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Information and communication technologies in contextual target situation analysis: improving Online CEAP course design in developing countries

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Tecnologias de Informação e Comunicação na análise contextual da situação-alvo: aprimorando o desenho de cursos de CEAP online em países em desenvolvimento

Bruna Gabriela Augusto Marçal Vieira¹

Abstract

This paper discusses the benefits of information and communication technologies (ICT) in the contextual target situation analysis at a distance to design online critical English for academic purposes (CEAP) courses. A contextual investigation of the publishing process of high-impact journals in computer science is presented, which is aimed at identifying issues that might influence the publication of Brazilian researchers' papers. The beliefs and experiences of Brazilian authors in the aforementioned process were analyzed through electronic questionnaires and remote interviews. Moreover, research articles' reviews were studied to identify the community's criteria for accepting or rejecting papers. Via ICT, a wider contextual analysis was possible with participants located in different parts of the world. Results provided relevant information about researching and publishing in the field, which may substantiate the design of tasks aimed at improving students' critical academic literacy. For developing continental countries such as Brazil, saving time and resources through ICT in CEAP courses' design means the possibility of investing in a more relevant instruction, which better attends to students' contextual needs and wants.

Keywords: contextual genre analysis, target situation, needs analysis, online CEAP, ICT

Resumo

Este trabalho discute os benefícios de Tecnologias de Informação e Comunicação (TIC) na

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análise contextual a distância da situação-alvo durante a elaboração de um curso *online* de inglês para fins acadêmicos em sua perspectiva crítica. Essa análise, com foco no processo de publicação acadêmica em periódicos de alto impacto na área de ciência da computação, buscou identificar fatores que possam influenciar o aceite de artigos produzidos por pesquisadores brasileiros. Crenças e a experiência de autores brasileiros foram analisadas no referido processo via questionários eletrônicos e entrevistas remotas. Ademais, pareceres de artigos de pesquisa foram estudados, e os critérios avaliativos dessa comunidade, identificados. Por meio das TICs, uma ampla análise contextual foi possível, contemplando pesquisadores localizados em diversas partes do globo. Os resultados revelam práticas de pesquisa e publicação na área que podem fundamentar o desenho de tarefas voltadas à promoção do letramento acadêmico dos alunos. Em países em desenvolvimento, como o Brasil, economizar tempo e recursos, por meio das TICs, durante o desenho de cursos significa a possibilidade de investimento em um ensino relevante, que melhor atenda às necessidades discentes.

Palavras-chave: análise contextual de gênero, situação-alvo, análise de necessidades, inglês para fins acadêmico crítico, TIC

1. Introduction

Education, as a dialogical social practice, is a dynamic and complex system that emerges out of the interaction of multiple factors (Mason, 2008). Society, individuals, institutions, disciplinary content, pedagogical and psychological theories are, at the same time, constituted within the interaction of social, historical, cultural, ideological, and financial factors, as well as elements that shape and are shaped by education. From this perspective, educational features are singular to contextual needs and constraints. Moreover, they are contextually organized in a never-ending movement of change.

The advent of new technologies, or ICT (information and communication technologies), in the turn of the century, has drastically changed innumerable social systems (Warschauer, 2002), including that of education. The inclusion of ICT in the teaching and learning processes has affected educational systems around the globe differently, causing, in the first moments, chaos and instability. Hara and Kling (2000), for instance, approached the influences of ICT on students, showing that lack of prompt feedback and technical problems

were two reasons for students' frustration in a web-based, distance language course in the United States. As far as the teachers/instructors are concerned, Lam (2000) showed that the 10 language teachers interviewed in Canada about their use of ICT in their classes believed that the perceived limitations were related to the rush of institutions to obtain technological innovations without preparing teachers adequately. Regarding the institutions' perspective, Karagiorgi (2005) reported the challenges to implement ICT in several elementary schools in Cyprus.

Almost twenty years have passed since the inclusion of ICT in education. All these years of experience exchange among teachers, researchers, and institutions – provided by ICT – have led to educational (re)organization and improvement. Recent works in the literature illustrate the new possibilities brought by the digital era. Regarding research and practice of language teaching and learning, ICT has contributed to modernizing traditional teaching approaches and practices (cf. Eckhaus, 2018) and to developing new teaching tools and materials (cf. Sahraoui & Syamsudarni, 2018). English for specific purposes (ESP) has also benefited from ICT in mainly two ways (Bloch, 2012): (i) changing traditional types of language learning with new tools, and (ii) creating new forms of communicating, enabling students to engage with their discourse community during classes. Less attention has been given to the use of ICT in needs analysis though, especially regarding the target situation. When analyzing the future communicative needs of students, technology has mainly been used in the investigation of linguistic (cf. Ha & Hyland, 2017) and textual features (cf. Supatranont, 2012) of specialized discourse. This paper presents the benefits of using ICT to investigate contextual features of language use in the target situation.

A three-phase investigation was carried out through multiple technological tools for gathering information about contextual issues involved in the production and publication of *research articles* by Brazilian computer science experts to design an online critical English for academic purpose (CEAP) course for graduates. This paper aims to demonstrate how ICT may contribute to contextual target situation analysis at a distance, expanding the scope of investigation as well as saving time and resources in courses' preparation.

2. Literature review

In this section, the complexity of language teaching and learning in CEAP courses is explored to justify the need for a contextual target situation analysis during needs analysis, which is not common in EAP/ESP literature. Afterwards, the use of ICT for such an investigation is presented, as a way to carry it out during the design of online CEAP courses.

CEAP and the complexity of language teaching and learning

Language teaching and learning, as with any other social practice, is a complex system, whose results depend on the interaction of an array of elements (Larsen-Freeman, 1997). Subjects, target language, language of instruction, students' native language, materials, tasks, assessing tools, language and teaching theories, target discourse community, institutional and economic constraints, and so on, are all elements involved in language teaching and learning. Besides, each of them is also a complex system that emerges out of the interaction of other elements. Languages, for example, are the social, cultural, and ideological result of the interaction of people and artifacts to communicate/act in society.

English for Specific Purposes (ESP) has acknowledged the complexity of language use, teaching, and learning. Therefore, one of the main principles of this approach is *specificity*. It refers to the linguistic, textual, and contextual configuration of discourse in a given social practice (target situation), which needs to be recognized to prepare students to engage in that practice through genre use (Hyland, 2002). It also refers to the needs of a given group of students (present situation) to develop their knowledge of those genres to the level that is recognized by a given discourse community.

Needs analysis is the process through which ESP practitioners investigate specificity in the target and present situation (Songhori, 2008). This process materializes *praxis*, the second main principle of the approach. Kumaravadivelu (2001) calls it practicality and explains that when analyzing the specificities of the discourse to be taught and the specificities of the classroom, teachers assume the role of scientists, whose theories become the basis of their own teaching. Since the preliminary work of Swales (1990) in ESP, both principles have

oriented ESP practice in occupational (EOP – English for occupational purposes) and academic (EAP – English for academic purposes) settings.

EAP has been successfully implemented to the teaching of academic discourse, to both native and non-native students. Once it focuses on the specialized language that students need to produce in the academic environment, it usually becomes a requirement for scholars so they can be prepared for academic communication. The problem is that in many countries, such as the U.S., EAP has been seen as a service subservient discipline, whose sole aim is to prepare students to communication across the curriculum or in academia (Benesch, 2001). In order to fight against this underrepresentation, the critical perspective of EAP (CEAP) aims at putting into the forefront the complexity of language teaching and learning in the university, evidencing the potentialities of EAP pedagogy to promote students' social awareness rather than just developing their linguistic skills.

CEAP advocates, then, for a third main principle: *criticism*, which stands for a bigger focus on contextual issues during language classes. That means approaching injustices and inequalities in the target and in the present situation (Benesch, 1996). By analyzing and reflecting upon contextual elements which, at the same time, shape and are shaped by the target language, Benesch (2009) explains that CEAP may help students to reconceptualize their sense of citizenship, their own identities, and their critical thinking regarding their roles in the target discourse community. They might be able, then, not only to recognize and reproduce their peers' discourse, but also to identify what needs to be changed, when and how, promoting social improvements in the community.

A critical approach to EAP implies new roles for teachers and students, who are not only seen as technician and novice members of the discourse community, but, respectively, as transformative practitioners (Morgan, 2009) and legitimate members of the community who can also be agents of change (Benesch, 1996). In this respect, CEAP turns out to be a good investment in developing countries, where university students need to be prepared for academic communication and for the pursuit of scientific equity.

ICT, as one of the main contemporary tools for human interaction, should also be an object of discussion in CEAP classes, once they start changing social systems, enabling them to

become more globalized, and, nonetheless, increase social and economic discrepancies.¹ In education, after a long period of adaptation, however, the use of ICT starts to bring good results. Thus, besides being an object of discussion, their use for language course design, implementation, and analysis tends to increase shortly.

In CEAP pedagogy, technological devices may be used to assess students' performance in CEAP tasks, their development throughout classes, and the validity of the courses (cf. Chun, 2009). The advent of new modes of instruction (computer-assisted language learning - CALL and distance or blended learning) is one of the major benefits ICT brought to CEAP courses' implementation (cf. Arnó-Macià & Rueda-Ramos, 2011). Finally, insofar as CEAP course design is concerned, ICT may be used for the elaboration of tasks, syllabus structuration, and needs analysis, for analyzing the present (cf. Vieira & Aranha, 2015a, 2015b; Vieira, 2017; Aranha & Vieira, 2018, Vieira, 2020) or target situation (Vieira, 2019b). The next section focuses on the use of ICT in the target situation analysis.

Target situation analysis: a breeding ground for the use of ICT in CEAP

Target situation analysis (TSA) is one of the main investigations to be conducted during needs analysis for CEAP course design. It comprehends what the learner needs to know to function effectively in the target situation (Songhori, 2008). TSA, then, is one of the procedures taken by the teacher in ESP/CEAP pedagogy to assure specificity, so they understand how language is used in the target discourse community and then can translate students' needs into linguistic, literacy, and pedagogical tasks.

Hyland (2007) explains that early studies focused on lexical and syntactic features of particular registers. Later, interest moved to the rhetorical macro-structure of specialist texts. Now a deeper interest in specific discourse communities leads to a pursuit of the understanding of community-situated language use and describing specific target texts required by learners. This investigation typically involves either experienced members of the community, the genres produced and consumed by them, or both.

¹ For a deeper understanding of the complex influences of ICT on social systems, cf. Warschauer's (2003) discussion on the technological divide.

Regarding experienced members, questionnaires, interviews, and field observation are common instruments for data gathering, aiming at identifying the genres that students might use in the target situation, as well as the skills they must develop in their English abilities (cf. Sarmiento, 2012). Genre analysis, on the other hand, tends to rely on texts produced and consumed by the community. It can be done either in a textual perspective — through which linguistic and rhetoric patterns of the target genre(s) are identified (cf. Cheng, 2008) — or in an intertextual one, aiming at identifying the genre system through which the members carry out their activity (cf. Molle & Prior, 2008).

For the CEAP course design, nevertheless, there is a need for widening the scope of TSA. Since CEAP also focuses on contextual issues of the present and target situations, TSA must provide ways of eliciting information on social, political, and ideological features of the discourse community, which promotes and sustains power relations among members. In this context, Benesch (1996) advocates for a critical perspective on a needs analysis that acknowledges the hierarchical configuration of institutions. Concerning the TSA, a critical perspective also identifies the socio-cognitive demands related to the use of English by the target community, but goes further and treats them as a site of possible reform. ICT, then, has much to contribute to contextual target situation analysis.

The use of ICT in contextual TSA has been most frequently used for data analysis, once most CEAP courses in the literature are locally implemented, allowing the teacher the opportunity to investigate the target discourse community in locus. Dehnad et al. (2010), for example, made use of computer software (SPSS) to analyze data collected from a questionnaire given to graduate students from a medical and management university, along with interviews conducted with the heads of departments, the students, and a high-ranking administrator of the university, to revise the syllabus of a CEAP course.

For distance education in extensive territories, such as Brazil, however, locus procedures may be time- and resources-consuming, which can be solved using ICT for data gathering as proposed in this paper. The next two sections present a contextual TSA for the design of an online CEAP course for Brazilian computer science graduate students. Special attention will be given to the use of ICT for data gathering and how it has facilitated the investigation of critical issues at a distance.

3. The Study

Although the language of instruction in Brazilian universities is Portuguese, because of globalization, students have been required to read and write in English - the academic lingua franca (Ferreira & Lousada, 2016). Applicants to computer science graduate programs from most public universities in the country, for example, need to pass an English proficiency exam which tests their reading comprehension of academic texts. Moreover, once admitted to the program, graduates must publish at least one paper in high-impact journals to get their post-graduation degree (Vieira, 2015a). Despite that, few institutions offer English writing courses for the development of students' academic literacy (Aranha, 2009). To provide an accessible way for these learners to get prepared for academic writing communication, online CEAP courses have been proposed.

In 2014, Vieira conducted a detailed needs analysis to investigate the purposes for which Brazilian computer science graduates need English in the academic environment. Results indicated that students' immediate need is to write research articles and abstracts. Departing from this result, a TSA focused on both genres was recently conducted. Besides a textual analysis (to be presented in future work), a contextual analysis was done to investigate critical issues that regulate the use of both genres by the community. More specifically, the contextual TSA presented here aimed at identifying issues that might influence the acceptance of Brazilian computer scientists' papers in high-impact journals.

Once both genres circulate in a variety of contexts (production, legitimation, publication, distribution, and preservation) (cf. Khosrowjerdi, 2011), the contextual TSA focused on the contexts in which the students have active participation, starting from production and ending in the publication process of research articles. Still, an array of subjects, institutions and factors are involved in those processes, such as authors, referees, funding agencies, and so on. Thus, the contextual investigation mainly focused on understanding research article production and publication in high-impact journals through the lens of those whom the target students wish to become in a near future: the authors.

Brazilian experts who have published articles in the higher ranked journals in each of seven subfields in computer science, according to the Journal Citation Reports² (JCR), over a five-year period were invited to take part in this investigation. Differently from CEAP courses that take place in English-speaking countries or in countries where instruction is in English, the target situation here does not emerge from the interactions of a local community, but rather from a global one engaged in the process of academic publication in computer science. Investigating the contextual features of this target situation in person would be extremely time- and resource-consuming. Thus, as a viable alternative, ICT was used for both data gathering and analysis at a distance. Table 1 presents the ICT tools used in each of the three phases of the contextual TSA.

Table 1 — Phases of contextual TSA

Phase	Instruments for data gathering	ICT tools
Phase 1	Questionnaire	Google web search, Google Docs, Web pages, Microsoft Word, Microsoft Excel.
Phase 2	Interviews	E-mail, Skype, aTube Catcher, audio recorder, Microsoft Word, ELAN, AntConc.
Phase 3	Document analysis	E-mail, Adobe Acrobat Reader DC, Microsoft Word, AntConc.

Phase 1 aimed at raising the profile of those scientists. Phase 2 was divided into two parts, each having a different objective: investigating the ability of the participants to produce publishable research articles in high-impact journals (Part 1); and deepening the discussion about some contextual factors investigated in the questionnaire (Part 2). Finally, ending the investigation, Phase 3 focused on the analysis of reviews received by the authors about submitted papers to computer science journals.³

² It is an online platform, created by the database *Web of Science*, for scientific journal evaluation in every field of expertise. Based on the number of citations received by a journal in a given period, the journals are ranked. The more citations a journal gets, the better its position in the rank, demonstrating its impact factor in a certain field.

³ Because there were humans involved in this investigation, a research project was submitted to the Ethical Board of the Institute of Biosciences, Humanities and Exact Sciences (Ibilce) of São Paulo State University (Unesp) (certificate number: 64609417.9.0000.5466). The project was approved by the Committee (review number 1.994.945), as well as its final report (review number 2.970.646). Besides, all participants signed an Informed Consent.

4. ICT in CEAP's critical needs analysis: a means to specificity, praxis and criticism

Out of the 6.086 research articles published from 2011 to 2016 in the seven journals investigated, 67 were written by or in collaboration with 127 Brazilian researchers. Table 2 presents the number of papers published by each journal in the considered period and the number of Brazilian researchers who produced them. When there was no contact information of the authors available in the published article, the Google web search engine was used to look up their profiles in a Brazilian database for researchers and institutions (Lattes)⁴. An e-mail was then sent to each author, inviting him/her to participate in the research through answering an online questionnaire on Google Docs. The link to the questionnaire was added to the e-mail.⁵

Table 2 — Number of Brazilian experts who have published research articles in the investigated journals

Subfield	Journal	JCR	Quantity
Information Systems	IEEE Communications Survey and Tutorials	1	30
Artificial Intelligence	IEEE Transactions on Fuzzy Systems	2	30
Theory and Methods	IEEE Transactions on Evolutionary Computation	5	15
Interdisciplinary Applications	Computer Aided-Civil and Infrastructure Engineering	7	0
Cybernetics	IEEE Transactions on Cybernetics	10	17
Hardware and Architecture	IEEE Transactions on Neural Network and Learning Systems	11	22
Software Engineering	ACM Transactions on Graphics	17	15
Total			129 ⁶

⁴ <http://lattes.cnpq.br/>

⁵ The questionnaire used in Phase 1 of contextual TSA is available at <https://docs.google.com/forms/d/e/1FAIpQLSdObnSvwlFO1OzBE4ygIUVMp-tEev-JI-3Qx1FCn0mjGFizQ/viewform>

⁶ Although the total number of researchers here is 129, there were 127 Brazilian (co)authors, because two of them took part in more than one publication.

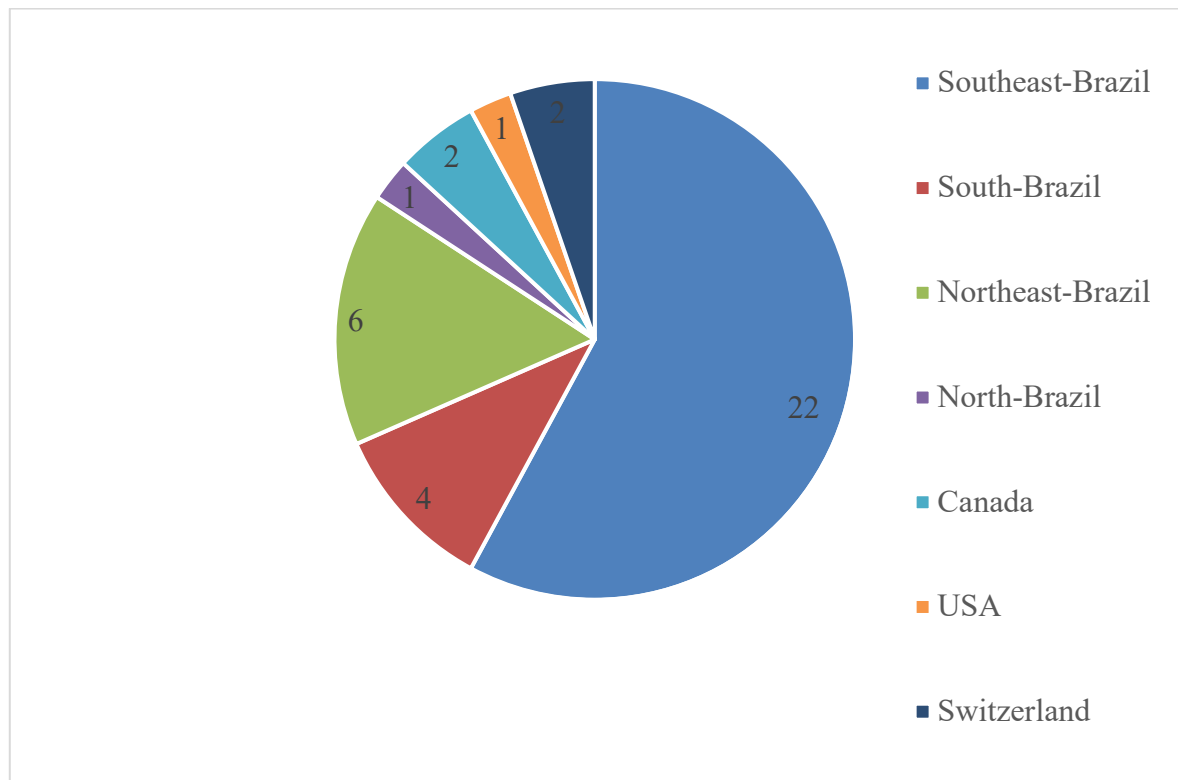
Phase 1 – Questionnaire

Eleven questions investigated social, academic, and scientific information about the authors, as well as their opinion on the influence of some contextual factors in the publishing process of high-impact journals. Thirty-eight authors participated in this phase, representing 29.92% of the invited experts – more than the minimum (10–20%) amount that represents a reliable sample of data, according to Oliveira and Grácio (2005).

Data analysis was based on Aaker and Day (1990), in whose methodology nominal and ordinal analyses of tabulated data are conducted. In the former, personal, academic, and professional features of the subjects were identified, and in the latter, features that recurred among participants were analyzed. Because the questionnaire was online, data were automatically tabulated, and Microsoft Word and Excel were used for data description and analysis, as well as for the design of tables and charts.

Questionnaires are a typical instrument used for data gathering during needs analysis by ESP practitioners (Flowerdew & Peacock, 2001). Using ICT, however, the benefits of questionnaires increase. First, online questionnaires might be more dynamic employing multiple stimuli that digital tools make possible, such as charts, figures, and animations. Moreover, sending questionnaires by e-mail is useful because they can be easily re-sent as many times as necessary, the time of response may be decreased, and participants have the convenience of answering them wherever and whenever they can. Besides all those benefits, in the present research, the use of online questionnaires made it possible to reach members from distant locations. Figure 1 presents those data.

Among the participants, there were Brazilian computer scientists from four regions of the country and researchers who were then abroad. Considering that Brazilian computer science graduate students need English to share their research results with their peers around the globe, and because the target audience of the considered online CEAP course was students from around Brazil, the conduction of this global investigation of the target discourse community responded to this contextual specificity. Those different backgrounds have led to distinct experiences with academic publication among the researchers, which were deeply investigated in Phase 2, and will be discussed below.

Figure 1 — Country/region of the participants of Phase 1

Phase 2 – Interviews

A sample of 29% of the questionnaire respondents agreed to participate in the next phase of the research. By e-mail, eleven participants were invited for the interviews, which were conducted individually through Skype video calls. aTube Catcher was used to record the interactions, and so was an audio recorder device as an alternate tool.

After the interviews were finished, they were transcribed using ELAN, software for audio and video transcription. Data analysis was based on a six-step methodology for content analysis, proposed by Huckin (2004), in which, after defining the unities of analysis, data must be tabulated for interpretation. There were over eight hours of transcribed data; therefore, AntCon – software for text analysis – was used to optimize the work.

Each interview, as mentioned above, was divided into two parts. Part 1 followed a Gordon and Dawes (2005) array protocol, in which the beliefs, strategies, and external behavior of participants were investigated to understand the structure of their experience in writing and

publishing papers in high-impact journals in the field. Questions related to the following issues were asked:

- (i) the concept of publishable articles in computer science high-impact journals;
- (ii) knowledge and skills necessary to produce that kind of paper;
- (iii) difficulties and limitations that Brazilian computer scientists face during the process of producing and publishing research articles, as well as strategies for overcoming them;
- (iv) evidence that the papers fit the expected conditions for publication; and
- (v) motivation for publishing in high-impact journals in the field.

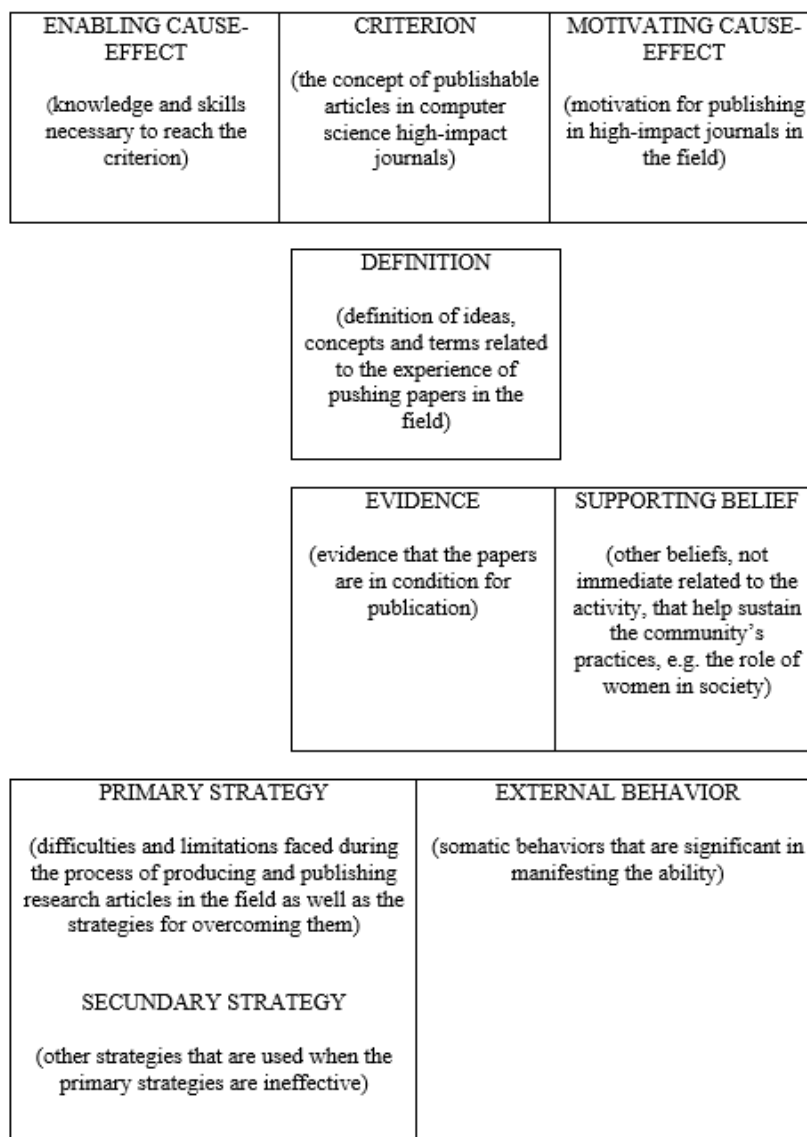
The questions were structured into an array (Figure 2), adapted from Gordon and Dawes (2015). Microsoft Word was used, which was filled in with the participants' answers. The interviewees had access to the array, thanks to Skype's screen sharing tool, so they could actively participate in the process of data gathering, following, and correcting the researcher's interpretation of their answers. That method adopts a second-person perspective, wherein the researcher acts as a mediator, helping participants access their subjective experiences by questioning them (Keranen et al., 2012). Additionally, it enables a deeper involvement of researcher and participant with the data, once both are responsible for the information raised.

Part 2 was conducted as a typical semi-structured interview. Participants were presented with data gathered from the analyzed questionnaire regarding contextual factors – such as sexism, xenophobia, social and academic bias – that, according to the 38 respondents, might influence the publication of papers, as well as to the profile of Brazilian computer scientists who have published in refereed journals. Then, they were asked to interpret those findings (cf. Vieira, 2019b).

The use of ICT in Phase 2 was also substantial for investigating critical issues at a distance. Firstly, it made it possible to perpetuate research practices that are typical in face-to-face interviews, such as audio and video recording, thanks to a lot of software that is freely available on the web. Besides, sharing the screen with the participants in Part 1 was central to assuring the second-person perspective for data gathering; moreover, it turned out to be a better procedure than the printed version. Once the participant has a full view of the array on the screen, s/he can more clearly accompany the data inserted in the array by the researcher and comment/correct them instantaneously without needing to erase the paper, and the

researcher ends the interview with the data already tabulated in digital version and ready to be analyzed.

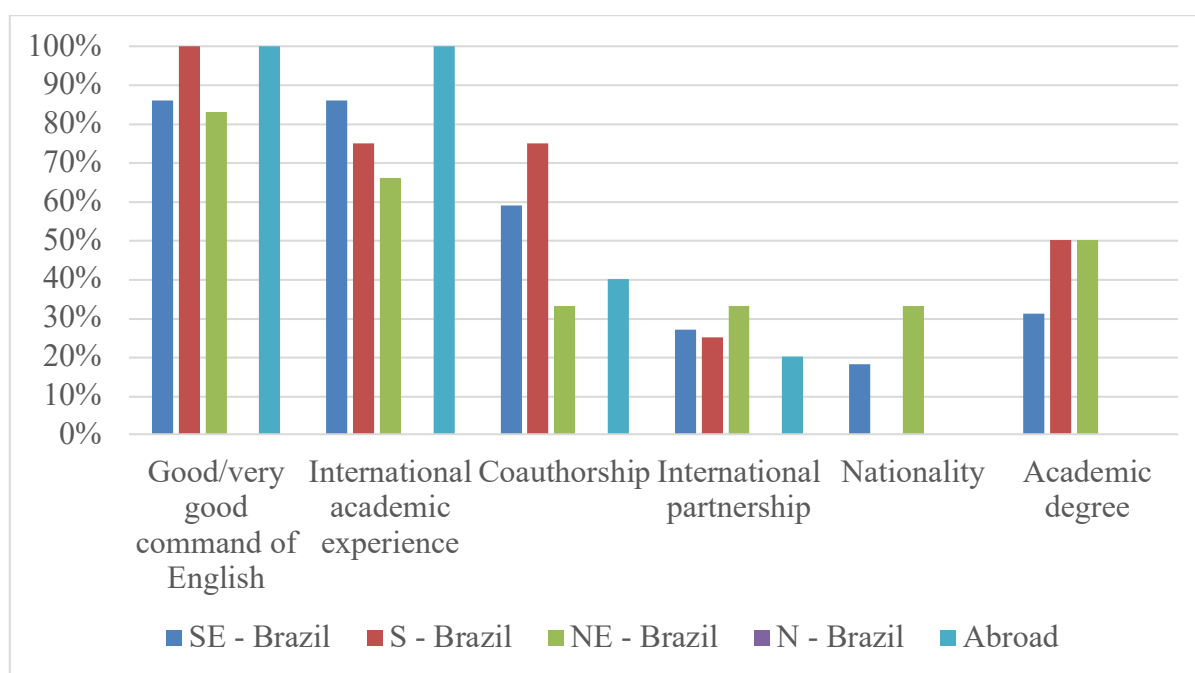
Figure 2 — Array protocol used in Part 1 of the interview



Finally, in addition to enabling the researcher to reach participants distant from her, in different regions of Brazil and abroad, conducting the interviews online also gave the participants the convenience of being interviewed at the best time and place for them. All these benefits brought using ICT in the contextual TSA contributed not only to reaching the specificity that Needs Analysis requires – discussed above, in the previous subsection – but also to assuring the criticism CEAP pedagogy advocates for. Interviewing members of a

global community enabled the teacher/researcher to observe and recognize beliefs, behaviors, accesses, restrictions, and power relations that the different backgrounds might perpetuate among the researchers in the field. Figure 3 shows, divided by region, participants' evaluation of their English knowledge to write academic texts, their international academic experience, and how they perceive the level of influence of contextual issues on the acceptance of Brazilian computer scientists' papers by high-impact journals in the field.

Figure 3 — Participants' evaluation of some critical issues regarding international academic writing and publication



While more than 70% of all interviewees believed they have good/very good command of English to write academic papers, and 65% had already had some type of international academic experience, the one in northern Brazil presented a bad evaluation of his English academic writing and stated that he had never had any type of international experiences. Such a difference may be motivated by numerous reasons, including personal ones. Among them, the unequal investments in education that the government makes in different states of Brazil cannot be ignored.

The website Terra (n.d.) based on data from the National Institute for Educational Studies and Research “Anísio Teixeira” (INEP), showed that the Amazon, a northern state in Brazil,

invested R\$ 3,075.89 a year per student while, for instance, Santa Catarina, a southern state, invested R\$ 6,829.52. Being education a complex system, it is not possible to state that every student from the North is lesser prepared for international academic writing than the students from the South due to the different public education they get. As elements that influence educational practices, however, contextual issues, such as economy and politics, need to be considered in the needs analysis for CEAP courses. ICT, as shown in this paper, may help teachers/course developers to investigate at a distance how those issues impact specific educational contexts.

In this respect, data in Figure 3 also show huge discrepancies among participants located in different countries/regions concerning their perception of contextual issues that might influence the publication process of computer science high-impact journals. “Having co-authorship with a well-known researcher in the field” was perceived as a big influence on the process by 75% of Brazilians located in the South of the country, and half of the participants in the South and the Northeast believed that the level of the researchers’ degrees influences their papers’ acceptance. Four of the five contextual factors investigated were considered influential to the publication process by the interviewees located in the Southeast, whereas just a few participants who were then abroad considered only two factors.

All this information was fundamental for designing tasks to prepare the target students (computer science graduate students from around Brazil) better for the different contextual limitations and constraints they might face in academia, how to overcome those problems, and/or work on solutions to eliminate them, changing research practices and contributing to the development of their community. Praxis, then, was also affected by using ICT in the contextual TSA, since the possibility of investigating members of a global community provided the teacher/researcher with rich information upon which she based her teaching practices. This issue is discussed deeply in the next subsection.

Phase 3 – Textual analysis

At the end of the interview, each participant was asked to share with the teacher/researcher a received review of papers that had been either accepted or rejected by a computer science high-impact journal. By e-mail, 17 texts were sent by them, representing 12 different publishing processes – four of which recommended rejection of the paper, and the other eight

accepted the work. For data analysis, Huckin's (2004) content analysis methodology was also used, as well as AntConc for raising specific information from the texts.

Carrying out this phase was possible only with the use of ICT. The very concept of research article reviews encompasses a digital dimension. Nowadays, academic publishing processes are conducted online; thus, all the interactions between editors and authors, editors and referees, and editors and editorial boards are via the internet. To have access to these texts, it would be necessary for the researcher to use ICT, not only because the authors are in distant locations, but because the texts per se are in digital format.

Having access to this material contributed to raising the reliability of the research since another perspective on the publication process of high-impact journals in the field could be analyzed: that of the referees. The analysis of the reviews showed the most common issues that the referees consider to reject or recommend the publication of a paper. Table 3 presents an overview of the frequency with which the referees criticized or evidenced authors' good work regarding each unit of analysis investigated.

Table 3 — Categories of factors considered by referees to reject and accept manuscripts for publication in computer science high-impact journals

Categories	Recommendation	Recommendation
	to reject	to accept
Contextual - positive	90%	63%
Contextual - negative	90%	50%
Textual - positive	60%	57%
Textual - negative	60%	63%
Linguistic - positive	0%	13%
Linguistic - negative	40%	28%
Publishing process - positive	10%	18%
Publishing process - negative	20%	13%
Formatting - negative	10%	31%

The referees most often commented on contextual issues related to the conduction of the research, such as “originality”, “contribution to existing knowledge”, and “impact of results”,

either for rejecting the paper (90%) or recommending its publication (50–63%). Textual issues regarding the selection and organization of information in the paper, like “quality of cited work”, “clarity of the methodology”, and “accuracy of data analysis”, were the second most mentioned, for either criticizing (60-63%) them or evidencing the authors’ good work (57–60%). Finally, linguistic issues concerning “syntax”, “spelling” and “coherence” were the least mentioned, followed by formatting and issues related to the publishing process.

This information helped the teacher/researcher understand the order of relevance of each investigated factor (contextual, textual, linguistic, etc.) to the acceptance/rejection of Brazilian computer scientists’ papers by high-impact journals. It is clear, in Table 3, that, although a good ability to write papers in English is considered in the referees’ reviews, it is not a defining criterion for recommending the publication of the paper or not. Rather, the validity and originality of the work are what counts more, followed by clarity, organization, and accuracy of the information in the manuscript. After assessing students’ present situation, the teacher/researcher could plan an appropriate syllabus and design effective tasks to fulfill students’ needs (cf. Vieira, 2019a).

5. Conclusion

This paper aimed to discuss the benefits of using ICT to conduct a contextual TSA at a distance. Results show that this use was essential for two main reasons: besides facilitating data analysis through multiple computer programs, such as Microsoft Word, Microsoft Excel, and AntConc, they enabled the researcher to gather data at a distance and to ensure the specificity, praxis, and criticism that CEAP pedagogy advocates for.

First, the conduction of a global investigation of the target discourse community responded to the specific needs of the target audience: students from around Brazil who need to share their research results with their peers located around the globe. Those different backgrounds have led to distinct experiences with academic literacy and publication, which could be properly investigated at a distance, expanding the scope of the contextual TSA as well as saving time and resources in course preparation.

As far as criticism is concerned, ICT made possible the investigation of, among other things, the experience and beliefs of members of this global discourse community concerning the

conduct and sharing of research in computer science. Results helped the teacher/researcher understand the causes of the contextual specificities identified, and their influence on the engagement of Brazilian researchers with international peers.

Finally, this investigation conducted using ICT tools and instruments informed the teacher/researcher on how to better select and organize content in the syllabus of the course, according to their level of relevance in manuscript analysis by referees. Thus, they substantiated the teacher/researcher praxis, once they provided relevant information, which she used to plan, organize, and conduct her teaching practice (Vieira, 2019a). The use of ICT, as shown in this paper, makes possible a wider contextual investigation of the TSA, reaching not only a local but also a global community with which students need to engage during their academic practices.

In Brazil, a continental developing country that is just starting the internationalization process of universities and where there barely are academic writing courses to help students in this task, online EAP/CEAP courses may represent the only opportunity for these novice researchers to develop their academic writing skills. However, the design of such courses may be a big challenge for teachers and course developers, due to social, cultural, ideological, and economic discrepancies among different regions of the country. To assure the specificity ESP pedagogy advocates for, present and target situation analysis must also investigate contextual issues regarding discursive practices in the target discourse community in each region where students are from. Carrying out this investigation in *locus*, in this case, may be time- and resource-demanding. Contextual TSA at a distance, then, appears as the best solution to assure specificity, criticism, and praxis for the design of courses that fully attend to students' needs and wants with fewer investments, which is only possible thanks to ICT.

At this point, it is necessary to consider that, although ICT makes possible the improvement of contextual TSA for reaching a global discourse community, it may also limit such an improvement in regions and countries where teachers and course developers have no access to them. Unfortunately, the scientific equity that CEAP aims to promote among students depends on an array of factors that are out of instructors' control. It is important, however, that ESP teachers and practitioners keep on searching for ways to bring more access to underrepresented minorities through language courses. As Bazerman et al. (2009, pp. XIV)

remember, “advancing the communicative competence of all, making available the genres of power and cooperation, is a matter of social capacity and social justice”.

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Ethics Committee Approval Statement

This investigation was approved by the Research Ethics Committee from UNESP – Instituto de Biociências Letras e Ciências Exatas on March 23, 2017.

Conflict of interests

The corresponding author has no conflict of interest to declare and bears full responsibility for the submission.

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