modified input that clarifies and strengthens spoken language. For instance, learners can ask for clarification directly in the Chat without interrupting the flow of the meeting or class, allowing the speaker to rephrase or further simplify their input. This type of real time adjustment is crucial for making input more understandable and supporting language learning by continually adapting the language level to the learner's needs.

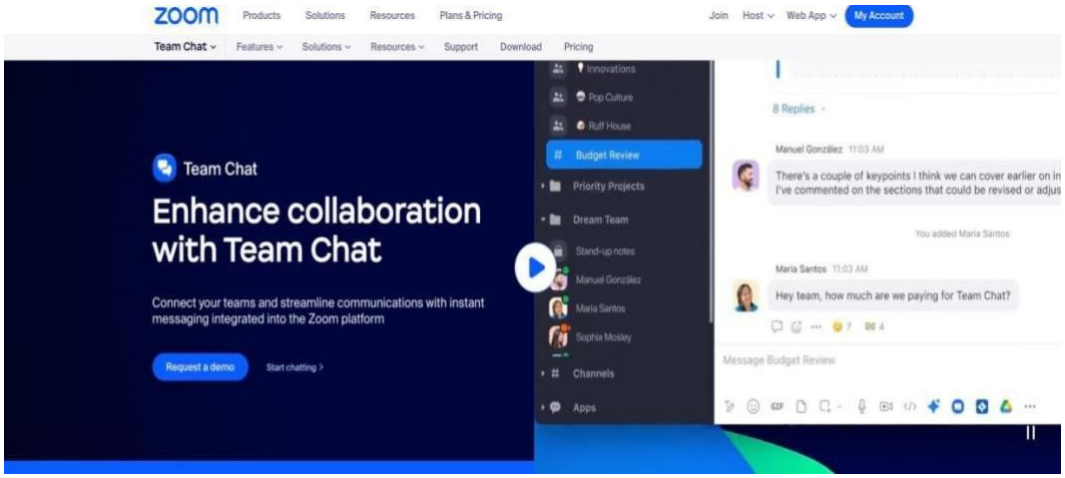
In addition to the above, slowing down the exchange of information in Chat can be especially advantageous for learners with lower proficiency levels, as they typically need more time to grasp new vocabulary and language structures. This was corroborated by research such as Cheung (2021), which emphasized the benefits of Chat in enhancing listening and speaking skills by clarifying complex verbal input through written text. As a result, the Chat feature stands out as a powerful tool for reinforcing understanding and promoting language production in ways that traditional classroom interactions may not adequately support.

The Chat feature also provides opportunities for comprehensible input by encouraging advanced learners or instructors to write more straightforward explanations or use more basic vocabulary when they notice the learner's difficulty understanding, thus mirroring the concept of interactionally modified input. This aligns with Sauro's (2011) study on synchronous text-based Chat, which demonstrates its benefits for L2 learners by providing them with the opportunity to take their time when responding. This reflective pause enables learners to carefully consider their answers, resulting in the production of more refined and target-like

language. For an illustration of a typical Zoom interaction using Chat, see Figure 1.

Figure 1.

Written Support in Zoom



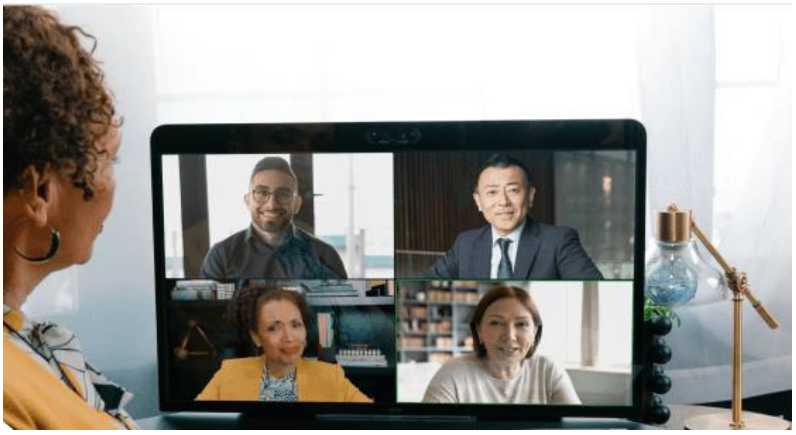
Finally, learners can use Zoom's Chat as a tool for improving their speaking skills, rehearsing their responses based on modified input, and receiving real-time feedback. These interactions help learners develop their listening and speaking abilities by offering accessible, comprehensible input that reinforces language use. These same capabilities were also highlighted in Cheung's study (2021), emphasizing how it can enhance learners' understanding of spoken input, as teachers can provide simplified explanations and rephrased statements in real time. This ability to clarify spoken language through text helps learners process auditory input more effectively, especially in virtual environments with limited face-to-face cues.

Zoom and Comprehensible Input: Video (Web) Conferencing

Another interactive Zoom feature is Web or Video Conferencing, which, along with Egbert and Shahrokni's (2018) model of working *with* and *through* computers, involves direct and engaging interactions with the technology to complete tasks across geographic boundaries. In this feature, modified input is achieved through a visual and auditory feedback loop that enables instructors to assess learners' reactions and adapt their language accordingly. As Figure 2 illustrates, this Zoom component offers instructors' real-time insights into learners' non-verbal cues, such as expressions of confusion or comprehension of what was said. This visual information enables instructors to adjust their language complexity as necessary. This aligns with Long's (1996) view that effective language learning occurs when input is tailored to the learner's proficiency level.

Figure 2.

Non-verbal Cues in Video Conferencing



This function in Zoom offers valuable access to enhanced input, creating opportunities for more learner-specific output and enabling participants to receive feedback through its audio and video capabilities. As a synchronous feature, Video Conferencing and its visual and interactive components greatly facilitate the implementation of the Interactionist Hypothesis by encouraging Negotiation of Meaning in language learning. This aligns with research by Mpungose (2023), who found that Video Conferencing enhanced interactive communication among students and promoted real-time communicative practice and meaningful negotiation, ultimately enhancing language learning and adjustments in oral production among ESL learners.

Zoom and Comprehensible Input: Breakout Rooms

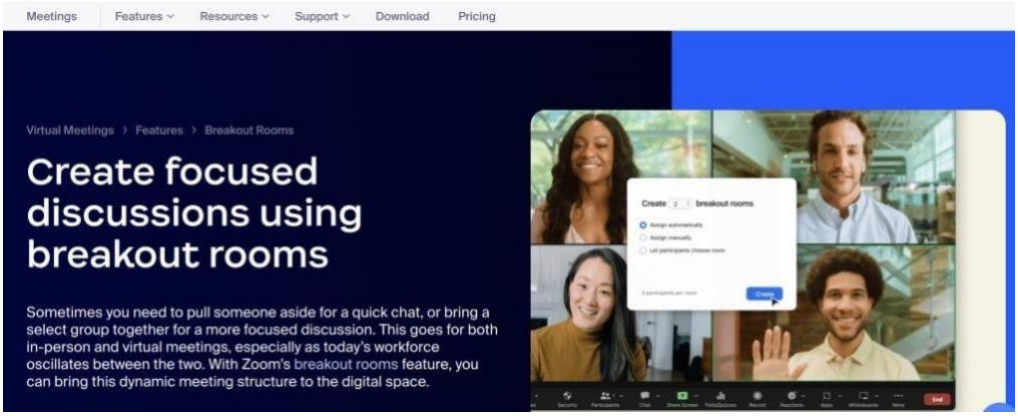
Breakout Rooms, another interactive feature in Zoom, supports the modified input necessary for language learning by fostering an environment where learners can engage in meaningful, accessible, and interactional communication, consequently aligning with Long's (1996) Interactionist Hypothesis. While the Interactionist Hypothesis emphasizes that adjusting the language complexity of modified input to meet the learner's level facilitates better comprehension and aids processing (Long, 1996), Breakout Rooms allow learners to interact in smaller, more focused groups (as illustrated in Figure 3), where language adjustments can be made, thus enhancing learning and language development.

Breakout Rooms encourage peer interactions by simulating physical groups, thus aligning with the concepts of working *through* and *around* computers (Egbert & Shahrokni, 2018). Engagement in Breakout Rooms embodies collaborating *around* computers, where technology enhances human interaction rather than taking center stage in learning. In this environment, peers and instructors can simplify or rephrase their speech, ensuring the language input is accessible to learners of varying proficiency levels. For instance, individuals in Breakout Rooms can clarify or ask for repetition to negotiate meaning, consequently receiving immediate, customized input that matches their comprehension. This aligns with insights from Ellis and He (1999), highlighting the importance of using simplified and personalized language in smaller

group settings where the learners' ability to adapt their language based on peer feedback fosters deeper engagement and cognitive processing.

Figure 3.

Breakout Rooms setting and participants



Finally, the use of Breakout Rooms aligns with recent research indicating the significance of these types of interactive environments in language learning. For instance, their pedagogical implementation reinforces Ellis and He's (1999) conclusion that environments fostering interactionally modified input significantly enhance comprehension and vocabulary acquisition, making Breakout Rooms a valuable tool for supporting effective language learning.

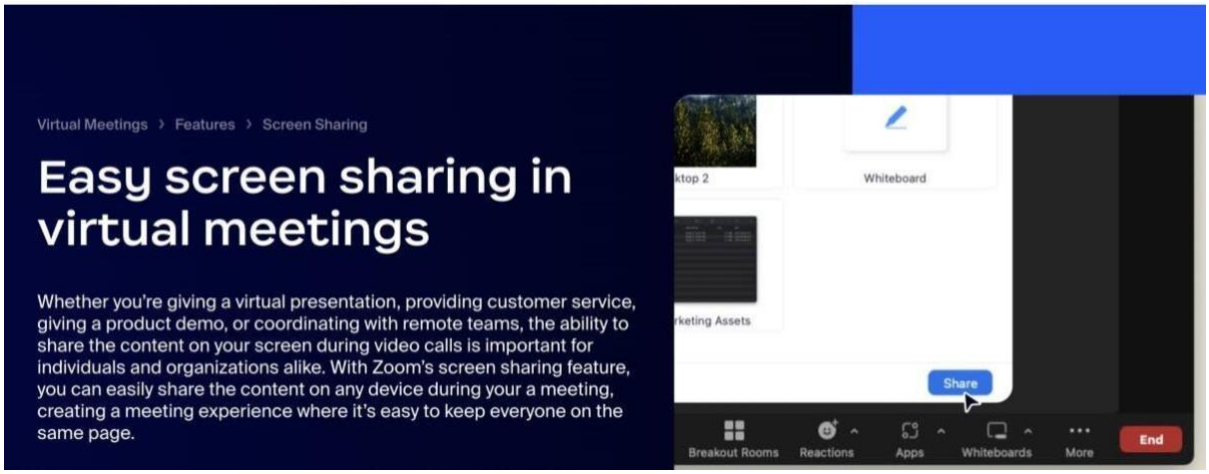
Zoom and Comprehensible Input: Share (Screen-Sharing)

The Share function allows Screen-Sharing among participants. This feature can function along with working *with* and *through* the computer (Egbert & Shahrokni, 2018) since it acts as a medium to share documents or screens by straightforward use of Zoom's tools to present slides as a medium for collaborative projects, like co-editing a document shared on- screen.

When analyzed through the framework of working *with* and *through* computers (Egbert & Shahrokni, 2018) and using Long's (1996) Interactionist Hypothesis criteria of modified input, this feature shows significant potential for supporting L2 learning. According to Long, modified input, where language input is adjusted in real time to match the learner's proficiency, is essential for enhancing comprehension and learning. In Zoom, as illustrated in Figure 4, Screen-Sharing allows instructors to deliver visual and textual input that can be dynamically adjusted based on learners' immediate needs, which is crucial for scaffolding understanding effectively.

Figure 4.

Zoom Screen Sharing



The Share feature goes beyond the traditional concept of computer-based collaboration. It also allows users to engage with shared content, enabling dynamic interaction through real-time input modifications. This feature transforms technology from a passive tool to an active facilitator, creating more engaging and responsive learning environments. It aligns with the modified input principles of the Interactionist Hypothesis for L2 acquisition by providing opportunities for instructors to adapt their language and materials in response to learners' needs.

By Screen-Sharing, instructors can display images, charts, documents, or videos. This multimodal approach, supported by studies such as Ellis and He (1999), emphasizes the combination of visual and auditory inputs to enhance learning, particularly for learners with lower proficiency. Additionally, Screen-Sharing allows teachers to make real-time changes to their presentations by focusing on details or simplifying information to offer tailored input. This is consistent with the findings of Sauro (2011), which highlight the importance of real-time interaction and input modification in online learning settings. Screen-Sharing not only aids in learning through diverse inputs but also encourages peer interaction, enabling students to share their work for feedback. Furthermore, the Screen-Sharing feature allows instructors to offer tailored input that directly targets learners' areas of misunderstanding, promoting the interactive process emphasized by Long (1996) as crucial for language acquisition.

The Screen-Share feature allows instructors to integrate various modalities, such as visual, textual, and auditory elements, enhancing learners' comprehension by Proving context and reinforcing meaning. This aligns with the findings of Ellis and He (1999), who underscore the significance of multimodal input in SLA, as it enables learners to engage with content through multiple sensory channels. Consequently, learners gain from modified input through verbal interactions and visual representations, which help their understanding.

Zoom and Comprehensible Input: Polls/Quizzes

The Polls/Quizzes feature is an interesting pedagogical tool that offers immediate feedback and comprehensible input. In this context, computer-mediated communication involves using technology to facilitate communication between learners and instructors, aligning with working *with* computers (Egbert & Shahrokni, 2018) to provide feedback or check understanding during

a session, thus modifying L2 input during learning. This Zoom function enables real time interaction and serves as a tool for educators to evaluate understanding, promptly identify areas of difficulty, and adjust their teaching to align with the learners' current proficiency levels. This immediate reaction to students' errors is critical, as according to Long's (1996) Interactionist Hypothesis, modified input involves adjusting language to meet the needs of learners, ensuring that it is understandable and accessible.

In the context of Zoom's Polls/Quizzes, instructors can assess learners' comprehension through their responses and then offer immediate corrections or explanations to modify input. For example, if learners consistently answer a grammar question incorrectly during a poll, the instructor can promptly simplify their explanations or provide additional examples. This real time feedback loop supports input modification to enhance learner engagement, a vital principle of the Interactionist Hypothesis (Long, 1996). Building on this understanding, recent studies have highlighted the efficacy of interactive tools such as Polls/Quizzes in online learning environments (e.g., Al-Jarf, 2020). Unlike static teaching tools that offer only pre-recorded or unchangeable content, Zoom's live Polls/Quizzes foster a dynamic learning environment where input can be customized and adjusted in real-time. This adaptability enables instructors to consistently evaluate learner comprehension and modify the complexity of their explanations as needed (Sénécal & Cardoso, 2024).

Zoom and Comprehensible Input: Whiteboard

The Whiteboard option in Zoom is a valuable tool for facilitating real time interaction in L2 environments, as it allows instructors and learners to engage dynamically and responsively *through* technology (Egbert & Shahrokni, 2018), helping to structure and visualize ideas collaboratively. Additionally, Zoom's Whiteboard feature enables immediate modification of visual, textual, and interactive input, making it an ideal platform for addressing learners' pedagogical needs following the concept of comprehensible input. In alignment with this perspective, Zoom's Whiteboard allows instructors to adapt their input immediately during interactions, facilitating learning using visual aids, drawings, and written explanations in real time. For example, when learners struggle to understand a verbal explanation, the instructor can draw diagrams, highlight key terms on the Whiteboard, making the content more accessible. This aligns with the core idea of the Interactionist Hypothesis, which emphasizes the importance of adjusting input to match the learners' proficiency level and comprehension needs (Long, 1996).

Recent research indicates that interactive visual aids like digital Whiteboards can significantly improve learner engagement and understanding. Whiteboards can enhance visibility and promote interactivity since everyone can draw or write on them. They also allow for real-time adjustments, particularly in e-learning environments, thus enhancing the learning experience by providing visual aids which offer learners a modified form of input that they can engage with directly, enabling them to process and internalize the language more deeply. These observations align with Sauro's study (2011), who contends that combining visual, auditory, and textual input can significantly enhance second language acquisition. This multimodal approach allows learners to engage with the material, making it easier to tailor their learning experience to their level of understanding.

Educators can use a multimodal approach to create a dynamic environment encouraging participation and active learning. This approach stands out for its greater flexibility in accommodating visual and written input when contrasting Zoom's Whiteboard with other interactive tools like Polls/Quizzes. While the latter effectively gauges understanding and offers instant feedback, the Whiteboard permits more personalized input adjustments. Instructors can continuously tailor the language complexity, provide real-time corrections, and employ visual aids to enhance verbal explanations, thus catering to individual learners' needs more effectively. This is consistent with Al-Jarf's (2020) findings, which underscore the positive impact of tools that allow real-time adaptation and visual input on language learners' engagement.

Zoom and Opportunities for Output

The second feature of Long's (1996) Interactionist Hypothesis is the opportunity for output practice, which is crucial to L2 acquisition because it allows learners to practice, refine, and internalize linguistic structures through meaningful communication through interaction with peers and instructors. As learners communicate, they test their linguistic hypotheses, receive feedback and adjust their language use.

Zoom and Opportunities for Output: Chat

The Chat feature in Zoom allows learners to refine their language output by allowing them to compose, edit, and adjust their messages before sending them. In written communication, learners have more time to carefully consider their language use, resulting in more accurate and thoughtful responses. This semi-synchronous interaction facilitates adjusted output, as learners can refine their language based on feedback from peers or instructors. This analysis supports the research by Jiang (2021), which demonstrated that synchronous communication tools like Chat empower ESL learners to engage and refine their output by receiving immediate instructor feedback, ultimately improving language acquisition.

Zoom and Opportunities for Output: Video Conferencing

Video Conferencing offers an interesting opportunity for L2 education by providing a platform for interactive and synchronous communication, which aligns well with the Interactionist Hypothesis's focus on meaningful opportunities for output practice. This hypothesis posits that language learners benefit from opportunities to produce language in response to feedback from others, as it helps refine their linguistic competencies and adapt output in real time (Long, 1996).

In the ESL context, Zoom Video Conferencing facilitates this by allowing real time conversational exchanges, aligning with Cheung's (2021) conclusions that Zoom enhances learners' ability to immediately adjust their responses based on feedback from instructors or peers, thereby fostering more dynamic and adaptive language Learning-interaction.

Additionally, our analysis shows that Video Conferencing through Zoom allows teachers to use process-oriented approaches to interaction, focusing on spontaneous language use rather than pre-recorded material, a strategy that supports comprehensible input and modified output, crucial elements in ESL learning.

Finally, our analysis demonstrates that Zoom's Video Conferencing functionality, with its ease

of use and adaptability, makes it a practical tool for facilitating interactive L2 learning activities. Students can receive immediate corrective feedback and modify their language output, which directly supports the Interactionist Hypothesis's tenets of language development. Additionally, the analysis indicates that utilizing Zoom's Video Conferencing enables educators to adopt process-oriented methods for interaction, emphasizing spontaneous language usage instead of relying on pre-recorded content. This approach aids in providing comprehensible input and modified output, which are essential components in learning English as a second language.

Zoom and Opportunities for Output: Breakout Rooms

Zoom's Breakout Rooms create a virtual space for ESL learners to participate in small-group or paired conversations, providing ample opportunities to practice speaking—an essential aspect of Long's Interactionist Hypothesis. Long (1996) highlights the significance of output practice, which allows learners to experiment with their language use, identify gaps in their knowledge, and adjust based on Intended interaction and feedback. This process is necessary for developing proficiency in all skills. Breakout Rooms enable learners to produce output in authentic, conversational contexts, allowing them to refine their language knowledge. For instance, in a speaking task, learners might be prompted to discuss a topic, summarize a reading, or debate a concept. As learners produce output, they often encounter challenges in fluency or accuracy, encouraging them to refine their language through self-correction, peer feedback, or input from an instructor. This active engagement enables them to test and adjust their language output as they communicate with peers.

Long's Interactionist Hypothesis emphasizes the crucial role of output practice in language acquisition, as it allows learners to produce and refine their language skills through interaction and feedback. The Breakout Room feature is an excellent platform for facilitating such opportunities, as it allows learners to engage in small groups or paired discussions to practice their language skills in real time, potentially improving their language output through written communication (e.g., via a combination of Chat within Breakout Rooms) and oral exchanges. This analysis aligns with the findings of Tyen et al. (2022), which indicated that short, focused interactions in terms of comprehensible input and opportunities for output, like those occurring in Breakout Rooms, boost learners' skills in negotiating meaning and modifying their language use in real-time, thereby enhancing both fluency and accuracy. Consequently, this feature promotes language learning and comprehension and the active co-construction of knowledge, both vital for practical language use.

Zoom and Opportunities for Output: Share (Screen Sharing)

Zoom's Sharing capability is in line with the Interactionist Hypothesis, which highlights the importance of interaction in the learning process by offering chances for output and meaningful negotiation. The ability for multiple participants to share simultaneously and the use of Breakout Rooms further enrich collaborative learning by supporting turn-taking and focused discussions in smaller groups. Collectively, these functionalities create a vibrant setting where interaction fuels understanding and learning, positioning Zoom as an effective platform for activities centered around interaction and output. The use of Screen Sharing in Zoom supports the study by Kohnke and Moorhouse (2020) in which the multiple use of tools helps learners

with more engagement and more chances to provide output.

Zoom and Opportunities for Output: Polls/Quizzes

Polls/Quizzes offer learners instant feedback on their language use and understanding, prompting them to adapt their output. For instance, if learners receive quiz results indicating a misunderstanding, they are motivated to adjust their subsequent responses or seek clarification, consequently improving their language skills. The analysis provided here supports a previous study by Goodman and Moore (2023), in which real-time feedback from Polls/Quizzes enhanced learners' confidence and encouraged them to modify their output as they tested their knowledge and adjusted based on the feedback they received.

Zoom and Opportunities for Output: Whiteboard

The Whiteboard offers learners an interactive space to represent and modify their language output visually. Students can explain and adjust their explanations, correct errors, and refine their ideas by writing or drawing on the Whiteboard. The Whiteboard also enables peers and instructors to provide real-time suggestions, encouraging learners to improve their output. This analysis supports the research from Kohnke and Moorhouse (2020) and Dharmawati (2022), who reported that the use of Zoom Whiteboard boosts learner engagement, improves pronunciation accuracy, and enhances fluency. Their research demonstrated how the tool supports learners in refining their language skills through visual and written collaboration, ultimately resulting in more accurate and effective language use.

Zoom and Negotiation of Meaning

Examining modified output forms the basis for the concept of Negotiation of Meaning, a pivotal element of Long's Interactionist Hypothesis. Negotiation of Meaning encompasses the interactive process in which learners and interlocutors collaborate to clarify misunderstandings, request repetition, and adjust to ensure mutual understanding.

Zoom and Negotiation of Meaning: Chat

The Chat feature in Zoom is a valuable tool for facilitating the Negotiation of Meaning. It enables learners to type out questions, seek clarification, and request further explanations in real time, allowing them to address any misunderstandings as they occur. This process empowers learners to enhance their learning through active engagement with peers and instructors, ultimately leading to more effective language learning. This analysis reinforces Jiang's (2021) observation that Chat tools are highly effective for negotiating meaning in online L2 settings, as they allow learners to seek clarification without the immediate pressure of face-to-face interaction, thereby fostering a collaborative language learning environment.

Zoom and Negotiation of Meaning: Video Conferencing

Zoom's Video Conferencing is a valuable resource for fostering Negotiation of Meaning in language learning, closely aligning with the tenets of the Interactionist Hypothesis. During an L2 class, for instance, synchronous Video interactions offer students an immediate opportunity to resolve misunderstandings through strategies like clarification requests, confirmations, and rephrasing. Research supports that Video Conferencing can create conditions like face-to-face negotiation by encouraging learners to use gaze and gestures, which are essential in identifying

and resolving communication breakdowns (Li, 2022). This visual element, unique to face-to-face interactions and Web Conferencing, aids in more effective negotiation episodes, as learners can observe peers' visual cues and adapt their responses accordingly, resulting in improved understanding and linguistic adjustments (Li, 2022).

Zoom's multimodal setup, which features text Chat and Breakout Rooms (see forthcoming sections), improves these negotiation activities by enabling learners to validate and modify their language use in smaller group settings. This setup effectively fosters negotiation-rich interactions and allows learners to practice language in real time (Massner, 2021).

Zoom and Negotiation of Meaning: Breakout Rooms

Breakout Rooms offer a low-pressure setting for participants to practice negotiating meaning with their peers and facilitate a more engaging language learning experience. By actively working to ensure comprehension among all group members, participants enhance their language skills through collaborative problem-solving and meaningful interaction. In Breakout Rooms, participants can discuss topics within smaller groups, allowing for a natural exchange of ideas. When misunderstandings arise, participants can ask for clarification, rephrase their comments, or request repetitions, leading to deeper and more meaningful conversations.

Zoom and Negotiation of Meaning: Share (Screen Sharing)

Zoom's Screen-Sharing feature enables learners to visually complement their verbal explanations, thereby aiding in negotiating meaning when misunderstandings or communication breakdowns arise. Learners can practice and clarify their spoken or written language by sharing documents, images, or other visual aids, which helps them, and their peers understand the information being exchanged and negotiated more effectively. This study's analysis supports Cheung's (2021) findings, highlighting how the Share option in Zoom boosts learners' ability to negotiate meaning through multimodal resources. This feature has the potential to bridge understanding gaps, especially in virtual classroom settings.

Moreover, Whiteboard enables real time feedback, empowering learners to modify and refine their work based on guidance and suggestions from peers or instructors. This ongoing experimentation, feedback, and improvement process is crucial in interpreting meaning and helps learners grasp complex language structures. Table 1 presents an overview of the features examined, along with their definitions and how they relate to the key components of the interactionist hypothesis.

Zoom and Negotiation of Meaning: Polls/Quizzes

Polls/Quizzes serve not only as assessment tools but also as platforms for negotiating meaning. When learners respond to quiz questions or participate in Polls, immediate feedback can uncover misunderstandings, prompting them to seek further explanations or ask follow-up questions. This feedback loop facilitates the Negotiation of Meaning as learners collaborate in solving problems interactively to address gaps in their understanding. These insights align with Goodman and Moore (2023), indicating that online Quizzes often spark subsequent discussions where learners negotiate meaning based on their quiz performance, ultimately fostering a deeper understanding of the material.

When utilized for assessment, Zoom's Polls/Quizzes offer immediate feedback that allows for real-time adjustments to language delivery, aligning with Long's (1996) assertion that timely feedback is essential for learners to refine their language skills. It also supports the work of Al-Jarf (2020), which showed that online Quizzes, along with continuous assessment and immediate feedback, promote autonomous learning.

Zoom and Negotiation of Meaning: Whiteboard

Zoom's Whiteboard facilitates the Negotiation of Meaning by enabling instructors and learners to visually represent and modify ideas in real time. As learners interact with the content on the Whiteboard, they can request clarification or suggest alterations to the information presented, thus promoting an interactive understanding process. This tool supports learners in negotiating meaning through both written and visual methods. Analyzed within the framework of the Interactionist Hypothesis, digital Whiteboards enhance Negotiation of Meaning by offering a platform where learners can work together to tackle problems, ask for clarification, and refine their understanding through immediate visual interaction. Digital Whiteboards greatly enhance the negotiation process by allowing learners to visualize their thoughts and responses, thus fostering more interactive learning.

Research in online language learning consistently demonstrates that interactive tools, such as Whiteboards, significantly improve L2 learning by encouraging active engagement with language material (e.g., Wang et al. (2019). For instance, in a language learning setting, when learners encounter difficulties understanding a verbal explanation, instructors can utilize the Whiteboard to diagram concepts, emphasize key terms, or provide simplified versions of sentences (similar to a traditional blackboard). This approach enhances the accessibility of the content, making it easier for learners to grasp complex ideas.

Table 1.

Zoom Features Within an Interactionist Approach to SLA: Summary

	Interactionist Hypothesis Components		
Zoom Features	**Comprehensible Input**	**Opportunities for Output**	**Negotiation of Meaning**
Chat	Allows written clarification, simplified input, and rephrased explanations. Supports learners reviewing input repeatedly.	Enables learners to refine written output by composing and editing messages before sending.	Facilitates real-time clarification and rephrasing without interrupting the flow of interaction.
Video Conferencing	Real-time visual and auditory feedback helps instructors adjust speech and simplify input based on learner cues.	Encourages real-time conversational exchanges, enabling immediate adaptation of language.	Promotes meaning negotiation through gestures, facial expressions, and spoken rephrasing.
Breakout Rooms	Provides opportunities for simplified, small-group communication tailored to learners' proficiency levels.	Encourages active language use in smaller settings, facilitating practice and self-correction.	Low-pressure settings allow learners to clarify misunderstandings and refine their language use.
Screen Sharing	Combines visual, textual, and auditory inputs to enhance comprehension. Instructors can adjust materials in real time.	Allows learners to respond to visual stimuli and refine their explanations during shared content sessions.	Supports negotiation by visualizing spoken language through diagrams or documents to resolve misunderstandings.
Polls/Quizzes	Provides immediate feedback to adapt instruction and reinforce understanding.	Encourages learners to adjust responses based on quiz feedback, enhancing output accuracy.	Interactive feedback loops enable learners to seek clarification or further explanation.
Whiteboard	Offers real-time written and visual input to support comprehension.	Enables learners to visually represent, explain, and modify their language output collaboratively.	Facilitates negotiation through collaborative problem-solving and clarification of visual content.

Conclusion

In this study, we examined Zoom's capabilities as a platform for enhancing L2 acquisition, with a particular emphasis on its alignment with Long's (1996) Interactionist Hypothesis. By systematically analyzing various Zoom features, including Chat, Web/Video Conferencing, Breakout Rooms, Share, Polls/Quizzes, and Whiteboard, we assessed how these built-in tools support essential constructs from the Interactionist Hypothesis: access to comprehensible input, opportunities for output practice and feedback, and negotiation of meaning. As such, our analysis contributes to the growing body of literature on integrating technology in language learning, particularly within the realm of CALL, where adaptive and interactive digital environments are playing an increasingly important role.

The implications of this study extend beyond Zoom's practical applications for language learning and underscore the necessity for ongoing research to enhance the pedagogical potential of digital platforms across different instructional contexts. Future investigations should concentrate on how Zoom features can be adapted to the specific needs of learners with varying proficiency levels. Additionally, comparative analyses could provide deeper insights into its relative effectiveness and help identify best practices for integrating multiple digital tools in creating comprehensive language learning ecosystems. Future research should also examine the effectiveness of individual Zoom features with pre-post-test designs, preferably in longitudinal settings.

While offering valuable insights into Zoom's potential for facilitating L2 learning, the study presents several limitations. First, the analysis focuses on Zoom features without examining their effectiveness through empirical, learner-focused research, such as pre-post-tests or longitudinal studies. Second, the study relies on secondary sources rather than on the direct evaluation of learners' outcomes. The rapid pace of technological advancement also limits the findings, as Zoom's features and competitors will evolve, potentially rendering the conclusions less relevant over time. Finally, the scope of the study does not fully address the varied needs of learners with diverse linguistic backgrounds or proficiency levels, nor does it explore challenges like technological accessibility, user familiarity, or instructor training, all of which may influence the platform's efficacy in real-world contexts.

In conclusion, this study highlights Zoom's diverse advantages as a powerful platform for facilitating L2 acquisition. Its interactive and highly flexible (and theory-agnostic) features enable educators to integrate essential SLA principles into virtual learning environments. As online education continues to grow worldwide, platforms such as Zoom are set to play a crucial role in enhancing the scalability, accessibility, and personalization of language education to meet individual learning needs.

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