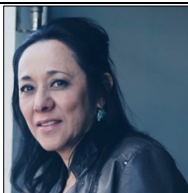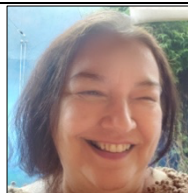# Dialogic approach to the analysis of the meaning-making process in a blended setting

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Abstract

This paper analyses meaning-making processes in a blended setting—face-to-face interaction and web forum—purposely created for collaborative learning activity. The analysis focuses on one pair out of 14 dyads. The dyad comprises two female students aged 17 and 18 who attended a Brazilian third-year state secondary school. We envisioned intertextuality in a seamless thematic flux using a single theme—about everyday problems in the culture—by two different problem-solving tasks. Task#1 required discussing two polemic reports published in an online newspaper: one in favour of using digital technologies in class, the other against it. Task#2 involved perspective-taking, where students should imagine the school in 20 years. Afterwards, the pair participated in an episodic interview focusing on their participation in both tasks. The interactions were video recorded. To map the meaning-making processes, we applied the dialogic thematic analysis looking for centripetal and centrifugal forces. A semantic map was drawn and discussed. Altogether, the paired and grouped collaborative activities in blended learning promoted authorial production. Our dyad achieved reflective meta-analysis when they compared their viewpoints with the perspective of their colleagues by using justifications and explanations grounded in their production, generating reflexivity and agency in dialogue.

Keywords: web forums; dialogic blended setting; meaning-making; Secondary Education; dialogic thematic analysis.

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Introduction

New education challenges can potentially expand dialogic teaching-learning processes. The post-pandemic scenario in education calls for new practices and methodologies in blended learning settings where online and face-to-face strategies are mixed and combined (Singh, 2021). Blended learning improves its effectiveness when educational methods are based on dialogic principles (Ligorio, 2021). It enhances collective-authorial production through multimodal teaching-learning (Barbato & Beraldo, 2020). The challenge now is double-fold. From one side, scholars are required to produce new educational methodologies able to inspire blended settings to create interactive and ubiquitous learning oriented to the demands of students. On the other hand, it is crucial to bridge the digital divide often exposed by the pandemic.

The substantial socioeconomic gap in the Brazilian school system became more visible during the Covid-19 crisis and was manifested in different conditions and access to continued educational endeavours. Although the earliest programs for innovative educational technologies in public schools began over two decades ago, with the urgency of remote learning, it became evident that the in-service teachers had a problem with educational technology. This revealed that, despite successful dialogical learning practices in progressive and democratic Brazilian schools, there still exists among the teachers a significant orientation to traditional teacher-centred content learning. Teachers without or with little experience in digital environments tended to transpose traditional face-to-face methods to digital environments, favouring the replication of interactions shaped by traditional monologic strategies, such as Initiation-Response-Follow-up (IRF) (Sinclair & Coulthard, 1975) and Initiation-Response-Evaluation (IRE) (Mehan, 1979).

New ways to interact with students and to sustain students' interaction in digital environments seek new epistemic instruments to establish novel semiotic grounding systems (Ritella & Hakkarainen, 2012), multimodal modes of communication, and transference of responsibility in collaboration (Barbato & Beraldo, 2020).

Nowadays, technology allows diverse kinds of participation, and new psycho-pedagogical models are emerging based on freedom-to-learn where students raise their real needs and interests (Marjanovic-Shane, 2011; Matusov & Marjanovic-Shane, 2017; Matusov, 2020; Ritella et al., 2021). Moreover, the knowledge in our time is interconnected. It is a live organism coordinated in real time both through human intelligence and artificial machine intelligence (Lévi, 1999). Even if you do not participate directly in the digital world, you will be impacted by it in some way. In times of digital disruption and urgency, innovation increased the use of digital technologies, mainly video conferences, webinars, software applications (Apps), platforms, and many types of mobile devices. All of these technologies support and trigger expectations and behaviour changes in institutions and society. "Technology catalyses changes not only in what we do

but in how we think. It changes people's awareness of themselves, of one another, of their relationship with the world" (Turkle, 1984, p. 18-19). Technology changes fast over time and is best suited to social life.

Blended learning methodologies could be thought of from outside school—in social use, as social media tools develop and innovate quicker than in educational settings. Blended dialogic settings further increase dialogical potentialities in education (Beraldo et al., 2021; Barbato & Beraldo, 2020; Ligorio et al., 2020; Stahl, 2006; Trausan-Matu et al., 2008). Dialogic education implies being and acting in a collaborative dynamic with the Other, mutually and discretely transforming the teaching-learning (inter)history as interlocutors. Praxis emerges from the common ground of the activity itself, negotiated by the dyad or group to reach collective goals, virtues, and values (Sidorkin, 1996). Engaging students ontologically in natural situations may generate legitimate and spontaneous questions that can reach a high critical level to encompass each other's productions, contributions, and actions (Matusov, 2009).

Changes between old values and beliefs and the new knowledge allow the interplay between the known and its critique that may impact personal and collective senses. Such transaction processes work as open dynamics on the actualisation of meanings, enabling students to expand their understanding and repertoire of the problem in focus from different standpoints and positions (Barbato & Beraldo, 2020).

Collaborative learning processes enhance students' authorial role in creating new interpretations, positions, and solutions to problems, sometimes without the direct intervention of the teacher. The group itself can move from an initial exchange of accumulating information to an ontologic agentic collaboration. Collaboration spurs engagement with responsibility and care principles, forming ethical positions on dilemmas. Sensitive matters close to students' interests can promote or impede cooperation, prompting discursive rifts and triggering various constraints and opportunities in negotiating meanings (Barbato & Beraldo, 2020). Sharing responsibility in joint activities builds trust in which everyone has the right to express themselves and promotes ontological dialogues (Matusov, 1996; 2009; Sidorkin, 1996).

Chronotopes (Bakhtin, 1986) refer to how interlocutors' actions and communication create axioms and the sense of temporal contiguity in social dimensions. Online, space-time perception is modified by the immediacy of communication and by facilitated ubiquity (being present everywhere at the same time). Blended chronotopes add many layers and dimensions to face-to-face and remote communications, actualising meaning-making in synchronous and asynchronous flows (Barbato & Beraldo, 2020; Perrino, 2020). The possibilities of experiencing new chronotopes affect other people's perceptions of places, temporal contiguity, and openness in dialogue (Beraldo et al., 2017). The configuration of an online chronotope sets up different possibilities for socialisation. For example, students may interact with peers outside their school or in neighbouring schools to resolve an issue raised by the teacher (Ligorio et al., 2005; Ligorio et al., 2008).

Individual and collective commitments prompt different viewpoints and open gaps that may promote ontological changes. For instance, by extending an online collaborative forum for two weeks (or more), students will use the lag between reading and writing to reflect and compare their opinions. The feedback on the play between individual and collective positioning and reflexivity promotes psychosocial development aspects, such as managing conflicts and their possible solutions. This type of collaborative learning triggers negotiation and changes in I-positions. It improves students' level of agency, defined as reflexive acts in a developing situation, allowing the emergence of dissonant and fine-tuning intersubjective processes (Beraldo et al., 2017; Ligorio et al., 2005; Ligorio et al., 2008; Matusov, 1996). Collective meaning-making (as a process of assigning meaning to knowledge and actions connected to its production) orients the exploration of possible, alternative solutions that impact the interpretations of oneself, the other, and the problem at hand.

Dialogism in collaborative activities in blended learning

Collaborative activities in blended learning allow for adding more layers as multimodal communication texts, including spoken language, videos, podcasts, emoticons, images, animations, writing texts, gifs, links, memes, pictures, etc. Features of face-to-face and online communication are selected and combined. In a blended setting, temporality is modified. Interlocutors have more time to exchange dialogue turns and can express themselves using a new multimodal language, i.e., the language of new generations. It engenders diverse possibilities for horizontal authorial exchange of viewpoints and may break hierarchies in learning (Evans et al., 2011; Gilje, 2019; Pifarré & Staarman, 2011).

In blended settings, multimodal communication, or other modes than oral and written to express oneself, is perceived in chronological and anachronic ways. In multimodal environments, for example, students can simultaneously accompany their community and many other online communities (LIVE, podcast, webinar, interview etc.) discussing the same topic. Web forums, for example, became quite complex when students added these different web sources. The production is actualised on multiple layers by polyphonic dynamics (other voices may appear) (Barbato & Beraldo, 2020), and it opens to innovations and heteroglossia.

Blended Chronotopes create interplays between synchronicities and asynchronicities in knowledge production. Time multiplies, becoming manifold, planned to offer seamless learning experiences, i.e., intertextual (Barbato & Beraldo, 2020), ongoing bridged multi-faced learning possibilities that flow across location, time, technologies and social environments (Kayalar, 2022). One of the main features of any digital platform is that it keeps layers of information that become a source of new reflexivity, propositions, meta-analyses etc., for a long period of time. Then the production of knowledge, as well as expectations along the interaction, stands between the present abstract knowledge and meta-representation for future applications. Pedagogy that supports authorial learning thrives on dialogical principles, furthering shared, negotiated meaning-making in the discussion. In polemic web forums, meaning-making depends on the impact of ethical educational problems and their consequences in social life.

In general, a psycho-pedagogy model supporting authorial learning thrives on dialogical principles. Within this framework, knowledge can further be shared, and meanings are continuously negotiated based on participants' positioning and shifting positions. This text presents a polemic web forum as a collaborative learning activity based on the dialogism principle, in which students debate a theme previously not applied at their school. This strategy widened paths towards a transactional space of aesthetic and ethical experience with others and the students' engagement through the interlocutor's appraisal.

The web-forum

Considering the dialogic assumptions just described, we designed two tasks encompassing blended discussion on problem-solving that promotes meaning-making processes. The research question guiding our project is: Which meaning-making processes unfold in a blended context?

The activity was implemented into Moodle (Modular Object-Oriented Dynamic Learning Environment), one of the most used free, open-source software. The participating school has been using Moodle since 2006. The teachers adjusted the environment continuously to apply standardised tests and share didactic materials such as videos, links, books, and podcasts. The web forum was not used at the time.

Both tasks were designed based on short texts published in national online newspapers that were close to some dilemmas these students lived at school. Twenty-eight students between 17 and 18 years

old agreed to participate and worked in pairs. For this paper, we analysed one dyad involving two female students: Agnes and Deca, both attending this third-year Brazilian state secondary school. Their profiles are reported in Table 1.

Pseudonym	Age	Profile
Agnes	18	She started using the Internet at the age of 9. She competently uses software designed to draw. She thinks teachers should publish their video classes instead of showing PowerPoint to the class. She believes the Government should use resources on the Internet to save money on education.
Deca	17	She has used the Internet since she was 10. She said it is unthinkable to live without a mobile phone and the Internet. She affirmed that students could not learn using the Internet because too many things online would distract young people. Nevertheless, she believes that students will have only virtual lessons in a few years.

Table 1: Profiles of the two students composing the selected dyad.

With the support of the Philosophy teacher, we devised two tasks. These activities, Task#1 and Task#2, were based on the same theme—"The use of ICT in class"—but with different delineations. Task#1 focused on the present, and Task#2 set perspective-taking to envision possibilities to use ICT in schools. Both tasks took place in the computer lab in two alternate-day sessions, lasting approximately 45 minutes each. All dyads were free to pick up images, videos, texts, emoticons, links, etc., on the Web. Some other dyads used this resource, but our pair did not. They remained focused only on the tasks. The Philosophy teacher and the researcher did not stay in the lab while the dyad performed the tasks. A lab technician was nearby in case they needed technical support.

This qualitative study draws on the multimethod approach by using (a) a profile interview, (b) 02 problem-solving tasks, and (c) an episodic interview in which the researcher dialogues with each dyad about the tasks to clarify decision-making points of view and meaning-making. Task#1 required students to discuss two short articles: one in favour of using technologies in class; the other against it. One piece brings an interview with a US expert who was in favour. He proposed that teachers should allow the use of smartphones and tablets in class because students are skilled in such devices. The second text presented various opinions from different voices and positions, such as principals, coordinators and teachers (against), and a group of students (in favour). Three short questions were added: (a) the first one focused on students in general – *What do you think about the students' views on using their digital devices in the classroom?*; (b) the second one focused on position-shifting – *How would you answer the question regarding educational use of the digital technologies if you were in the place of the teachers or the Head of School?;* and (c) the third one required the third change of perspective – *The ICT expert defends the use of mobiles and tablets in class. What's your view of that?* The students were free to answer if they wanted and/or comment on each other's posts.

Task#2 involved perspective-taking, where students should imagine school 20 years in the future. This task gathers on a future projection that requires imaginative play with the present and future. They have to answer a single question – *Who do you think should be responsible for the school in the future?* They had to position themselves in the school in 20 years and decide who would be the possible

person responsible for the school's change. They could choose among the President, the Minister of Education, the Governor, the Headteacher, a teacher, a student, or another person of their choice. The collaborating dyads focused on possible solutions to the tasks we gave them. Their learning depended on how they comprehended the two activities, their relations, and their relevance for them.

Agnes and Deca spent 68 minutes on Task#1 and 26 minutes on Task#2, and their whole discussion comprised 579 turns. At the end of the online activities, the dyad took part in an episodic interview meant to bring clarification to the analysis. The interview was guided by questions based on the dyad's discussion. For example, "*You said in the US students are more prepared to use technology in class. Why do you think the Brazilian students are not?*"

The students' utterances and written messages posted in the web forum have been analysed following a thematic-dialogic procedure (Barbato & Beraldo, 2020). This analysis requires attention to the information produced by each participant's utterances and posted messages oriented by the meaning-making processes, textual coherence and cohesion.

When activities develop over time, the chronotope becomes open as students reflect on the proposed problem in collaboration. During the period the participants are apart, between meetings, they may mention and discuss conversations, texts, and forums with other people. In dialogic-thematic analysis, meaning-making is produced through different polyphonic dynamics, depending on the activity's impact on participants. Concepts of centripetal-centrifugal forces, the surplus of vision, polyphony, and heteroglossia are fundamental. The analyst considers centripetal forces as convergent and related to the permanence of values, ideologies, standardisation and cultural beliefs at this school and lead the students to instrumental learning. Centrifugal forces are divergent producing decentralisation, polyphonies, openness, novelty, high variability in meaning-making, and agency.

Dialogic-thematic analysis focuses on how meanings emerge among the participants in an interaction sequence. The use of multimethod in studying the dyad's dialogue and written productions allowed us to make an in-depth analysis. Since shifting positions illuminate sets of meanings, responsivity in adjacent pairs is not the only strategy in meaning-making as it may extend over different moments and meetings.

As the many layers of analysis are related, we were able to generate assumptions about the dyad's dialogic meanings and advance the theoretical aspects of the study. The micro-level analysis focused on the two participants' positions and meanings, especially on what changes in their positions and what remains. Micro-analysis also allowed us to look at how discourse worked in the textual form. Polyphonies were also identified by considering the other information: which utterances appear first in texts or at what moments participants changed the theme; what was marked with emphasis. We considered the discursive sequence and the frequency or redundancy of signs. Their expression or signifier, and meaning or signified, and their orientations. Ambivalences appear when the same utterance expresses different orientations. They may lead to possible changes of meaning in the dialogue. These changes in meanings were then submitted to a microgenetic analysis of the discourse to establish discursive patterns that trigger change. In each moment of analysis, transcriptions were read and re-read without removing the utterances from their context; audio recordings were checked whenever necessary.

First, the transcripts of each task were organised in a vertical sequence based on the traditional analysis of turn-taking: agreement, disagreement, negotiation, appreciation, reciprocity, communicative breaks, tensions, convergences, and position (I/You/We), which made possible to understand the personal and shared meanings. After, we applied the dialogical-thematic analysis to identify how some themes

developed, meaning-production, stabilities and changes. Next step, the transcripts of each task were organised side by side in a horizontal unit of analysis to identify recurrences and similar orientations to the utterances and terms. Some meanings had more relevancy when the dyad qualified them at different levels of hierarchy. Finally, results were brought into a single text for the analysis considering intertextuality between utterances along the tasks and interview. The process through which we shaped Deca and Agnes' exchanges into a single text opened up more possibilities in the analysis. A horizontal and vertical reading allowed us to find similar signifiers and meanings at different moments in their collaboration, thus enabling analysis at varying layers of interactions. Also, the episodic interview gave us ways to identify similar meanings in that chronotope.

We identified activity-regulating meanings in the production of knowledge in peer collaboration. To do so, we looked at the interplay between what we identified as centripetal and centrifugal discursive forces. Centripetal discursive forces are oriented to the permanence of meaning and actions. They are related to instrumental learning in which the interlocutors did not produce novelty. They agreed, entirely or partially, with the perspectives of the adult authorities, e.g., the teacher, head director, coordinator, parents, etc. However, attunement to other's authorial voices (outside the forum) sometimes is oriented by the centrifugal force of innovation. For example, they reference someone's voice (inside the group) to bring more validation to their arguments. Also, when they cited a prominent author or person to validate their opinion. Meaning-making has low variability when centripetal forces are present. Sometimes the only resource the student search for is in the didactic material, even in blended learning. Signification has high variability in centrifugal forces as the students become the centre of reflexivity. Thus, a novelty in reflexivity and agency is expected (Barbato & Beraldo, 2020).

The collaboration dynamics

Task# 1: Discussion of the educational use of ICT as a dialogical stance of re-positioning

In the first moment, Agnes and Deca agreed on common ground, mainly negotiating tools and mediation for self-regulation. Thus, physical and digital materiality indicated an increased frequency of deictic such as: *here, there, underneath, look at that etc*. They strived to contextualise the activity and follow up on their colleagues' posts in the collective forum. In the beginning, the girls sat slightly apart, but in time, they got closer to each other and established rules to work in collaboration. Agnes constantly addressed Deca while synchronising their work, to the extent that she was reading and coordinating their joint task. They also tried to identify rules of participation in synchrony with what the other dyads were posting online. Personal position and reciprocal appropriation of the position worked as a tool to establish the intersubjective space.

In Task#1, Agnes and Deca's initial position was the students must use digital technologies only for learning purposes; therefore, it was up to the teacher to propose an educational use of technology in class. The girls agreed with the coordinator's position—cited in one of the initial texts—who stated, *"Rules are rules. The devices are only returned to students when relatives come to retrieve them personally. In our school, devices are forbidden in class".* Accordingly, Agnes suggested, *"The use of technology should be controlled, and an educational App must be created. For example, if you need a laptop in class, you should use it just for visiting sites, and you can write your observations, notes such things."* Agnes criticised the position of a student who admitted to using the iPad earpiece even though she knew that the coordinator could check. Her initial positioning involved some attunement with a student quoted in the newspaper text. This process disclosed intersubjective interchanges and reciprocity that opened up possibilities for a collective position (*We*). This centripetal force introduces high variability to the semiotic field. It increases the use of evaluative words, argument consistency, and capacity for more than one interpretation of the tasks. For instance, Agnes said, *"the students were a bit immature! Taking pictures of the teacher, using*

their mobiles to mess around. This sort of stuff, you know?" and Deca agreed: "*Yeah, they don't know how to use it to study, do they*?". Agnes replied, "*They don't know how to use it at the right time, moment, and for what, you know? Such as mobile apps. I felt they are a bit immature*". Deca complemented, "*Apps are not necessary. It is not necessary to use a mobile in class. Only in case of change. Change a copybook for a laptop. However, it is not necessary*". The need for the teacher in the control position is underlined, caused by what the girls perceive as the lack of students' responsibility.

For the girls, using technology at school brings an educational benefit and "*if it is allowed, it should be done in a controlled manner*". There is initial support for the interpretation that teachers should be authorised to control the use of educational technologies in school. They explain that inappropriate use refers only to social media access and improper and frequent communication with parents and friends during class. After, Agnes and Deca tried to find a solution for students to use ICT in class. Agnes pointed *"the students need the discipline to use it at the right moment, for the right thing. Do you agree? Because they need to learn, but they don't... They don't know how to use it".* The girls did not identify themselves with the students cited in the text; therefore, there was no identification between the pair "we" and the others (the Brazilians' students mentioned). Here, a tension between personal and social perspectives can be observed, producing a centripetal force that can be defined as the permanence of the current rules established by their school or the teacher. Agnes argued that technologies are necessary only for the teacher and insisted, "*if students need information, they should ask the teacher*". Ambivalence is noted regarding two opposing statements: "Technology, yes" versus "No mobile phones [for any type of school activity]". Mobiles are related to leisure, fun, distraction, games, music, friends, and social media; therefore, they are inadequate to support learning processes. But the girls supported the view that technologies could be used for educational purposes only when the teacher controls the lesson. Furthermore, the girls insisted that parents must control the use of digital technologies at home. For Deca, mobiles allow free access to the Internet and networks, and students are immature because "*they cannot resist the temptation of social media*". She included herself in this situation.

The second paper in Task#1 contained the following statements by a North American expert who argued, "*these new technologies are ending the educational paradigms since they are part of everyday life and can be integrated into the school. Using technology in education is an attractive option for more exciting classes*". Reflexivity oriented Agnes and Deca to assume a new position. They began using the pronouns "we" (Brazilian students) vs the "others" (North American students) as they formulated a new critique. For the girls, "*the North American specialist knows how to make pedagogical use of ICT in class. It is why the North American students can use such devices*". Agnes justified her position: "*In Brazil, students use it only for a social network, for chatting*". In this interplay, the dyad engaged with their awareness and the voices of the social other.

In the dialogue, discursive changes occur through expansions of previous argumentative utterances. Agnes and Deca articulated a critique about Brazilian educators who are expected to create a pedagogical way to control the use of technology in class. Deca and Agnes brought examples to the dialogue where their comparisons aligned with the need "*to control, limit, and block social access to the internet*". Such engagement opened up the possibility of shifting from a student's position to a teacher's position producing polyphony composed of a fused meaning of the imagined teacher's voice and their own. Indeed, Deca said, "*Okay, teachers can accept the technology in class. However, in a limited way. Write this, we can accept it*", and Agnes responded: "*Okay, we accept it*". The students expressed an ambivalent position as they identified themselves with the teacher rather than with their peers. The ambivalent positions ("we" in the place of the teachers) may indicate the strength of values and beliefs identified with the traditional rules established in this school and may produce criticisms and solutions. These dynamics seem to generate differentiation from the other, promoting agency.

The dyad passed through different layers of activity when preparing comments and suggestions, reformulating the initial problem to balance various tensions in positions and concepts involved. Changes in the shared object (the use of ICT in class) are adopted through the production of commonality. They saw teachers as the controlling authority and downplayed students' awareness of the use of technology and pedagogy, including the application of rules against inappropriate ICT use. It is the school that can decide what could enhance a responsible alternative educational use of technology.

Agnes shifted her viewpoint to visualise the problem and its connections to a third position that we call an exotopic position, i.e., (Beraldo et al., 2021), when she recognised herself in the situation in focus. In this movement, she may have generated reflexivity and self-awareness, looking from the outside. This new direction and its development contributed to expanding collaboration. Thus, centrifugal forces are at play and require abstraction, imagination, and cognitive efforts that involve shifting from one perspective to another in a new comprehension of the problem. This reflexive effort required a certain amount of time. Agnes and Deca considered the teacher's supervision of students' engagement with ICT at length. They discussed restrictions ("the teacher must limit activities to tests, exercises, readings in e-books in educational applications") and prohibition ("the teacher must prohibit the use of cell phones and search engines during classes and must block access to websites, Facebook, and networks").

The commitment to consider their colleagues' posts sets a new type of textuality by nesting comments and chronological asynchronous additions to the discussion. Intersubjectivity here involved their reflexivity about their colleagues' opinions. Thus, joint attention in collaborative writing allowed them to expand meaning-making, adding different viewpoints that promoted metacognition. The girls began reflecting on their writing process during different moments of the collaborative activity on both tasks. Their colleagues' posts had an impact on their position (*others-we*). They approached their production with attention to 1. The posts as resulting from collaborative reflexive efforts on the same theme. 2. The reflexivity of the opposite or similar ideas in the large group with different perspectives on the tasks. And 3. The actualisation of meanings along the two activities and in the episodic interview.

Excerpt 1:

> Deca: Whom will you choose?
> Agnes: Ahm, I will choose… a person to create... Okay, we should create the future school and say who will do it.
> Deca: Umm, the President (of the Brazilian Republic), maybe the Minister?
> Agnes: I think the students can do it. Students and teachers can do it.
> Deca: But students will be Ministers in the future. The President will create it, but … You know, a student [a Brazilian activist] already does this.
> Agnes: Oh, I don't know ... Maybe the Minister of Education can do it, he has a great background. Let me see.
> Deca: Yeah, he can do what he wants (she whispers).
> (…)
> Agnes: Whom will we choose?
> Deca: Who? The President!
> Agnes: I do not choose the President because he will just…
> Deca: No! Okay. Students and teachers can suggest some proposals and send them to the Minister of Education, and he should take it to the President. If the President accepts the proposal, he will give directions to the Minister. He will apply them. Don't you think?
> Agnes: Um, um.
> Deca: Let me type; I want to write.

For Agnes and Deca, the President of Brazil should be responsible for implementing teachers' and students' proposals. Working with hypothetical situations in future scenarios requires a higher level of abstraction, visualisation, planning, the flexibility of positions, and creativity to explore an issue not connected to current daily practices. This type of task is generally recommended when perspective-taking is encouraged as an alternative to tasks based on memorisation or just responding to pre-defined questions. The possibilities are many in which the students could engage with awareness. Besides, students may overcome the challenges to envision a future that requires dealing with and making sense of concrete situations on their own terms.

The episodic interview gave us additional information to appreciate the dyad's productions. A first indication emerging from the tasks and interview activities in dialogue with the researcher was that metalanguage worked as a tool to re-contextualise and re-signify the meanings at a later moment, as deductible from the following excerpt:

Excerpt 2:

> *Researcher: Could we try to recall what you said? You said that the students were too immature to use their mobiles in class and that, at the moment, the school shouldn't allow it. Could you explain why?*
>
> *Deca:* *Yeah, the use of ICT is not required at the moment, nor are mobiles and such personal gadgets. I think the teacher should have technology that helps him check if the grammar is correct. It could be necessary for the teacher but not for the student. I think many of them (students) are too immature to use their technologies such as mobiles, tablets etc.*
>
> *Agnes*: *Like in that text about Ogge Marques, the American specialist. He studied in the United States, and they have already used it in some places in Florida. Well, maybe they had discipline there, right? For example, if you allow mobile phones in class (in Brazil), no one will use them for study.*
>
> *Deca:* *Yeah, they (Brazilian students) still haven't got this… this skill, have they?*
>
> Agnes: *Yeah, they still don't have this awareness, this kind of discipline to use it for research. Thus, if the teacher is in class, we don't need to use the Internet to search for something. We ask him, right? It's what we thought about.*

In excerpt 2, we identified many meanings already expressed during the tasks and a synthesis of ideas. The outcomes indicated that meta-language worked as a tool to re-contextualise and actualise more organised and interwoven meanings.

A semantic map was charted to visualise the most recurrent themes and sub-themes and to index them. We observed how these themes developed or stagnated to build a fine-tuned map (Figure 1). It was also observed how meaning-making unfolded into actualised meanings. New discursive formations and significations emerged in juxtaposition with each other. The meaning-making was analysed as a seamless text summarised on the following semantic map.

Figure 1. Semantic Map – Agnes and Deca
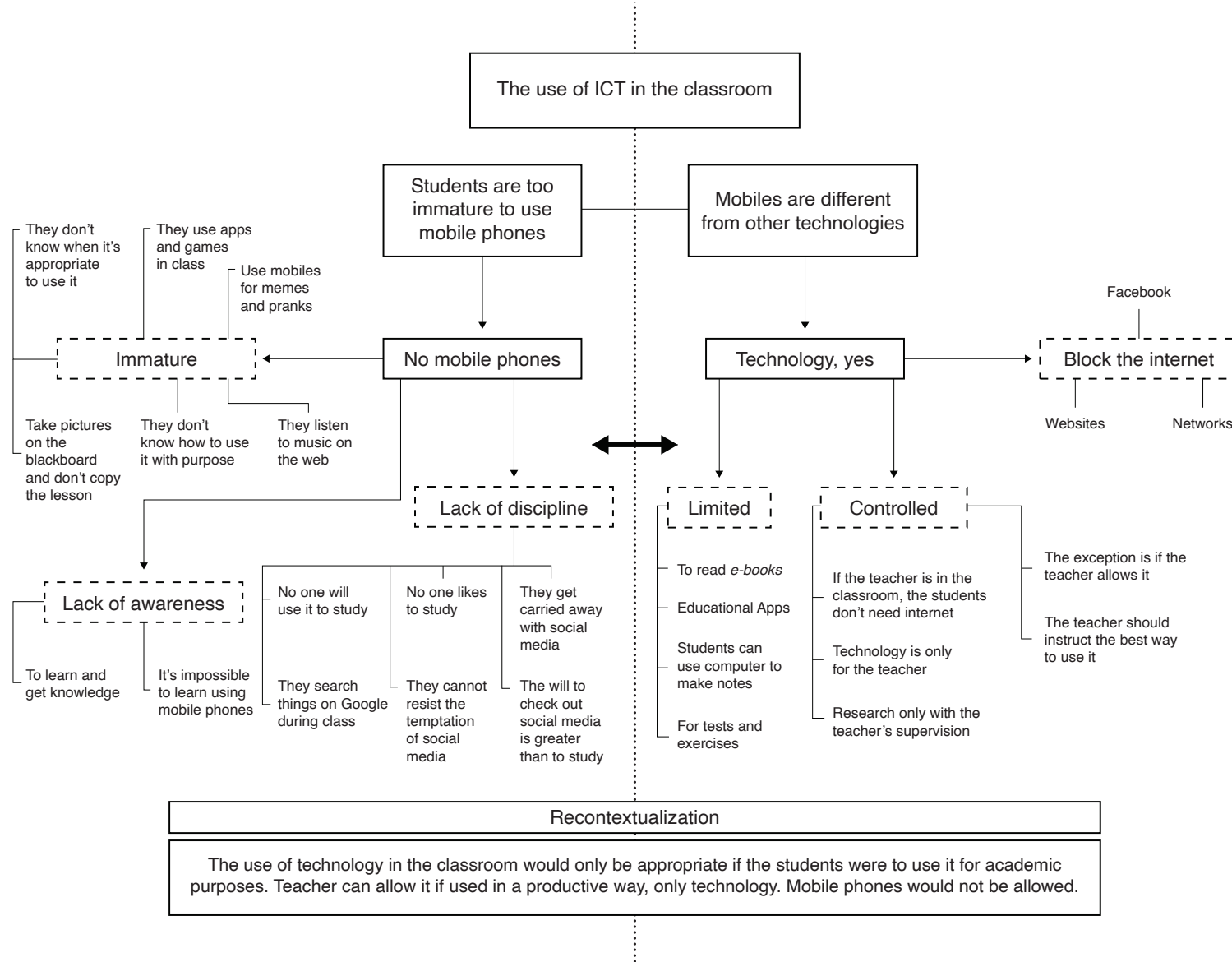
Dialogic approach to the analysis of the meaning-making process in a blended setting
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Lack of discipline
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Brazilian students
need to be disciplined

They respect
the teachers

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American students
are disciplined
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Schools are
better

They study
full time

They are
patriots

Students listen to
authority and have
higher expectations
to meet

Students
listen to
authority and
have higher
expectations
to meet

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Technology, yes
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No need to
bring books and
laptops

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No need to
waste paper
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Controlled
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It helps the environment

The use of ICT
should be
controlled to
bring the
teacher closer

The parents
should control
the time: study,
network, free
time to use
technologies

The parents
should control
internet use

The teacher
should keep in
touch with the
parents

The teacher
should keep in
touch with the
students

Parents are
responsible to
guide their kids to
search the web

More
participation
from the family
in school

Explain right
from wrong and
set up time limit

The teacher
should teach,
explain, and
answer the
questions

The teacher
should not teach
using only
a computer

The presence of the family is
important. School is the
second home of the student

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Recontextualization
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The school should provide more activities and plan classes that will promote technology usage in a positive way. It might be for research in scientific areas, or for knowledge depth, influencing students to possibly even choose a career in these areas. Which would help the development of the country. The school should be full-time, so students would have more immersed in the school activities. The families should have more participation in school. Students should have more things like science and technology fair.

In figure 1, the rectangles indicate the twin themes, and the vertical dotted line separates contrasting ideas the dyad elaborated in collaboration. The arrows positioned in the middle of the map indicate the back-and-forth flux and variability in meaning-making. The rectangles placed under the central theme are sub-themes put into dashed rectangles. These sub-themes are surrounded by utterances strongly anchored in the significant themes. The statements were sometimes reported with semantic approximation using similar words or were reiterated many times. Some meanings remained undeveloped and were stored as sub-themes. For example, *lack of discipline* relates to social media, chats, and networks. On the contrary, *lack of awareness* is related to learning by using mobile phones, which is, in their perception, a peculiar type of technology. At the bottom of the map, we placed a "Re-contextualisation box" to synthesise the meaning-making process's result.

In sum, we can answer our research question by indicating the following elements, featuring the meaning-making dynamics as several discursive positions followed by reciprocal appropriation, accompanied by new meanings and novel connections. Furthermore, the alternation between reading (the educational material assigned and the notes produced by the mates online) and writing required students' high coordination of the activity, exchanges of information, clarification of their thoughts as accurately as possible, synthesis and, at the same time, in-depth reflection. The meaning-making process was characterised by shared management, joint attention, mutual influence, elaboration of ideas, explanations with appreciations and suggestions, and discursive and reciprocal positioning. Finally, students synthesised and reintegrated the meanings they produced, comparing them to those of the larger group.

Conclusions

The polemic web forums—based on problems of real-world contexts—aim to engage students ontologically. They may create spaces of negotiation that involve ethical positions, values, and moral judgments on open-ended problems with multiple potential creative solutions.

Adding obstacles, i.e. difficulties to the activity—such as the different voices and other positions in the statements or putting the students in the centre of a decision—prompts freedom to learn in collaboration.

The specific method we developed and the construction of the semantic map allowed us to analyse the discursive movements that characterise meaning-making. The extensive use of multimodal tools has promoted changes in everyday pedagogical practice. Such multimodality in technological educational activities combines new modes of communication and forms of interaction, contributing to change and transforming socialisation and human development conditions. In addition, thematic problem-solving collaborative tasks combine different timelines and social profiles. Similarly, this multimodality promoted the expanded alternation of positions and complex activities in executing actions such as reading, writing together, dictating, revising, reflecting, augmenting and deciding in collaboration.

Perspective-taking and freedom of expression linked the actual situation in the school setting (Task# 1) to the perspectives of the school in the future (Task# 2). Both tasks were purposely designed to include issues that created spaces for negotiation involving ethical positions, values, moral judgements, and creative solutions. The discussion about these issues developed reflexivity about responsibility and care ethics in cultural practices. Divergences, collisions or opposing positions in collaboration were triggered initially by the material provided to students. Highlighting different voices and their/other positions and putting students in the centre of decision-making processes prompted the free emergence of polyphonies and heteroglossia that led the students to experience new positions in knowledge production.

The outcomes show that collaboration dynamics may produce various actions, such as the ability to observe, elaborate, guide the activity, and get more involved in maintaining the intersubjective meaning-

making process. Linking the argument genre with the narrative in the construction of personal and collective positions produced innovation and reciprocal alignments in making the students' meanings.

The small set of data having only one dyad as the participant is, at the same time, a guarantee of deep analysis for the further understanding of the processes and a limitation. We developed a methodology to track down meaning-making dynamics occurring within dyads collaborating in a blended setting. Considering that blended activities will be more frequent in educational contexts as a post-Covid legacy, it is clear that this method will continue to be developed. Finally, this research adds insight into the meaning-making dynamics when students are required to combine written knowledge in interaction with a peer while considering their peers' online responsiveness.

Acknowledgements

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