

AFFORDANCES AND CONSTRAINTS OF A MOODLE ONLINE DISCUSSION BOARD: THE CASE OF AN UNDERGRADUATE CLASS IN BRAZIL

Tânia Gastão Saliés, Tania Granja Shepherd
Universidade do Estado do Rio de Janeiro
Brazil

Abstract

Among the different cultural artifacts that may mediate learning in virtual environments are online discussion boards. Research, however, has demonstrated that the artifact may become a double-edged sword: Participants may either collaborate toward knowledge co-construction or ignore their interlocutors, behaving individually. What are the affordances and constraints created by participation in a discussion board? To better understand the issue, this paper focuses qualitatively on a corpus of exchanges mediated by a Moodle online discussion board within a sociocultural approach.

Keywords: Moodle, online discussion boards, collaborative learning, sociocultural approach, mediation, affordances.

Introduction

Online group work and collaborative learning have become current practices in disciplines that include a virtual component: learners come together in virtual classrooms and discussion boards to achieve a communicative purpose. One of our concerns as educators is to find ways in which to assess these online pedagogical practices, as well as the digital artifacts that mediate students' actions towards meaning construction. Students' participation in collaborative online events triggers a number of pedagogical questions, one of which is how to evaluate learners' participation in terms of both collaboration and possible affordances and constraints.

This paper focuses on this question, by looking specifically at a corpus of messages posted on a Moodle online discussion board by 13 undergraduates attending a course in Applied Linguistics and the Teaching of Foreign Languages at the Faculty of Letters of the Rio de Janeiro State University, Brazil. The starting point was a sociocultural approach to learning and to the mind (Jones, 2013; Lantolf & Thorne, 2006), from which the paper examines both the quality and structure of the discourse as well as if and how meaning is co-constructed at both the cognitive and social levels. In this way, the research aims at holistically eliciting the affordances and constraints of the discussion board under study. These include discourse strategies and textual practices indexed to concrete mediated actions through which participants position themselves and make claims relative to the task at hand.

Background

The processes involved in computer mediated learning have been studied largely by means of the data logs that students leave behind when using discussion boards on Learning Management Systems (LMS). These logs provide an excellent source for research into the practices of discussion boards. In the last 20 years, the academic

interest on these data logs has gone through three research phases (Hakkarainen, 2009). The first phase focused on examining computer supported collaborative learning from a cognitive perspective, or rather, whether the use of computers elicited conceptual changes in the learner.

The second phase examined patterns of participation in the learning process. Part of the more recent body of research into students' data logs from this perspective may be shown in Beer, Jones, and Clark (2009). These authors found that there is a significant relationship between teacher-student interaction and learner success.

The third phase, still ongoing, seeks to overcome the dichotomy between elements of the cognitive (knowledge construction) and the social-cultural (participation). Here the focus is on the dynamics of learning proper as a sociocognitive practice, in which cognition and sociocultural practices are one and the same. In other words, this latter phase consists of investigating whether the knowledge construction process is a self-organizing system, in addition to examining the agents, cultural artifacts and social communities (Hakkarainen, Paavola, & Lipponen, 2004) inherent to this potential system. The present paper's concerns are related to this third phase.

The Moodle and Its Possible Affordances

The notion of affordances was first proposed by Gibson (1977) in the field of perception psychology. In his view, it is a person's perception of the environment that prompts some course of action. *Affordances*, thus, refer to the properties of an object in a given environment that enable some form of activity. In other words, an affordance can be understood as any use of an object that is perceived as adequate by a user in order to carry out a task. In the fields of technology and language teaching pedagogy, the term affordance is generally used as a synonym for opportunities, attributes or practices that offer learning activities -- "pathways for action" (Allen, Otto, & Hoffman, 2004, p. 226), rather than a physical artifact. These authors also claim that affordances "may enable opportunities and constrain others."

In the case of discussion boards within Learning Management Systems (LMS) such as Moodle, a number of affordances are available to both educators and learners. Most of these affordances have been listed on the documentation of the Moodle 2.2 under *pedagogy*. By working in the collaborative environment which the Moodle provides, one may teach and learn, and do so by observing others and creating something for others to see. In other words, Moodle provides ways in which information can be accessed and transformed by means of peer (and expert) collaboration and communication. In addition to the documented affordances, Moodle discussion boards may offer affordances derived from users' possible perceptions of the artifact, or rather, the users' ability to approach tasks by resorting to what the artifact may have to offer, the most important of which is the possibility of accomplishing a task collectively. In the case of this study, the task is to discuss possible applications of theoretical concepts in foreign language learning and apply them to the collaborative analysis of a movie -- *The Terminal* (Nathanson, Gervasi & Spielberg, 2004).

At this stage in the discussion, it seems appropriate to flesh out the meaning of collaboration, as it is part and parcel of the philosophy underpinning Moodle. To understand collaboration, it is necessary to distinguish it from cooperation. While

cooperative learning can be defined as working together to accomplish shared goals, *collaborative learning* “implies working in a group of two or more to achieve a common goal, while respecting each individual’s contribution to the whole” (McInnerney & Robert, 2004, p. 205). In other words, *cooperation* means dividing a task among participants, having participants do their respective parts and finally putting the parts together to achieve a shared goal. On the other hand, successful *collaboration* requires participants to share in the process of knowledge creation, by discussing, negotiating, and accommodating possible conflicting points of view.

Online Discussion Boards as Cultural Artifacts

According to a model proposed by Belenky, Clinchy, Goldberger, & Tarule (1997), there are two possible ways of behaving in online discussion boards: (1) constructing knowledge analytically and objectively – the self-oriented mode; or (2) constructing knowledge in the interaction process – the interconnected mode. In the latter case, learners take the perspective of other participants, exercising not only subjectivity but also intersubjectivity. Yet, there is a third possibility, as explained by Williams (2005): learners may construct knowledge by combining modes 1 and 2, giving rise to the constructed mode. From this perspective, learners not only analyze the problem at hand, but also exercise their subjectivities as they express agreement and disagreement and identify positive and negative points in their peers’ postings. Restructuring of knowledge systems and positioning of selves are present in every case. Therefore, from this perspective, online asynchronous discussion boards would arguably be seen as environments that may foster continuous cycles of exposition, analysis and evaluation of new ideas and, thus, yield opportunities for reflexivity and creativity.

The Study

In contrast to most research that has addressed online discussion boards (Wever, Schellens, Valcke, & Keer 2006; Lu, Chiu, & Law, 2011), this study takes a qualitative approach to the analysis of discourse, examining holistically the cognitive and social levels of meaning making. At the cognitive level, the focus will be on the structure of the arguments (presence of claims, grounds, challenges and synthesis), as well as the presence of other metacommunicative actions such as the creation of new insights and integration of knowledge. At the social level, the focus will be on moves to collaborate (the presence of questions, elaborations and evaluations on one another’s contributions).

Context: Discipline, Task and Participants

The focus of analysis is the online discourse of 13 undergraduates of a large, public university in the State of Rio de Janeiro (UERJ), Brazil. The online discussion occurred *in tandem* with face-to-face classes in Applied Linguistics and the Teaching of Foreign Languages, a discipline that is a core part of the curriculum of all language majors at the Faculty of Letters. The objective was to allow learners to appropriate tenets of foreign language learning and teaching for themselves. To this end, the professor (the first author of this paper) asked them to watch a movie and relate readings and discussions developed in class to the experiences of the main character in the movie, a learner of English as a second language. The professor set up and moderated the forum.

The task. Students were prompted to discuss how the communicative challenges faced by Viktor Navorski, the main character in the movie *The Terminal* (Nathanson et al., 2004), could be explained in the light of various concepts. These included

interlanguage, the critical period of language acquisition, and scaffolding, among others previously introduced by their readings for the discipline. Students were also prepped not to simply retell the movie plot, but to associate their theoretical understanding to the character's experiences. The online asynchronous discussion went on from June 09 to July 09, the last month of the semester in Brazil. During this time, the professor posted no more than four times, in an effort to foster participants' independence and interconnectivity. In these cases, giving answers was avoided; rather, learners' thoughts were challenged. In their last face-to-face meeting, a debriefing was conducted in order to synthesize and clarify those points where misunderstandings had occurred.

Participants. Out of the 17 students enrolled in the Applied Linguistics discipline, 13 participated in the discussion board (10 females and 3 males). All are native speakers of Brazilian Portuguese, and, at the time of the study, their ages varied from 18 to 22. Their participation in the forum was evaluated for quality: they could add up to 20 points to their total score in the discipline if they demonstrated knowledge of the concepts and reflexivity. To guarantee participants' anonymity, all names are fictitious.

Research Questions

This study investigated whether an online discussion board run within the Applied Linguistics to the Teaching of Foreign Languages discipline affords learning opportunities and, if so, how these learning opportunities are materialized in participants' language behaviors. It also addressed the constraints faced by participants, given the characteristics of the medium. The research questions undertaken were:

- What are the affordances and constraints of the discussion board case studied?
- How do learners both create and reflect on discourse?
- What patterns emerge, if any, of language use and collaboration?

Analysis

To answer the research questions, the messages posted by the participants were qualitatively analyzed for recurrent patterns that might throw light on the cognitive and social levels of meaning making. These patterns were further interpreted in the light of the literature review and the sociocultural approach to learning and the mind, pioneered by Vygotsky (1978). The central tenets of this view are mediation, the social origin of higher mental functions and their historical or developmental nature (Lantolf & Thorne, 2006). According to these authors, cultural artifacts (language, writing, the computer, the discussion board) mediate the relation of the human mind with the world. "These auxiliary means arise as a consequence of participation in cultural activities" (p. 59) in the case under study, participating in a Moodle mediated online discussion board. During these activities, the cultural artifacts interact with cultural concepts in complex ways, "shaping our perception of phenomena," how we relate to others, "the meanings we can make and the actions we can take" (Jones, 2013, pp. 2-5). Based on these premises, the unit of analysis was the "real-time, concrete mediated action" in the corpus.

Key findings: Affordances and Constraints in the Case Study

In their influential book on digital literacies, Jones and Hafner (2012, p. 5) have posited a five-fold classification for the different affordances and constraints introduced by any

media: affordances and constraints on what we can do; on what we can mean; on how we can relate to others; on how or what we can think; and, finally, on who we can be. In the sections below, these five categories will be applied to the data under study.

What Participants Could Do: Co-Construct Knowledge Discursively

In the case of the online discussion under study, participants invariably prefaced their claims by citing their colleagues’ contributions. Thus, the forum may be argued as being instrumental in the co-construction of knowledge. Students’ uptake of one another’s ideas and the order in which each one contributed to the discussion illustrates this incremental construction, shown in Example 1. With the exception of Luis, Rogéria and Pepe (postings 12, 15 and 16 respectively), who did not retake previous ideas, the other participants advanced information from points made by their colleagues.

Example 1

Collective Construction of Knowledge

	Posting	Translation into English
<i>Posting 2</i>	Joana: Aproveitando um fato marcante que a Maria comentou [...]	Taking advantage of a remarkable fact that Maria commented upon [...]
	Assim como a Maria apontou [...]	As Maria pointed out [...]
<i>Posting 3</i>	Pedrita: Concordo com as meninas, sobretudo com o que a Joana afirmou no trecho [...]	I agree with the ‘girls’, especially with what Joana stated in the excerpt [...]
<i>Posting 4</i>	Juliana: Como já mencionado de alguma maneira por todas [...]	As has already been mentioned by everybody [...]
<i>Posting 5</i>	Lúcia: Bom, partindo de coisas já mencionadas [...]	Well, starting from issues already mentioned [...]
<i>Posting 6</i>	Mariluce: Como já foi comentado anteriormente [...] e aproveitando o que a Lúcia comentou[...]	As commented previously, [...] And taking advantage of what Lúcia (has commented [...])
<i>Posting 9</i>	Marcela: Gostaria de destacar dois pontos do filme (já mencionados) Juliana (<i>4th posting</i>) mencionou o primeiro ponto [...] E Lúcia (<i>5th posting</i>) mencionou o outro momento [...]	I would like to highlight two points that have already been mentioned about the movie [...] Juliana (<i>4th posting</i>) mentioned the first point [...] And Lúcia (<i>5th posting</i>) mentioned the other moment [...]
<i>Posting 17</i>	Pedrita: Elaborando um pouquinho mais uma questão já abordada anteriormente por vários colegas	Elaborating a little bit more on an issue previously addressed by several colleagues [...]
<i>Posting 18</i>	Juliana: teoria da pidgnização ou aculturação, já citada pela Melissa, e também pela Pedrita e pelo Gabriel [...]	[...] pidginization or acculturation theory, already cited by Melissa, and also by Pedrita and Luis [...]

What Participants Could Mean: Appropriate and Apply Concepts

The newly acquired concepts and appropriate terminology were exchanged with peers in a secure and friendly asynchronous discussion. Students were able to read, reflect upon and check information before putting it down in words and posting. These processes arguably afford the appropriation of newly acquired concepts (mediation,

scaffolding, ZPD and others), of academic discourse (learners cite their readings for the course, viz. Quaresma de Figueiredo), taking the role of teachers (viz. Alice in Example 2) or analysts who analyze the case of Viktor in the movie (the case of all participants). Example 2 shows two postings in which concept appropriation occurs.

Example 2

Appropriation of Newly Acquired Concepts

Posting 18	Juliana: Algo que também observei foi que Viktor recebe bastante input, mas não recebe instrução. Ele não possui mediação do conhecimento como auxiliar no desenvolvimento do andaimento e da zona de desenvolvimento proximal (ZDP) ou mecanismos de atenção dirigida para a apresentação da sistematização.	Something that I have also noticed is that Viktor (gets lots of input , but is not given any instruction. There is no mediation of knowledge to help him create scaffolding and a zone of proximal development (ZPD) or direct his attention mechanisms in order to systematize knowledge.
Posting 7	Alice: A aprendizagem da segunda língua feita por criança e por adultos é realmente distinta. Seguindo Quaresma de Figueiredo, o fator idade se distingue pela velocidade. O adulto já tem estratégias cognitivas para passar por uma língua [...]	The learning of a second language by children and adults is really specific? According to Quaresma de Figueiredo, the age factor distinguishes the rate of acquisition . Adults already have cognitive strategies to use in a language [...]

Thematisation (Brown & Yule, 1983) is another way to examine how concepts have been appropriated by these participants. Thus, the thematic organization of the corpus was analysed, in addition to the number of times a theme was retaken (see Table 1). As some participants contributed ideas, others would retake and further develop the same ideas, foregrounding information, and/or showing alignment with a peer. For example, *Topic 1: Input in natural contexts of interaction is facilitative of learning*, the most frequent claim, was further developed into subtopics such as *the affective filter needs to be low because motivation increases* or *a low affective filter is not enough*.

Table 1

How Learners Explained Viktor’s Learning of English: Main Sub-Topics

Topic 1: Input in natural contexts is facilitative		Topic 2: The age factor makes a difference	
Sub-Topics	Mentions	Sub-Topics	Mentions
Low affective filter	11	Viktor is an adult	8
Contextual cues	6	Accent	10
Motivation	4	Learning strategies	5
Absence of formal study	3	Hypothesis testing	2
Topic 3: Errors		Topic 4: Reactions to survive	
Sub-Topics	Mentions	Sub-Topics	Mentions
Acquisition natural order	6	Signified/signifier	5
Everyday actions	6	Motivation	4
Local errors	4	Independent study	4

Topic 5: Use of mother tongue		Topic 6: Discourse Theory SLA	
Sub-Topics	Mentions	Sub-Topics	Mentions
Cognitive demands	5	Interaction=input	3
Emotional demands	5	Comprehension emerges from context	2
		Output affords the perception of gaps	2

The length of their postings also signals the quality of topic development. Some postings, such as Alice’s in Example 2, added up to 626 words, posting 18, 371 words, posting 8, 364 words, posting 13, 354 words. The mean length of their contributions was 277 words, the shortest being João’s (70 words). Most postings fell in the range of 250-370 words (n=12). That is, their topics and subtopics were well explained.

How or What Participants Think: The Discourse of a Discussion

Learners structured their discourse by making claims (the topics and sub-topics in Table 1 are examples of claims in the corpus), providing grounds (by means of examples and further development of the sub-topics) and warrants (citations of readings and expression of agreement with peers). This structure is shown in Example 3:

Example 3

Structure of Discourse

Posting 9	Marcela: [...] Não entendo como Viktor poderia entender a complexidade da situação enquanto fazia o papel de tradutor, como ele conseguiu pensar e perceber rápido que se os remédios não fossem para uma pessoa ele poderiam não ser barrados; e quando o diretor lhe dá a chance de asilo político ele não entende[...] Poderia ser um engano do filme ou poderia ter alguma explicação o seu entendimento melhor em situações diferentes?	[...] I don’t understand how Viktor could understand the complexity of the situation as he performed the role of a translator, how he could think and notice fast that if the prescriptions were not for a given person they would not pass immigration; and when the director raises the possibility of giving him political asylum, he does not understand [...] Could it be a mistake made by the movie director or could his understanding be explained in a better way in different situations?
Posting 15	Luis: Em vista dos tópicos que a Melissa citou, é possível perceber que, devido a estar em território americano, ele recebe muitos inputs daquela língua o tempo todo, das pessoas ao seu redor, televisão, revistas, lojas, enfim. Porém, faltam instruções para que ele possa direcionar focos de atenção e transformar tais inputs em outputs, devido a isso, ele precisa desenvolver sozinho, mecanismos de aprendizagem, para que possa assimilar todos os inputs recebidos [...] Ele começa então a fazer assimilações, como associação de imagens, quando assiste ao noticiário por exemplo, comparação de um livro em inglês com outra versão em sua língua nativa [...]	Given the topics that Melissa brought up, it is possible to notice that, because he was in American territory, he receives lots of input (s) in the target language all the time, from people around him, TV, magazines, shops, etc. However, there is lack of formal instruction to direct his attention mechanisms and transform input in output; because of this, he needs to develop learning mechanisms by himself,, so that he can assimilate the inputs [...] He begins thus to associate images when he sees the news on TV, to compare a book in English to its translation in his mother tongue [...]
Posting	Joana: Comentando brevemente o	Commenting briefly upon Marcelas’s

14	questionamento feito pela Marcela [...] acredito que o filme quer justamente mostrar que conforme Viktor convive no meio linguístico da língua alvo ele começa a ter input compreensível. E ele entra no período de transição de sua língua mãe para a língua alvo e sua compreensão tem uma melhora com os recursos de comparação que ele utiliza na obtenção e vocabulário da Língua Inglesa. [...]	question, I believe that the movie wants to show that as Viktor lives in an environment where the target language is spoken he begins to have comprehensive input. And he begins to move from his L1 to the target language and his comprehension improves with strategies such as comparisons to learn vocabulary in English [...]
----	---	---

In brief, the participants’ exchanges provide evidence of the way they see the task. The professor specifically says that they are to participate in a discussion. In Portuguese, *discussão* involves negotiation, arriving at a consensus, if possible. There is a series of logically connected claim-ground-warrant sequences, showing that they can and are making contributions. However, there was no discordance between them, as it is clear in the examples (except for posting 15, in which Luis indirectly disagrees with Joana as she tries to respond to Marcela’s question). Therefore, their exchanges within Moodle signal their idea of a discussion, a collaborative non-confrontational argumentation.

How Participants Relate to Others and Build Online Identities: The Social Level

As discourse unfolds, it both creates relationships between participants and builds upon their identities, both as readers and producers of discourse. The online discourse of the undergraduates under study is no different: As it creates a way of being perceived by others, it also shows ways in which others are being perceived.

The first point under consideration is whether the undergraduates are indeed collaborating towards the completion of the task. An indispensable element for collaboration is that all those involved in a collaborative task are seen to contribute more or less equally (Ingram & Hathorn, 2009). All the undergraduates participated once, a few a second time, and none participated a third time. They also appear to have respected each other’s contributions and even used peers’ voices to warrant their own claims (Table 2).

Table 2

How Participants Relate to Others

Learner	Postings	Date and time	Target	Retakes
Maria	1	13/06 12:01	Group	
Joana	2	13/06 19:31	Group	Maria (2 x)
		30/06 20:04	Group/Melissa	-----
Pedrita	2	14/06 09:01	Group / Joana & Maria	Joana & Maria
		01/07 17:30	Group	Several peers
Juliana	2	14/06 17:42	Group	Several peers
		02/07 13:00	Group	Rogéria, Pedrita, Melissa, Luis
Lucia	1	15/06 14:21	Group	Several peers
Mariluce		19/06 12:00	Group	Several peers, Lucia
Alice	1	19/06 15:03	Group	Juliana, Pedrita
Prof.	4	10/06 12:34	Group / Joana	----
		20/06 13:00	Lucia /Group	----
		20/06 13:15	Lucia/Group	----

		27/06 22:30	Rogeria /Group	----
Rogeria	2	27/06 19:00	Group	Mariluce
		30/06 12:07	Group	----
Marcela	1	27/06 20:15	Group	Juliana & Lucia
João	1	27/06 22:00	Group	Pedrita
Melissa	1	27/06 22:05	Group	Several peers
Luis	2	30/06 14:12	Group	Melissa, Mariluce, several peers
		01/07 09:30	Joana / Group	Melissa
Pepe	1	01/07 11:43	Group	-----

Although they acknowledge each other’s contributions, the undergraduates do not ask questions with the exception of Marcela in posting 9. In addition, there is no direct disagreement. Luis (posting 15) was the only one to disagree, albeit indirectly, as he responded to Joana’s attempt to respond to Marcela (postings 14 and 9 respectively). In addition, even though their discourse is mostly other directed, when the participants produce a self-directed discourse, the aim seems to be to promote a tentative non-confrontational mitigating image, the signals of which are “I think,” “perhaps,” and “I believe.” Another element within their discursive construction that deserves analysis is the use of indirect evaluations, indexes of socio-affective support, the focus of the following section.

Socio-affective collaborative support. Albeit in a small scale, participants show support for each other by praising each other’s contributions. To cite the contribution of a colleague may also be seen as a signal of affinity (Examples 1 and 4):

Example 4

Citing to Build Trust

Posting 2	Joana: Aproveitando um fato marcante que a Maria comentou [...]	Taking advantage of an impressive fact commented upon by Maria [...]
Posting 9	Marcela: Juliana mencionou o primeiro ponto que me chamou mais a atenção: [...]	Juliana mentioned the first aspect that called my attention the most [...]
Posting 10	Joao: Um acontecimento importante já citado pela Pedrita [...]	A remarkable event that has already been mentioned by Pedrita [...]

The same holds true for setting a friendly tone for the discussion with off topic comments such as “*as meninas*” (the girls), “*por coincidência, a sessão da tarde exibiu esse filme hoje* and *pude assitir de novo: D*” (by coincidence, the movie was on TV this afternoon and I was able see it again: D). The presence of an emoticon further strengthens the affective relation which is under construction by means of the expressions in bold.

All in all, the undergraduates’ discourse foregrounded certain aspects of their identities: alignment with colleagues and ability to collaborate and complete the task. In this process, they took different identities for themselves. There are those who teach, those who analyze, those who simply retake what a colleague had said, but the know-it-all identity has not been found: knowledge in the forum is distributed.

Structure of participation. The structure of participation seems linear at a first glance, as Table 2 has already demonstrated: A participant initiates, and others develop topics; some cite each other's contributions and highlight what has already been mentioned. In general, participants address their group. However, a closer examination of the exchanges reveals a conversation-like atmosphere given the friendly tone, greetings, compliments to others and closures, in addition to discourse strategies (retakes; use of gerunds, qualifiers, first person pronoun, emotion and conversational markers such as "*bom*" /well/). These features project a conversation-like tone for a discourse that tends toward the academic pole of the continuum.

This atmosphere, however, is constrained by writing (a medium that led them to use language they would not choose when participating in face-to-face interactions), by technology (they had time to think, read and integrate information), and by the context (they know the professor is assessing their participation in the forum, and thus they are also speaking to her). The subsequent section further analyzes these constraints.

Constraints

It has been claimed that participants of online discussions act as constraints on each other (Dron, 2007). Each claim posed limits upon the choices of those who follow, thus shaping the exchanges. However, as Dron himself observes, this is simply "the nature of dialogue" (p. 163), and if it were not so, the exchanges would be a set of independent statements, rather than a discussion. Therefore, it is expected and desirable that a discussion becomes constraining in this sense. This was the case of this study.

Temporal sequence also limited the choices and breadth of the discussion. That is, messages that were posted early in the process were given a few or no responses/comments. Maria, for example, was the first to post. Her posting was retaken once in Posting 2 and never again. Participants who posted last had no choice but to pull together much of what had already been said (Luis and Juliana). Their postings were very close to becoming a synthesis of previous postings. In other words, much of what seems linear is a consequence of the parallelism of threaded forums (Dron, 2007).

Summary and Final Remarks

This study focused on two levels of meaning construction: cognitive and social. Cognitively, participants were seen to construct knowledge by providing claims, grounds and warrants. A glance at the topic flow provides evidence of the variety of sub-topics developed throughout the discussion to complete the task, as well as participants' ability to integrate information from a variety of sources, i.e., signals of knowledge construction. Socially, participants' discourse reinforced and elaborated upon each other's contribution, yielding shared understandings. However, they hardly addressed, questioned or evaluated each other directly. Collaboration at this level of meaning construction is wanting. Structurally, the relation among postings is high, given the discourse strategy of retaking one another's contribution and citing colleagues to build trust. These retakes projected an interaction-like atmosphere and created cohesiveness, yielding a very high level of texture among the postings. This also allows us to say that subjectivity, intersubjectivity and reflexivity were high.

In sum, the affordances provided by the discussion board, as well as its constraints, impacted the way participants behaved socially and linguistically. Writing demands a

high level of digital literacy. To demonstrate this ability online demands reflection and the integration of several sources of knowledge (readings assigned by the course, in class discussions, peers' contributions in the discussion board, and the context itself, among others). If the communicative purpose was to reflect on the principles of foreign language teaching and learning, the discussion board was very successful. The medium appears ideal for the integration of knowledge and co-construction of meaning. However, in terms of interaction, there are constraints. Participants appear to treat the medium with a degree of reverence. Their choice of vocabulary reinforces this interpretation. In addition, they still need to adopt a critical stance and overcome constraints imposed by the medium for expanding the possibilities of online discussion boards as cultural artifacts. Ultimately, however, knowledge has been expanded and enhanced, and the medium has undoubtedly afforded reflection.

References

- Allen, B., Otto, R., & Hoffman, B. (2004). Media as lived environments: The ecological psychology of educational technology. In D. H. Jonassen (Ed.), *Handbook of research on educational communications and technology* (pp. 215-242). Mahwah, NJ: Lawrence Erlbaum.
- Beer, C., Jones, D., & Clark, K. (2009). The indicators project identifying affective learning: Adoption, activity, grades and external factors. Same places, different spaces. *Australian Society for Computers in Learning in Tertiary Education Annual Conference* (pp. 60–70). Auckland, Australia.
- Bateson, G. (1973). *Steps to an ecology of mind*. London, United Kingdom: Granada Publishing Ltd.
- Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1997). *Women's ways of knowing: The development of self voice, and mind*. New York, NY: Basic Books.
- Brown, G., & Yule, G. (2003). *Discourse analysis*. Cambridge: Cambridge University Press.
- Dron, J. (2007). *Control and constraint in e-learning: Choosing when to choose*. Hershey, PA: Information Science Publishing.
- Gibson, J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (Vol. 2) (pp. 67-68). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Hakkarainen, K., Paavola, S., & Lipponen, L. (2004). From communities of practice to innovative knowledge communities. *Lifelong Learning in Europe*, 9 (2), 74-83.
- Hakkarainen, K. (2009). Three generations of technology-enhanced learning. *British Journal of Educational Technology*, 40 (5), 879–888.
- Ingram, A., & Hathorn, L. (2004). Methods for analyzing collaboration in online communications. In R. Timothy (Ed.), *Online collaborative learning: Theory and practice* (pp. 215- 241). Melbourne, Australia: Information Science Publishing.
- Jones, R. (2013). Analysis of mediated interaction. In C. Chapelle (Ed.), *The encyclopedia of applied linguistics* (pp. 2-5). Hoboken, NJ: Wiley-Blackwell.
- Jones, R., & Hafner, C. (2012). *Understanding digital literacies. A Practical introduction*. New York, NY: Routledge.
- Lantolf, J. P., & Thorne, S. (2006). *Sociocultural theory and the genesis of second language development*. Oxford: OUP.

- Lu, J., Chiu, M. M., & Law, N. W. (2011). Collaborative argumentation and justifications: A statistical discourse analysis of online discussions. *Computers in Human Behavior* 27, 946–955.
- McInnerney, J. M., & Roberts, T. S. (2004). Online learning: Social interaction and the creation of a sense of community. *Educational Technology & Society*, 7(3), 73-81.
- Nathanson, J., Gervasi, S. (Producers), & Spielberg, S. (Director). (2004). *The terminal* [Motion picture]. United States: DreamWorks SKG.
- Vygotsky, L. S. (1978). *Mind in Society*. Cambridge, MA: Harvard University Press.
- Wever, B., Schellens, T., Valcke, M., & Keer, H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computers & Education*, 46, 6-28.
- Williams, B. C. (2005). *Moodle 1.4.3 for teachers, trainers and administrators*. Retrieved from https://docs.moodle.org/19/en/Moodle_manuals

Author Details

Tânia Gastão Saliés

tanias.salies@gmail.com

Tania Granja Shepherd

taniasherpherd@gmail.com