

Processes for Instructional Material Development for ESP Classes from the Critical Literacy Perspective in a Federal Educational Center in Brazil

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Abstract

Teaching English for specific purposes presents the challenge of designing and developing instructional materials that will cater for students' needs. According to Hutchinson and Waters (1987), students, professors from the specialized fields, and the English teacher should work in tandem, so that the teaching of the English language might actually meet the students' needs. The aim of this paper is to reflect on the origins of and advances in ESP in Brazil since its beginning with professor Maria Alba Celani's focus on material's development, selection, and adaptation. The materials that will be presented here come from the chosen classes of the industrial and mechanical engineering courses, as well as, a technical course in the fields of mining and ports offered at a Federal Center of Technological Education located in Itaguaí, a district of Rio de Janeiro. Special attention is given to the course in the field of ports due to two environmental disasters caused by a famous company that is well-known to the students. Given that each course in these degree programs are associated with specific needs, and given that most courses involve technical issues, of central concern in this chapter is presenting and reflecting upon the materials developed, stressing the importance of teaching ESP under the critical literacy perspective (Jordão, 2012; Fairclough, 2003), which promotes a critical and reflective language education.

1. Introduction

It has been said by scholars such as Dudley-Evans and St John (1998) that one of the major features of the professional who teaches English for specific purposes (ESP) is the ability to produce, adapt, and develop specific materials for her/his students. This reveals how hard an ESP teacher's work is. In addition, much creativity and effort are needed in order to produce new materials that are appropriate for a particular student or a group of students each week, for instance. Luckily, most scholars and teachers agree that there is no need to re-invent the wheel. Old materials can be adapted in order to fit students' needs, and they can also be developed and updated as time goes by.

When developing materials for ESP and English for academic purposes (EAP), it is advisable that the language professional work collaboratively either with the students or the professors from the specialized field (Hutchinson & Waters, 1987). This paper tries to present how this tandem work has been occurring in English classes offered to students in technical degree courses in a Federal Center of Technological Education located in Itaguaí, a district of Rio de Janeiro, Brazil. The specific areas include undergraduate degree courses such as the B.A. in Industrial and Mechanical Engineering, as well as a technical/professional development course in the fields of mining and ports. The objective of this paper is to present the specific materials that have been developed thus far, and to reflect upon the process of materials development, stressing the importance of teaching ESP under the critical literacy perspective (Jordão & Fogaça, 2012; Fairclough, 2003).

2. Some Considerations about ESP in Brazil

To begin with, I believe in the importance of defining terminology, especially when it comes to the teaching of ESP in Brazil. What ESP is understood as nowadays has a direct impact on ESP materials development. In fact, the teaching of ESP and the materials design process are intertwined. One cannot think about addressing learners' needs without designing specific activities and materials for the students. In the past, however, ESP in Brazil was understood as a subject that aimed at teaching a list of words that belonged to a certain discourse community. In order to do that, there was no need to develop special materials for

the students, except for the vocabulary lists and glossaries, usually with translations. In the past, those who taught ESP did not think of the English language as a discourse spoken by different speech communities for different specific purposes. Language was seen as a set of structures and words detached from the context that students should master.

Historically, the teaching of ESP in Brazil was linked to the necessity of teaching English for certain specialized professionals who primarily needed to develop their reading skills. *The National Curriculum/Parameters for Teaching (Parâmetros Curriculares Nacionais) foreign languages* was designed by MEC (The Brazilian Ministry of Education) in 1996, and it recommended the development of reading as the most feasible skill to be taught in schools and universities. According to the aforementioned document, even in cosmopolitan cities in Brazil a student of English as a second language would only have the chance to come into contact with the language through reading (1996, pp. 21–22). Therefore, the students could only gain access to other cultures through books, magazines, etc.

Thus, the primary idea spread about ESP was that it was designed for the teaching of reading skills, not only in public K-12 schools, but also for undergraduate students who needed to read books and articles in English from their specialized fields, where, especially in Brazil, translations are not widely available, and where the translated editions tend to be more expensive. Under this scenario, it was believed that only reading mattered and the so-called technical vocabulary was taught in isolation from specialized discourse through the use of lists.

As time went by, professors such as Maria Alba Celani and Rosinda Ramos, just to name two delved into researching ESP, and contributed to the realization that working with a language for a specific purpose meant working with a specific discourse. More than that, as the first needs analyses were conducted, it became clear that reading was not the only skill required by students. Other skills were emphasized in the learning of ESP.

3. ESP as Discourse Analysis

Due to the traditional emphasis on reading in ESP in Brazil, it has been necessary to stress that, as a language, English cannot be dissociated from discourse, especially the discourse of a specialized field. The importance of comprehending discourse, as Cook (1999) and Fairclough (2003) propose, is of a paramount importance to the teaching of English, not only in the subfield of ESP, but also in so-called *general English* as well. When language is viewed as discourse, we can analyze and reflect about its many layers. It is possible to discuss a text's voice and purpose, when it was written or uttered and why. As each ESP is situated within its respective professional field, working under a discourse perspective helps the students better understand and reflect more on their future professions.

The same can be applied to the materials used in class. As students' needs are prioritized, the materials should reflect and embody the needs of the students, and explore different kinds of register, lexis, genre, and pragmatics from each specific professional field, as Ramos (2004) and many others point out.

4. Developing Critical Literacies in ESP

After accepting the importance of teaching language as discourse, one can come to the conclusion that whenever discourses are studied, a critical view/reading is required in class. That is when *critical literacies* come into play. Within the critical literacies approach, as conceived by the New London Group,¹ students are viewed as people who interact in the world using a great number of discourses, where students may criticize, legitimize, or subvert opinions, actions, and transactions in their profession. Teaching ESP from a critical perspective, while also taking into account students' specific needs, implies that not only has language been developed, but also skills associated with *citizenship*. ESP classes become an exercise in reflection and discussion. Therefore, it is advisable that the instructional materials which teachers design/adapt/select for students must be in tune with this teaching and learning proposition.

1 The New London Group (NLG) was composed of the professors Allan Luke, William Cope, Carmen Luke, Courtney Cazden, Charles Eliot, Gunther Kress, Jim Gee, Martin Nakata, Mary Kalantzis, Norman Fairclough, and Sarah Michaels.

When working with audio-visual materials or working with written texts, under the critical literacy perspective, one of the teacher's main concerns tends to be whether or not to provide instructions and discussing the input materials in the L1 whenever there is a perceived lack of proficiency in class. Fogaça and Jordão (2012, p. 77) argue that the use of L1 does not cause any harm to the students, especially when reflecting on language use, and if citizenship is being promoted and developed. Accordingly, there is no problem, for instance, designing a reading activity about a scientific article with the instructions and answers in the mother tongue, as long as reading strategies are being developed alongside, for example, a discussion about the ethical considerations of the study presented in the article.

5. Developing Materials for ESP

In professional development courses for language teachers and undergraduate and post-graduate courses for language teachers in Brazil, it is often heard that teachers face difficulty developing materials. When a critical approach is required, they may have a harder time creating materials that meet their students' needs. One reason for this interest in designing material is that the number of technical schools that offer professional development increased between the years of 2002 and 2015. Unfortunately, when the government changed in 2015, this trend flattened. Teachers were accustomed to assuming the role of materials consumers rather than producers and had to face a new reality: how to teach ESP, and how to cater for their students' needs.

The lack of expertise in creating and adapting materials usually results in inexperienced teachers spending a lot of time creating lesson plans. However, Dudley-Evans and St John draw our attention to the myth that every ESP teacher should develop her/his own materials:

One of the myths of ESP has been that you have to write your own materials. This, in turn, underpins the myth that every ESP teacher needs to be an expert designer of course materials [...] What all ESP practitioners have to be is be good providers of materials. (1998, p. 172)

Dudley-Evans and St John also point out that “there is a danger in ESP course and materials provision of constant ‘re-invention of the wheel (p. 172).’” Hence, teachers should feel less anxious about the obligation of mastering the materials design craft. On the other hand, teachers should be aware that a regular students’ book from a well-known publishing house or any material related to the teaching of so-called general English will not do. Thus, specific materials should be either be developed or adapted.

According to Paiva (2005, p. 32) it is the teachers’ duty to develop students’ learning abilities so they can be the agents that promote their own learning. As I see it, the instructional ESP materials developed by teachers for students should also promote autonomy, especially because the ESP student usually needs to understand/use language to solve tasks in their field of work and/or study, where their English teachers are rarely present. The instructions should be clear, the activities should have an example, and directions should lead the students to understand grammar and lexis, for example. In other words, when students get home and work through the designed materials on their own, they should be able to perform the tasks, they should be able to study, and they should know where they can find references and support. The material, therefore, should help promote students’ autonomy

Another source of concern in materials design for ESP is the perceived need for collaboration between the language teacher and the subject teacher to take on the form of tandem work.

Such teamwork must be done in combination with the process of needs analysis following Munby’s jigsaw framework (1978) and should be efficient and effective when it comes to designing/adapting materials for students, selecting which skills should be addressed, and determining what genres and emerging or existing discourses are important for the students.

6. ESP Materials Developed at a Federal Center of Technological Education in Brazil

The students who worked with the specific materials presented in this section were enrolled in two undergraduate courses in the field of engineering: mechanical and industrial engineering. Materials are also presented from a

technical course in the fields of mining and ports. These courses are offered by a federal center of technological education in Brazil, located in Rio de Janeiro, named Centro Federal de Educação Tecnológica Celso Suco da Fonseca (CEFET-RJ). The institution offers courses at different levels of technical education ranging from secondary to tertiary, including degrees in technological fields, languages applied to international relations, physics, and philosophy, to name but a few. The institution also offers M.A. and Ph.D. courses. CEFET-RJ operates different campuses around the state of Rio de Janeiro. The courses discussed here were taught in the city of Itaguaí, which is a residential, industrial, and by the same token a touristic area located in the green coastal region of Rio de Janeiro.

CEFET-RJ, which celebrated its 100 years of existence in 2017, aims at promoting education through teaching, research, and cooperative education by connecting the academy with society. It aims to provide society with workers who have been educated in a humanistic, scientific, and technological tradition with a strong ethical, social, and political foundation, so that they might act in the benefit of society.

Within this complex and rich context, the teaching of English language can be a challenging activity. The students are heterogeneous and the number of students in each class may vary from six to forty. Each new semester, there are new groups that possess different needs and specificities.

In order to perform a needs analysis, I personally follow Munby's (1978) so-called jigsaw proposal: A set of criteria that work as if they were matching parts that form a perfect jigsaw, or a perfect portrait. I would say that the result is a picture of my students and their needs. The criteria adopted by Munby for collecting data about the learners and their needs are: 1) *target situation analysis*, which includes objective, perceived, and product-oriented needs; 2) *strategy or learning strategies*, which include subjective and process-oriented needs; 3) *present situation analysis*, which estimates strengths and weaknesses in language, skills, and learning experience; 4) *means analysis*, that is, the environment in which the course will be run; 5) *register analysis*, which focuses on lexis; 6) *deficiency analysis*, which considers a learner's present needs or wants, and, finally, 7) *discourse and genre analysis*.

It should be stated that all data obtained through the reflection on each criterion can be revised at any time during the teaching and learning process.

The identified needs may be dynamic and change from time to time as the group progresses in learning. Therefore, the teacher may design and develop certain materials for one semester, and then not use it or adapt it during the next semester due to the different needs that may arise from the new situations students face at work, for instance.

After conducting a needs analysis following Munby's jigsaw, some decisions are taken in relation to the materials that are to be adopted, adapted, and developed for each course.

In the technical course in the fields of mining and ports, for instance, it was discovered that students need to read documents issued by large mining companies. The students from this course expressed a desire to work at the Port of Itaguaí. Among the companies they wished to work for, the giant Brazilian mining company Vale is the most prominent, despite the great environmental and human disasters caused by the burst of dams in the state of Minas Gerais. It should also be said that, generally speaking, the students in this degree course have already finished high school, and most of them are adults who had been away from school for some time and who had decided to go back to school in order to specialize in a different profession, so they might find a better job and/or salary. As these students had been out of the formal educational setting for some time, a diagnostic test revealed that many needed to review concepts and contents in many different subjects. Regarding the teaching of the English language, the first diagnostic activity often revealed a lack of self-confidence in their reading strategies.

The materials used with these students needed to build their confidence and autonomy. As they worked with documents, I usually told them that a document is not a creatively written text. The more they read the documents, the more they realized the features of the genre, and the more they noticed that the terminology is frequently repeated. For example, there is a document named Notice of Arrival (NOA). The information contained in this notice is always the same and it indicates that the vessel is ready to arrive at outer roads in a fortnight and the port should issue the vessel's permission, otherwise a heavy fine must be paid by the cargo shipper. This warning text does not change from company to company, it is a standardized text. Thus, students who are acquainted with Vale's NOA's text, will also be familiar with the NOA from CSN, another company.

Another strategy to build students' confidence is exploring their background knowledge by using authentic documents. The documents I used with the students were ones they had seen before in other subjects studied at CEFET-RJ. Some of the documents are in fact commonly referred to in Portuguese by their abbreviations/acronyms in English, such as NOR, NOA, and BL (*notice of readiness*, *notice of arrival*, and *bill of lading*, respectively). Thus, students are acquainted with the content of such texts because they are needed for port operations. In their daily routines at work, they deal with these documents. Without the issue of a document of bulk cargo formation, for example, a cargo shipper cannot complain about the discrepancy in cargo at the end of a voyage through a letter of protest.

Such documents were procured through tandem collaboration with the teachers of the students' specific fields, who kindly shared the materials they work with. Students were also asked to bring to class texts they had seen in the companies where they work as trainees, and some texts were provided by the companies themselves. Many companies are interested in having employees capable of reading these documents, so they simply remove confidential information, such as signatures and the most important figures and graphs, in order to share the documents for learning purposes. But, due to confidential information about the cargo and the companies, these documents cannot be made available outside the classroom.

Dealing with authentic documents also presented the opportunity to explore their cultural and social aspects and this led me to search for additional material on my own to cater for a more critical perspective. There are many interesting aspects in these types of documents concerning the environment, regulations, social greetings, health, safety, and even sexism, all of which can be explored in class. In one activity, for example, students were asked to read in pairs a questionnaire that is usually asked when the vessels arrive and leave from the port (see Figure 1)

FOR FREE PRATIQUE

A) VESSEL'S MAXIMUM CAPACITY OF CREW MEMBERS AND PASSENGERS

B) PORTS OF CALL
PORTS / COUNTRY CALLED IN THE LAST 30 DAYS AND SAILING DATES

C) HEALTH QUESTIONS

1. HAS THERE BEEN ON BOARD DURING THE VOYAGE ANY CASE OF DEATH ?
2. HAS THERE BEEN ON BOARD DURING THE VOYAGE ANY BURIAL ?
3. IS THERE ON BOARD OR HAS BEEN DURING THE VOYAGE ANY SICKNESS PERSON ? (IN CASE OF YES, IT APPEARED ANY SIGNAL OF FEVER OR HEMORRHAGE, JAUNDICE, DIARRHEA, NEUROLOGICAL DISFUNCTION, COUGH OR BREATH OBSTRUCTION ?
4. HAS THERE BEEN ON BOARD DURING THE VOYAGE ANY ACCIDENT ?
5. HAS THERE BEEN ON BOARD DURING THE VOYAGE MORTALITY AMONG RATS OR MICE ?

D) EXPIRE DATE OF THE DERATTING CERTIFICATE AND PORT OF ISSUE

E) ANY CONSUMPTION OF MEDICINES DURING THE VOYAGE – YES / NO IN CASE OF YES, PLEASE SPECIFY.

F) FRESH WATER

1. DOES THE VESSEL PRODUCE FRESH WATER – YES / NO 2. LAST PORT THAT THE VESSEL WAS SUPPLIED OF FRESH WATER 3. DOES THE VESSEL HAS A FRESH WATER TRETMENT SYSTEM – YES / NO IF YES, PLS SPECIFY.

4. MAXIMUM FRESH WATER STORAGE CAPACITY

5. VESSEL WILL BE SUPPLIED WITH FRESH WATER AT THIS PORT?

G) BALLAST

1. NUMBER OF BALLAST TANKS
2. BALLAST WATER MANAGEMENT PLAN ON BOARD – YES / NO 3. IN CASE OF YES, WAS THE MANAGEMENT PLAN IMPLEMENTED – YES / NO 4. IMO BALLAST WATER GUIDELINES ON BOARD (RES. A686(20)) – YES / NO 5. IS THERE ANY BALLAST WATER ON BOARD – YES / NO 6. LAST BALLAST INTAKE – LATITUDE AND LONGITUDE AND NAME OF PORT 7. ANY BALLAST EXCHANGE OCCURED – YES / NO 8. PLACE OF BALLAST EXCHANGE – LATITUDE AND LONGITUDE 9. LAST DEBALLAST – LATITUDE AND LONGITUDE AND NAME OF PORT 10. ANY DEBALLAST SCHEDULED FOR THIS PORT – YES / NO

H) SEWAGE SYSTEM

1. IS THERE ANY SEWAGE RETENTION TANK OR SEWAGE TREATEMENT PLANT – YES / NO PLEASE SPECIFY
2. MAXIMUM STORAGE CAPACITY OF SEWAGE IN M3 (CUBIC METERS) AND NUMBER OF DAYS OF RETENTION 3. PLS INFO WHAT KIND OF CHEMICAL PRODUCT USED IN THE SEWAGE TANKS :

I) ANY DANGEROUS CARGO ON BOARD – YES / NO

Figure 1 – Sample Activity

In reading these questions, students could discuss sanitary laws and technical procedures. But in particular the two questions about deaths and burials at the sea caught my attention. So, I immediately asked them about the procedures that were followed if a worker died aboard. The answers they gave me not only surprised me, but also led to a discussion on working conditions, social classes, immigration, and humanism, as well. The students told me that if an engineer or a professional who held a university degree died aboard, a helicopter would

fly over to return the corpse to the family. But, according to the students, if the deceased worker was an illegal immigrant from the Philippines, the body would simply be buried at sea. In addition, students told me that Filipinos are very poor people who accept any kind of work people offer them. This classroom experience illustrates how important it is to read texts in class under a critical perspective, whereby the English teacher is not only developing reading skills, but is also helping students to think critically, in this case about their future occupations.

6.1 Integrating a Critical Perspective: Two Industrial Tragedies

Unfortunately, two tragedies occurred in the mining area in Brazil, the first in the city of Mariana in 2015, in the state of Minas Gerais, and the second in the city of Brumadinho, in the state of Minas Gerais in 2019. Both tragedies were caused by the mining company Vale, the former Vale do Rio Doce (named after the famous river in the region, the river Doce, which is ironically dying because of the company's operations). Both tragedies led me to search for international news on the disasters that could be discussed and analyzed in class. The first tragedy was in the Minas Gerais State, more specifically in Mariana, an important historical city, where a mining company's operations have been reported to be destroying life around the river Doce.

The company Vale has been using upstream dams, which is the cheapest way to prevent the buildup of waste in the dams. In Mariana one of the company's mining dams collapsed in 2015 killing many people, destroying the Bento Rodrigues' district, and causing the greatest environmental disaster in recent history, destroying the Doce, a very important river.

The second tragedy, which not only had a negative environmental impact, but also caused the death of hundreds of workers, took place in 2019 in Brumadinho, a city next to Inhotim, a giant open-air art gallery, and also next to an important river named the Paraopeba. In this case another dam burst in Brumadinho, causing deaths, environmental losses, horror, and the destruction of the Paraopeba. The workers' canteen was the first building to be engulfed by the mudslide, and many people were killed. The company knew about the

risks of breakage, but they failed to take action in order to avoid a tragedy and the deaths of their own employees.

As working for this company represented a dream job for many of these students, as the repercussions of the tragedies was an appalling item in the news every day, and as the workers' safety was affected, I thought it would be appropriate if we discussed working conditions, environmental regulations, instructions for safety precautions, and Vale's 2017 report on sustainability, which seems to be quite contradictory when it says: "Vale wants to be responsible for a socio-environmental and positive role for society, as expressed in its vision: to be the number one global natural resources company in creating long term value through excellence and passion for people and the planet."

The texts read in class were found online, and they were mainly sourced from international newspapers such as *The New York Times*, and *The Guardian*. The texts were not adapted to the students' levels, but reading strategies were taught and promoted by the reading tasks that urged students to find cognates, to make inferences, to skim, to scan, to read for general context and read for details. The questions were in the students' mother tongue.

The discussions focused on environmental protection, safe working conditions, and sexism and racism due to the fact that while reading Vale's sustainability report, students noticed that there was only one woman on the board of directors, who was the human resources manager, and there were not any African Americans on the board. The word "spokeswoman" also led to a critical discussion of language, after they encountered this term in a text which described an e-mail sent by the spokeswoman to the press saying that there was no leakage in the dam. Students discussed how difficult it is in Brazil to see woman occupying this job, and how language can convey gender issues when the term "spokesman" is used.

For example, in their reading of this sustainability report, students also discussed if the company really cared about the environment and its employees. The report had been written after the first tragedy, and by the time students read the text, the second tragedy had already happened, suggesting that the company had not put into practice what it had pledged. In an online news article that we read, one of the employees claimed that everybody who worked at Brumadinho's mine knew that a tragedy was imminent. Reading this text, students developed more than reading strategies. They discussed working con-

ditions and regulations, and this reading activity helped them to become more critical about poor working conditions and their rights as workers.

6.2 Forms of Collaboration Between Language Experts and Field Experts

A scientific article on Green Logistics written by Machado de Oliveira, Almeida D'Agosto, Rosa de Alvarenga, and Assumpção do Couto (2016) provided by the students' teacher of logistics, Professor Cintia Machado de Oliveira, who happens to be one of the aforementioned writers, was also brought to class. The article was about low-carbon, green, and sustainable logistics, which are important themes for the logistics class. In this case, it was possible to see that the text not only mediated knowledge to students and developed reading strategies, but it also brought two important motivational factors: Students were proud to have read an article in English by applying the reading strategies that we had developed in class; and the affective filter to learning was lowered in this activity, because students were reading a text in English written by a professor they admired.

With reference to the engineering courses, the mechanical engineering groups were usually large classes in the evenings and students had different levels of English. Among their common needs were writing abstracts, CVs, and cover letters. Thus, multiple authentic texts taken from the internet were analyzed and served as models for the genres mentioned above.

The mechanical engineering students also had a professor of material science who required them to read articles and books in English. Students brought some of these readings to class. These texts also provided an opportunity to review specialized vocabulary in areas such as machining and welding. As an example, we can quote an article written by Haviarova, Eckelman, and Uysal (2015) on a comparison of the cyclic durability, ease of disassembly, repair, and reuse of parts of wooden chair frames. While working with the article, students helped me translate into Portuguese the names of materials and the types of joints that I could not find on the internet. In order to do that, we relied upon Google Images and the students' knowledge. It was interesting to notice how their knowledge on the specific subject is important for their understanding. In this specific group of students, only one of them was capable

of explaining more specific words due to the fact that he was really interested in materials science.

Collaboration in this case arose from students who volunteered to help build a glossary. When they wanted to know the specific names of screws or gears, for example, they could refer to Google Images. Videos on YouTube explaining different kinds of joints formed in welding and TV programs such as *Wheeler Dealers*, also brought a variety of genres into classroom. The book *Career Paths* was also used as an aid, but not as a fixed textbook due to its extensive use of vocabulary dissociated from authentic texts. The book served as a guide for the key issues in the field of mechanical engineering.

Saviani (2003) claims there can be no dissociation between manual labor and the academic field of mechanical engineering as in both instances engineers have to solve problems based on iterations. One of the purposes of the materials sciences is to restore, reduce, and recycle furniture and objects. Such aims provide ample opportunity for classroom discussion, and thereby a symbiosis between study and work.

In collaboration with the professors from industrial engineering, I started working with texts and videos that illustrated important field-specific topics such as supply chain management, logistics, variables, etc. The professors of the degree course also asked me to instruct the students in business English because industrial engineers also work as managers in various companies, and because in their work they must investigate problems to find and implement solutions.

These needs led me to adopt the book *Market Leader*, published by Longman. The groups of students from the industrial engineering degree course were usually small in size and had more lessons during the afternoon. Most of them had a pre-intermediate level of English. They were attending my lessons in order to brush up their English and to sound more professional when using the language.

The book contains units with important themes, such as leadership, money, ethics, how to conduct a meeting, how to select a candidate in a job interview, etc. As these students had an intermediate level, I did not concentrate on the teaching of grammar. Grammar notions were incidentally taught and revised. Thus, most of the lessons aimed at expanding general and specific lexis and were dedicated to the reading of scientific articles, to develop speaking

skills according to their needs, for instance, presenting a new product to the market, or conducting a business meeting. The lessons also aimed at working with problem-solving tasks such as deciding on how to manage a supply chain and the logistics chain, in case a natural disaster occurs. Listening skills were also developed through the use of Ted Talk videos, and YouTube videos, such as a video that showed how the logistics of Doctors without Borders work.

However, one of the best collaboration experiences teaching ESP with the industrial engineering group was an extension project where two students worked as monitors to help another group of students and professors that were engaged in a partnership with the St. Ambrose University in Iowa, in the United States. Their project was on assistive technologies. They looked for solutions to help poor patients with severe disabilities in Rio de Janeiro. They talked in English, mediated conversations, developed prototypes, and wrote articles in English. Thus, students had a real chance to interact with native-speaker specialists in an authentic real-world context, and they also produced an article in English that is forthcoming.

I supported the students who were working with assistive technologies by reviewing specific and appropriate vocabulary with them in terms of register and usage, for example when referring to the diseases. I helped them develop their listening and speaking skills, so they could listen and interact better with native speakers, and I also helped them become more acquainted with academic writing by opening an account in the online platform Edmodo, where writing activities were posted. The writing activities consisted of reports students had to write about the devices they were designing to assist the patient's needs. These experiences provided a clear picture of ESP taught from a critical and discursive perspective, in the sense that engineering students came into contact with the difficult realities poor patients and their families face on a daily basis. It was not merely language classroom. It demonstrated how universities can collaborate with society and revealed that language permeates these interactions. Teaching and studying the English language for specific purposes in this way surely enriches the future professional careers of the students, as they gain direct access to the use of English as a global scientific and academic language.

7. Conclusion

This article has demonstrated that developing instructional materials for the teaching of ESP is an activity that involves taking actions such as conducting needs analysis, looking for appropriate material to be adapted or modified, developing one's own material according to students' needs. However, most important of all, developing material for ESP teaching from the critical literacies perspective means that the language being taught should really represent the vivid professional discourses that are as closest as possible to the ones the students will have to deal with in their professional lives, making learning meaningful and purposeful.

References

- Cook, G. (1999). *Discourse. Language teaching: A scheme for teacher education*. Oxford University Press.
- Cotton, D. (2012). *Market leader*. Harlow: Penguin.
- Dudley-Evans, D., & St. John, M. (1998). *Developments in English for specific purposes*. Cambridge, UK: Cambridge University Press.
- Evans, V., Dooley, J., & Kern, J. (2014). *Mechanical engineering: Career paths* (1st ed.). Newbury, UK: Express Publishing.
- Fairclough, N. (2003). *Analysing Discourse: Textual analysis for social research*. London: Routledge.
- Haviarova, E, Eckelman, C., & Uysal, M. (2015). A comparison of the cyclic durability, ease of disassembly, repair, and reuse of parts of wooden chair frames. *Materials and Design*, 87, 75–81. doi:10.1016/j.matdes.2015.08.009
- Jordão, C. M., & Fogaça, F. C. (2012). O letramento crítico na aula de língua inglesa. *DELTA*, 28(1), 69-84. Retrieved from <http://www.scielo.br/pdf/delta/v28n1/v28n1a04.pdf>
- Hutchinson, T., & Waters, A. (1987) *English for specific purposes*. Cambridge, UK: Cambridge University Press.
- MEC/SEL. (1998). *Parâmetros curriculares nacionais (PCNs). Introdução, ensino fundamental*. Retrieved from <http://portal.mec.gov.br/seb/arquivos/pdf/introducao.pdf>
- Machado de Oliveira, C., de Almeida D'Agosto, M., de Alvarenga Rosa, R., & do Couto Assumpção, F. (2016). Low carbon logistics, green logistics & sustainable logistics: Establishing concepts and scope. *International Journal of Innovation and Scientific Research*, 26(1), 47–64. Retrieved from <http://www.ijisr.issr-journals.org/abstract.php?article=IJISR-16-140-03>
- Munby, J. (1978). *Communicative syllabus design*. Cambridge, UK: Cambridge University Press.
- Paiva, V. L. M. (Ed.). (2007). *Práticas de ensino e aprendizagem de inglês como foco na autonomia*. Campinas: Pontes.
- Ramos, R. C. G. (2004). Gêneros textuais: Uma proposta de aplicação em curso de Inglês para fins específicos. *The ESPecialist*, 25(2), 107–129. Retrieved from <https://revistas.pucsp.br/esp/article/view/9371>
- Saviani, D. (2003). The theoretical shock of the polytechnic. Trabalho, Educação E Saúde. *Debate*, 1(1), 131-152. Retrieved from <http://www.scielo.br/pdf/tes/v1n1/10.pdf>