Affordances for a meaningful educational experience through Task-Based Learning: presence at a distance

Propiciando uma experiência educacional significativa usando a Aprendizagem Baseada em Tarefas: presenças na distância

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Abstract
The present study was prompted by the sudden appearance of the COVID-19 pandemic, which affected the education system as a whole. The virus did not spare learning English as a Second language (L2) and forced classes to go fully online. This transition imposed significant educational barriers, as interaction is essential for L2 developing. This study analyzes an online English course using Task-Based Learning mediated by a synchronous communication tool (Zoom). By using a model of community inquiry, we aim to investigate whether this technology-mediated learning environment affords a meaningful educational experience composed of three essential elements: cognitive presence, social presence, and teaching presence. Our study adopts a netnographic methodology adapting the ethnographic method to include the influence of online environments. Forty-two students from the Sul-rio-grandense Federal Institute of Education and Technology - Campus Pelotas from different technical and undergraduate programs answered an online Community of Inquiry questionnaire after participating in the online classes. Findings suggest that Technology-mediated Task-Based Learning affords the emergence of a relevant educational experience, helping students develop English as an L2 and presenting the potential to influence future pedagogical practices. Our results also suggest that this particular learning experience helped students to keep cognitively active during social isolation. Using a synchronous communication tool enhanced the learning process and learner’s agency, affording meaningful interaction and aiding students in navigating the difficult moment imposed by the COVID-19 pandemic.

Keywords: Covid-19. Task-Based Learning. Educational experience.

Resumo
O presente estudo foi motivado pelo surgimento repentino da pandemia da COVID-19, que afetou o sistema educacional como um todo. O vírus não poupou o aprendizado de inglês como segunda língua (L2) e obrigou as aulas a serem totalmente online. Essa transição impôs barreiras significativas, pois a interação é essencial para o desenvolvimento de uma segunda língua. Este estudo analisa um curso de inglês online utilizando Aprendizagem Baseada em Tarefas mediatizada por uma ferramenta de comunicação síncrona (Zoom). Utilizando um modelo de investigação comunitária, pretendemos investigar se este ambiente de aprendizagem mediado pela tecnologia proporciona uma experiência educacional significativa composta por três elementos essenciais: presença cognitiva, presença social e presença de ensino. Nosso estudo adota uma metodologia netnográfica adaptando o método etnográfico para incluir a influência dos ambientes online. Quarenta e dois alunos do Instituto Federal Sul-rio-grandense de Educação e Tecnologia - Campus Pelotas de diferentes cursos técnico e de graduação responderam a um questionário online da Comunidade de Inquérito após participarem das aulas online. Nossos resultados sugerem que a Aprendizagem Baseada em Tarefas Mediada por Tecnologia proporciona o surgimento de uma experiência educacional relevante, ajudando os alunos a desenvolver a língua inglesa como L2 e apresentando o potencial de influenciar futuras práticas pedagógicas. Nossos resultados também sugerem que essa experiência de aprendizado específica ajudou os alunos a se manterem cognitivamente ativos durante o isolamento social. O uso de uma ferramenta de comunicação síncrona aprimorou o processo de aprendizagem e a agência do aluno, proporcionando interação significativa e auxiliando os alunos a navegar momentos difíceis impostos pela pandemia da COVID-19.


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1 Introduction

The coronavirus pandemic drove students away from the school environment imposing significant barriers for developing educational experiences in general. More specifically, in teaching and learning English as a second language (ESL), in addition to substantial infrastructure and emotional questions, the lack of face-to-face interaction emerged as a difficult hurdle to overcome (LOPES, Jr. et al., 2022). A significant number of schools were taken aback by the pandemic, an additional problem was that some schools took a considerable amount of time discussing a crucial issue: how to move from regular face-to-face interaction to online learning so suddenly. According to pagbrasil.com, internet penetration reached 70% in Brazil in 2019, above the global average of 57%. More than 149 million out of the country’s nearly 212 million inhabitants are internet users (PAGBRASIL, 2019). Nevertheless, students, especially those from the lower social classes, do not have high-speed internet at home. This connectivity limitation came as another barrier to schools: providing internet connection to students who did not have the financial conditions to pay for it. The policy of the Sul-rio-grandense Federal Institute was to not leave any students behind and bring them all together to the online environment.

While school administrators and teachers discussed how to adapt teaching practices to the technology-mediated environment and afford conditions for all students to participate in online classes, we came up with a proposal to carry out activities different from those planned for the regular semester to bring students together during this difficult time. Simultaneously, these activities would have to meet the students’ language level, keeping students in contact with the language, which is essential, especially for beginners. In order to seek a solution to the problem previously presented, it was possible to experience an approach to teach ESL mediated by technologies in a world where everyone was adapting to distance learning activities and could eventually be used in schools even in post-pandemic times. In this investigation, we tested Technology-Mediated Task-Based Learning (TBL) as a teaching and learning approach to ESL, aiming at fostering a meaningful learning experience based on the organization of a community of inquiry for educational purposes (GARRISON, ANDERSON, ARCHER, 2000). The interactions and learning affordances in this new environment constitute three essential elements to an educational transaction: cognitive presence, social presence, and teaching presence introduced by Garrison Anderson and Archer (2000) to qualify the process of learning ESL assisted by technology. The present study attempts to discuss the relevance of such presences when teaching ESL in a technology-mediated environment.

We also aim to answer the following guiding questions through the lens of the community of inquiry framework (GARRISON, ANDERSON, ARCHER, 2000):
i) is it possible to develop a meaningful educational experience when teaching ESL using Task-Based Learning mediated by a synchronous communication tool?

ii) has this learning experience helped students keep cognitive activities in their routines, also aiding in maintaining mental health when they could not attend regular classes?

iii) is it possible to offer a technology-mediated educational experience not only during pandemic times but also in future pedagogical initiatives?

The next section of this paper provides an overview of the literature, followed by the methodological aspects, results, and discussion. Finally, we attempt to answer our research questions and suggest future pedagogical practices using synchronous communication tools, mainly in the context of the Federal Institutes of Education and Technology.

2 A community of inquiry in online learning

2.1 ESL teaching at the Sul-rio-grandense Federal Institute of Education and Technology

ESL is part of the curriculum at the technical level programs (secondary school) at the Sul-rio-grandense Federal Institute in Pelotas during four of eight semesters, the minimum duration of courses at this level. It is a requirement for students to attend English classes from the fourth to the seventh semester. The ESL syllabus is designed based on the Common European Framework of Reference for Languages (CEFRL), an international standard for describing language ability. It describes language ability on a six-point scale, from A1 for beginners to C2 for those who mastered a language. Teachers aim to approach all contents from the A1 level during the four semesters of ESL classes, enabling students to understand and use familiar everyday expressions and very basic phrases aimed to satisfy the needs of a concrete type. Students can introduce themselves and others and ask and answer about personal details such as where they live, people they know, and things they have. They can also interact in a simple way, provided the other person talks slowly and clearly and is prepared to help. Finally, teachers also intend to arouse students’ curiosity and motivate them to look for additional learning opportunities inside and outside the Federal Institute with the help of the internet.

2.2 The elements of an educational experience

Suddenly, synchronous communication tools became part of our lives during social distancing times. Daily lives, family, and work meetings were mediated by software such as Zoom and Google Meet. Classes, mainly from private institutions, moved quickly to technology-mediated environments using the same communication tools. Public institutions, Federal Institutes as an example, took a little longer to go online as public administrators needed to ensure that all students had internet access.
While students waited for this essential organization, we decided to offer an on-line English course to students, so they would not be cognitively idle during the wait. Students who participated in this course were regular students at the first author’s classes. We intend to demonstrate that environments mediated by synchronous communication tools show the potential affordances to create a community of inquiry (COI) for a successful language learning experience. A COI assumes that learning occurs within the Community through the interaction of thee core elements: cognitive presence, social presence, and teaching presence (GARRISON, ANDERSON, ARCHER, 2000). However, we should first understand how to foster this type of community that supports meaningful learning.

For the pioneers in the area (GARRISON, ANDERSON, ARCHER, 2000), a meaningful educational experience is embedded within a COI consisting of teachers and students – the key participants in the learning process. We would also add the environment in which the experience takes place. In the case of this study, a technology-mediated one, as without it, mediation would not exist, and consequently, there would be no community to investigate. When investigating a technology-mediated environment, using a synchronous communication tool (Zoom) as in this study, we followed the COI framework proposed by Garrison, Anderson, and Archer (2000), seeking indications of three core elements: cognitive, social, and teaching presences. However, before going any further, we should elaborate on the concept of “presence” from the point of view of “distance.” After all, what does it mean to be present in an online context? Tori (2010) argues that the concepts of presence and distance are quite limited in the educational context. He adds that it is essential to discuss possible distances when considering the notion of presence. Tori (2010) points out that the educator should consider three types of distances when planning learning activities: spatial, temporal, and transactional. The first one is related to the physical space/distance, separating or joining students and teachers. The temporal distance regards the synchronous and asynchronous moments, and lastly, the transactional distance is what Moore (2002) calls “psychological distance perception.” The psychological perception of distance refers to the pedagogical factors of the teaching and learning process, so the term distance does not only embrace geographical issues. The teacher-student relationship, separated in space and time, the structure of the classes, and students’ autonomy are elements that contribute so that, even geographically distant, students and teachers feel “close” to each other. The last one takes place not only in the face-to-face environment but also in the virtual one. Tori (2010) believes that combining the three distances enables different ways to carry out educational activities. Depending on the type of distance, the teacher should use different presences. He highlights that the concept of presence seems simple, but this concept has become increasingly more complex due to technological developments.
Today, it is possible to join presence and distance in the same activity using synchronous communication tools, virtual environments, and other possibilities to reduce distances (TORI, 2010, p. 6).

According to the International Society for Presence Research, presence regards a psychological state related to two factors: perception and experience. In other words, to feel present in any place, it is necessary to experience the situation using or not the Digital Information and Communication Technologies (DICT) such as computers, tablets, smartphones, and digital boards. These devices enable the participants to perceive a meaningful experience of belonging to a place, a group of people, and the proposed task. Tori (2010) states that interactive technologies provide several ways to offer a sense of presence to the participants of an activity. In this regard, we approach the cognitive, social, and teaching presences in this study to show the potentialities of each one in the process of developing English as a second language.

Garrison, Anderson, and Archer (2000) state that cognitive presence is a vital element in critical thinking, a process and outcome frequently presented as the ostensible goal of education. Social presence is defined as the participants’ ability in a COI to project their personal characteristics into the community, presenting themselves to other participants as “real people.” The third element of the framework, teaching presence, consists of two general functions, which any participant of the COI may perform: the first is the design of the educational experience, including selection, organization, and presentation of course contents, as well as the design and development of learning activities and assessment performed by the teacher. The second function, facilitation, is the responsibility shared among the teacher and some or all of the students.

The following table groups the indicators into categories to point out the phase or aspect of each element demonstrated by the indicators. We intend to deal with this table in depth when analyzing our results.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Categories</th>
<th>Indicators (suggestions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive presence</td>
<td>triggering events</td>
<td>sense of puzzlement</td>
</tr>
<tr>
<td></td>
<td>exploration</td>
<td>information exchange</td>
</tr>
<tr>
<td></td>
<td>integration</td>
<td>connecting ideas</td>
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<tr>
<td></td>
<td>determination</td>
<td>apply new ideas</td>
</tr>
</tbody>
</table>
The table above describes the relationship between the three essential elements for creating a COI and the indicators in a technology-mediated environment. Even geographically distant, teachers and students can build from the three presences and characteristics pointed out above. This online learning environment provides satisfaction, autonomy, and student engagement, which we intend to discuss further in the results section. The investigation questionnaire described in the methodology section uses these elements and respective categories.

### 2.3 Creating an educational experience (a community of inquiry) through Technology-mediated Task-Based Learning

This article aims attempts to show that cognitive, social, and teaching presences can be identified in an ESL online class, especially using Technology-mediated TBL. Task-Based Learning is an approach to teaching and learning English as a second language (L2), which has received widespread attention from language teachers and researchers since the late 80’s and early 90’s. According to Bygate (2015), TBL has challenged established beliefs and practices within the domains of developing a second language. Still using the words of Bygate (2015), tasks are designed to create a space in which work is student-led and from which teachers step back. Teachers are supposed to retain the responsibility for mediating students’ entry into this new learning space, support them while in it, and accompany them as they leave. Teachers have a crucial role in negotiating with students, not only the task but the class interaction (BYGATE, 2015). When using TBL, learning takes place through task performance rather than for task performance (ELLIS et al., 2020). According to Ellis et al. (2020),
learning is an incidental process based on learners’ communicative needs, in other words, learning by doing.

Long (2015) also states that learning is incidental when using TBL. Students learn the language while doing other activities, and the focus is the content and not language items used in the process. Learners are expected to analyze the given affordances and, based on this analysis, reach conclusions regarding grammar rules and the meaning of unknown words, going through the same natural development of the second language as if they were in the country where the language is considered the first. Among the ten methodological principles Long (2015) proposed, one should promote a cooperative and collaborative learning process to develop a second language better. Pair and group work offer learners relative privacy and anonymity. They can try out new language items beyond the scrutiny typical with full class participation (LONG, 2015).

In recent years there has been growing interest in Technology-mediated Task-Based Learning (GONZÁLEZ-LLORET; ORTEGA, 2014; THOMAS; REINDERS, 2010). Lai and Li (2011) claimed that technology-mediated TBL presents some advantages over face-to-face TBL. “TBL expands the range of resources available to the learner, enhances learners' motivation to undertake tasks, increases learners' agency and sense of ownership of tasks, and it facilitates the provision of follow-up work in the post-task stage”. (LAI; LI, 2011)

Based on the characteristics of TBL, we attempt to demonstrate that it is possible to create a community of inquiry in a technology-mediated environment using TBL. We intend to identify indicators for cognitive, social, and teaching presences that afford an educational experience. We discuss our findings in section 4, after the next section, which aims to establish the methodological procedures for the study.

3 Methodology

3.1 Context of the study

This study used a netnographic research method to collect and analyze data. Netnography is an adaptation of ethnography, which is participant observation but applied to online environments (KOZINETS, 2014). We decided to use this method as it seems more appropriate to analyze this new ESL learning environment mediated by a synchronous communication tool. There are five steps to a netnographic method according to Kozinet (2014): i) the definition of research questions, ii) community identification and selection, iii) engagement and immersion in the community and data collection, iv) data analysis, and iterative interpretation of findings, v) writing, presenting and reporting research
findings. This study followed these steps by establishing the research questions (see above), identifying and describing the students’ community; the teacher was then engaged in the classes and collected data by recording the lessons for later analysis, and we now report the findings.

3.2 Participants

The study involved forty-two students from the Sul-rio-grandense Federal Institute of Education and Technology – Campus Pelotas from different technical and undergraduate programs. Students participated in online classes while waiting for school administrators and teachers to provide a technology-mediated environment in which they could continue their regular studies. Data in our investigation originated from these classes, which were totally at a distance using Zoom.

3.3 Design of the study and data collection

We used a COI questionnaire that focused on creating a community of inquiry in technology-mediated environments; in the case of this study, the synchronous communication tool Zoom. Garrison et al. (2000) elaborated the original questions. We translated and adapted them to Portuguese as we considered that students would not fully understand the questions in English. The version in Portuguese, such as the one in English, consists of 34 questions divided into three domains representing the necessary or desired elements for a meaningful learning experience: cognitive presence, social presence, and teaching presence. The respondents should indicate the degree of agreement and disagreement with each item using the five points of the Likert scale: (1) strongly agree to (5) strongly disagree. The form was available at the end of the classes for seven days on Google Forms, and we sent students a link to access and answer the questionnaire. Firstly, we carried out a descriptive statistical analysis using the students’ answers to the questionnaire. Second, we opted to use the same domains from the questionnaire to carry out a qualitative analysis.

4 Results and Discussion

This section presents results, reflections, and a discussion about our findings. According to Arbaugh et al. (2008), there are no valid and reliable measures to test a community of inquiry questionnaire. Therefore, we decided to carry out a descriptive statistical analysis based on the answers to the questionnaire and confirm these answers using qualitative analysis to answer our research questions.

The questionnaire can be accessed using the following link:
https://docs.google.com/forms/d/1r_EBLoKvht_SozNUTlvWHYsaDWDiglwTQxXL2aOLZnQ/edit
4.1 Descriptive and statistical analysis

The quantitative findings of our investigation come from a questionnaire using the domains of cognitive, social, and teaching presences and assess the creation of a community of inquiry and ultimately the affordances for an educational experience when there is an interaction of the three presences (GARRISON et al., 2000). We performed a descriptive statistical analysis to collect, describe, organize, and present our findings to reach conclusions combined with the qualitative analysis.

The first domain of the questionnaire assesses teaching presence. Students should indicate the level of agreement or disagreement with 13 statements (1-strongly disagree; 2-disagree; 3-neutral; 4-agree and 5-strongly agree). Few participants chose either 1 or 2. Most of the answers were between alternatives 3 and 5, and options 4 and 5 were the most frequent. If all participants strongly agreed (5), the total possible score would be 2730 points. The teaching domain reached 2200 points, representing 81.3% of the students’ perception regarding teaching presence. There were nine statements in the second domain, social presence, with a total score of 1890 points. The participants’ answers reached 1334 points representing 70.5% of social presence perception in a technology-mediated environment. The third domain included 12 statements with a total score of 2520 points. The total score was 1977, representing 78.4% of cognitive presence perception in this learning environment.

The percentage average of teaching presence (81.3%), social presence (70.5%), and cognitive presence (78.4%) is 76.7%. This percentage indicates a reasonable perception of the core elements (presences) and enables us to characterize this particular community of inquiry mediated by Zoom as a meaningful educational experience. The graph below demonstrates the distribution of the three presences in this educational experience.

![Educational Experience](image_url)

**Figure 1.**
The graph above shows that teaching, social and cognitive presences are well distributed, affording a meaningful educational experience. As shown, the percentage of social presence is slightly lower than the other two presences. This small difference, yet relevant, may indicate that social presence needs to be better explored in the technology-mediated learning environment so that students not only learn the content (teaching and cognitive presences) but also feel part of a learning community (social presence). Although it does not seem to be a significant difference, we intend to propose a possible explanation in the following section.

4.2 Qualitative analysis

In the first domain of the questionnaire, teaching presence, all statements reached high scores. However, statements three and four reached the highest scores. Statement three, which approaches whether the teacher provided clear instructions on participating in course learning activities, reinforced a sense of community among course participants. Statement four demonstrates that the teacher clearly communicated important due dates/time frames for learning activities. The total score of both statements added that all other statements reached a high score, demonstrating students’ perception of the teaching presence. These findings corroborate the importance of students’ perception of the teaching presence mentioned by the International Society for Presence Research. It highlights the role and importance of the teacher in creating the affordances for this presence to emerge. It is also in agreement with Garrison, Anderson, and Archer (2000) reinforcing the teacher’s actions in organizing, facilitating, and instructing the online interactions.

On the other hand, statements two and eleven presented the lowest scores. Statement two considered whether the teacher communicated essential course goals, and statement eleven whether the teacher helped focus discussion on relevant issues in a way that helped students learn. These low scores suggest teachers should consider the relevance of establishing clear course goals and showing students relevant learning topics.

The statements regarding the social presence, assessed in the second domain, did not reach similar scores as teaching presence, but they could also be considered high. We would like to highlight number 21, stating that students felt that their point of view was acknowledged by other course participants, and 22, which demonstrated that online discussions helped students develop a sense of collaboration. The fact that students felt respected by colleagues afforded meaningful interaction, demonstrating that students recognized the social presence. Technology-mediated tasks can promote collaboration among students and afford interaction that facilitates learning and motivates students to continue improving their language skills (GONZÁLEZ-LLORET, 2020). Our findings agree with Tori
(2010) concerning social presence. According to the author, the used technology does not directly interfere with the feeling of “being socially inserted” in a group. Our results suggest that the elements “open communication” and “group cohesion” listed by Garrison, Anderson, and Archer (2010) were essential for the emergence of a social presence in this learning environment. The use of a technology-mediated environment creates affordances for learning interactions, but group spirit and the fact that students are respected afford a meaningful learning interaction.

Still in the social domain, statements 14 (getting to know other course participants gave students a sense of belonging in the course) and 17 (feeling comfortable conversing through the online medium) presented the lowest scores. We can thus hypothesize that teachers should provide more activities to afford interaction among participants. On the other hand, students should be willing to participate more actively in these activities. Our experience has shown that a relevant percentage of the students do not turn on their cameras, let alone participate in the proposed activities. This fact is also related to not feeling comfortable conversing through the online medium. Experience has also shown us that some students attend online classes from places, e.g., while working in a bakery, which are inappropriate for learning, and feel embarrassed to turn on their cameras and participate in the activities.

We also found significant scores in the third and last domain of the questionnaire, cognitive presence. We highlight two items: first, number 30, which states that learning activities helped students construct explanations/solutions; second, number 34, which states that students can apply the knowledge created in the course to their work or other non-class related activities. The total score in these two items demonstrates students’ perception of cognitive presence. Considering these findings, we conclude that perception of the experience afforded cognitive presence. In other words, students engaged in the educational experience using triggering events, exploration, sense of puzzlement, and information exchange (GARRISON, ANDERSON, ARCHER, 2000). However, items 27, brainstorming and finding relevant information, helping students resolve content-related questions, and 32, in which students can describe ways to test and apply the knowledge created in the course, presented the lowest scores in this domain. Although students state they can apply the knowledge created in the course, they do not seem to describe what they learned.

5 Final remarks

The results and discussion we have presented in this study come from a learning experience afforded by a technology-mediated English course offered to the Sul-rio-grandense Federal Institute students during social distancing measures adopted to mitigate Covid-19. Our investigation aimed to
answer three research questions through the lens of the community of inquiry model (GARRISON, ANDERSON, ARCHER, 2000), which we approach as follows.

Evidence from our study suggests that Task-Based Learning mediated by synchronous communication technology afforded an educational experience when teaching English as an L2. The descriptive statistical analysis originated from a questionnaire that assesses the creation of a community of inquiry, provides insights into the emergence of an educational experience in this new learning environment. The averaging percentages between teaching (81.3%), social (70.5%), and cognitive (78.4%) presences is 76.7%, suggest a considerable perception of these three essential elements of a community of inquiry. The qualitative analysis points towards the same direction and implies students’ perception of all the three presences in this online environment using TBL.

Our results also suggest that this particular learning experience helped students keep cognitive activities, maintaining participants’ mental health when they were not supposed to leave their homes to meet their colleagues. Results show that using a synchronous communication tool enhanced the learning process, learner’s agency and afforded a meaningful interaction, helping students navigate the difficult moment of isolation.

We have suggested that it is possible to afford an educational experience mediated by synchronous communication software that embraces pedagogical impact not only during social distancing times but also when face-to-face instruction retakes place. This type of practice, which is now standard practice at the Sul-rio-grandense Federal Institute, could enhance exposure to English as an L2 affording more opportunities for students to develop communicative competence. However, despite the availability of synchronous communication tools such as Zoom and Google Meet, there has been relatively little research conducted using these tools (ZIEGLER, 2016 a). Further studies are needed as there is a growing need to better understand the pedagogical implications of interaction within a technology-mediated environment (ZIEGLER, 2016 b). We are aware that our study may have some limitations. The number of students who answered the questionnaire (42) might be low. Nevertheless, we believe that the percentages found in our study may be transferable to a larger sample. The fact that some students did not turn on their cameras during the online classes might have affected the results in the social domain.

We are currently in the process of investigating the affordances created to develop Symbolic Competence (KRAMSCH, 2006, 2021; VETROMILLE-CASTRO, 2017) in the same learning environment using TBL mediated by synchronous communication. In our view, technology-mediated Task-Based Learning affords a meaningful learning experience. It could be a practical approach in
developing linguistic and symbolic competence and intercultural awareness as most international encounters in which English is used take place in the absence of native speakers of English (GRADDOL, 2006). Once the Covid-19 pandemic is under control, our future challenge will be to balance online and face-to-face instruction. Our work has led us to conclude that online classes mediated by Zoom using TBL as a learning approach have the potential to afford the emergence of a meaningful learning experience for all participants.

References


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