

# Improving Higher Education Internationalization through CLIL at the Secondary Level

*Helber Silva, Marcelo Camilo, Keila Moreira*  
*Federal Institute of Rio Grande do Norte (IFRN), Brazil*  
*{helber.silva, marcelo.carneiro, keila.moreira}@ifrn.edu.br*

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*Keywords- Internationalization at home, Vocational/Higher Education, English as a medium of instruction.*

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## I. INTRODUCTION

In the last decade, internationalization of higher education has become a key topic for university and other institutions around the world. The motivation for the internationalization of higher education may differ from a university, region, country, to another. Examples of these rationales include increased international deeper engagement by students, improved quality of teaching and learning, enhanced prestige for the institution, among others [1].

In this paper, we consider two major concepts for internationalization. Firstly, we take into account the notion of “comprehensive internationalization”. Secondly, we put a light on the “internationalization at home”.

As for “comprehensive internationalization”, this study uses Hudzik’s [1] definition as “a commitment, confirmed through *action*, to integrate international, global, and comparative perspectives throughout the teaching, research, and service missions of higher education”. Concerning “internationalization at home”, we are based on Beelen and Jones [2], who propose that “Internationalisation at Home is the purposeful integration of international and intercultural

dimensions into the formal and informal curriculum for all students, within domestic learning environments.”

Recently, the Brazilian government funded different comprehensive internationalization programs for higher education. The main program is known as Science without Borders (SwB), which offered scholarships for university students to study abroad in several countries, including the United States, France, Portugal, Germany, the UK, among others. However, higher education students face difficulties regarding studying their courses in conjunction with foreign languages. To face this challenge, the Brazilian government also funded the English Without Borders (EwB) Program so as to improve the learning of foreign languages and hence the internationalization of higher education. Despite these initiatives, the weakening economy led to a bigger cut in internationalization programs (e.g., EwB and SwB) for the Brazilian higher education.

This highlights important challenges, since most efforts from academia and governments focus on approaches to achieve the internationalization *during* higher education [3-7]. It means that they give little (or no) attention to internationalization *for* higher education. This gap may limit the development of internationalization programs since students are expected to learn an additional language at the same time they spend time to learn other courses and are involved in tasks, such as research projects [8]. Moreover, with pressure on the government purse mounting, cuts are expected and led to reduce the internationalization for higher education even more.

The aforementioned issues raise the following research question: “how to encourage non-English speaking students to improve their internationalization experiences for the higher education in a sustainable (i.e., continuous) way?”. To address this question, we first argue that internationalization at home approaches, specially CLIL-based programs, may be delivered *before* the student attend a higher education program. CLIL is defined as a dual-focus approach that requires assessment of students’ comprehension in both content and language [9]. Hence, once previously “internationalized” through a CLIL program during the secondary level, the higher education student may improve his/her international and language knowledge and increase his/her chances in opportunities (e.g., researches, attend programs abroad, etc.). Moreover, CLIL

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programs do not require relevant investments (differently from scholarships to study abroad), being more stable and continuous.

This paper is on an ongoing research and it offers an examination on student's comprehension on the potentials of converging internationalization at home at different education levels to increase the overall quality of internationalization for the higher education. In order to achieve this goal, instead of focusing on the perceptions about the beliefs and gains on internationalization *only* from the higher education students point of view, we also considered the opinion of students engaged in a vocational (i.e., secondary) course at the Federal Institute of Rio Grande do Norte (IFRN), Brazil, as a case study. Particularly, we carried out a quantitative analysis based on information collected from IT (Information and Technology) students enrolled in both secondary vocational and higher education programs.

The remainder of this paper is organized as follows. Section 2 describes the methodology used to support our findings. Section 3 analyzes the IT students' comprehension on the benefits of CLIL-based technical course for the internationalization of higher education. Finally, Section 4 presents conclusions and future work.

## II. METHODOLOGY

This section describes the methodology applied in our comparative study considering data collected from students through a survey research. We detail in the next subsections the CLIL/EMI approach, the target education institution, the participants and the measures used to acquire our achievements.

### A. CLIL-EMI

According to Adrian Tennant, CLIL stands for Content and Language Integrated Learning and refers to teaching any school subject in a foreign language. The author adds that term CLIL was coined by David Marsh, from the University of Jyväskylä, Finland, as he defined it as "situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language.". However, as a view or approach, CLIL was used with different nomenclatures and in different parts of the world, long before, being one of them the use of English Medium Instruction (EMI) [10] used in this research.

### B. Target education institution

In order to support the reflection proposed in this paper, a case study was carried out to analyze students' beliefs on the use of CLIL for the higher education. We highlight that our proposal is to analyze how IT students perceive the gains on converging internationalization at home in both high school and higher education. To that, we conducted the examination at the

Federal Institute of Rio Grande do Norte (IFRN) as a case study. As for the research *locus*, IFRN is a reference as a human-and-vocational education institution comprised of 21 campuses placed in strategic sub regions (including the capital city, Natal, and the interior) of Rio Grande do Norte state, Northeast Brazil. As a federally funded, public institution, which in Brazil is tuition free, IFRN offers a number of different programs and courses to the population. For all the above mentioned, we decided to conduct this work at this institution due to different reasons closely related to the internationalization field. These rationales are described below:

- Firstly, the IFRN offers secondary vocational programs with the possibility of verticalization (and also internationalization) to the higher education at the same or even a different field of studies. This means that the institution may receive a 14 years old individual (to study the secondary level) and offer the society a 22 year old professional with a technological or BA degree. In this paper, we focus on the IT education domain for it is highly internationalized in the sense that its basis comes originally from documents and concepts defined in the English language;
- Secondly, an International Affairs Department in IFRN is involved in offering internationalization at home, CLIL (Content and Language Integrated Approach), internship programs, among others, to both vocational and higher education students. This can increase the international perspectives for these groups of students; and
- Finally, the Pedagogical and Political Project of the IFRN assumes the integration and interaction of human and professional courses together within the same program. Hence, CLIL-based technical courses are allowed and encouraged in the institution to favor internationalization of higher education.

### C. Participants

We aimed at obtaining a complete comprehension on the students' beliefs and perceptions on technical content delivery in English using a CLIL approach. We conducted our study based on an ongoing survey research meant to obtain data or information, actions or opinions from a group of people by using a structured questionnaire (given in the Appendix). This instrument allows for quantitative and comparative analysis, being appropriate when the *locus* of interest (as in this work) refers to a previous action, with exploratory purposes [11].

In this research, we offered the questionnaire to students enrolled in three different courses in the same IT area, but at different education levels. At the vocational secondary level,

we considered IT students of a program called “Informatics”. At the higher education level, we studied two groups: (i) an IT program (called Computer Network Technology), and (ii) a BA course in IT. We characterize these groups below:

- Vocational IT students: this group are with the Canguaretama Campus of IFRN, which is placed in the Canguaretama city, located 40 miles from Natal, the capital city of the Rio Grande do Norte state. This group is comprised of 27 IT students, whose ages ranges from 14 up to 18 years old. All of them are engaged in a complete CLIL-based course in Computer Networks since March, 2016 (i.e, for about 11 months up to data collection), offered by a professor with a Master’s Degree of Science in Computer Networks, a subarea of IT. The professor applied an English as a Medium of Instruction-based technical course to vocational students. It is important to highlight that the professor is not an English teacher and has an intermediate level of English;
- Higher education students: this group is comprised of students from Natal-Central Campus and Natal-Zona Norte Campus of IFRN. These two campuses are located in the capital city. Differently from the vocational students, neither of higher education students were engaged to a complete course based on CLIL, despite some initiatives (as analyzed in next section) from few IT professors.

Table I summarizes the main characteristics of the participants in this study. We highlight that our main goal is to analyze to what extent IT students (from both secondary and higher education) find that taking CLIL-based technical courses *before* getting enrolled in a higher education program may favor new opportunities (i.e., learning, research, projects, etc.) for internationalization *during* the higher education.

It is important to reveal that most (about 90%) of the students from the Canguaretama Campus of IFRN attending the CLIL courses are in social vulnerability, i.e., they live with 5+ person/home with a monthly income about US\$ 300. Moreover, the development index of cities used in Brazil (known as IDHM) reveals that the Canguaretama city offers to its citizens (including the vocational students observed in this research) low levels of public education previously to entering IFRN. That said, we must add that, due to this lack of good schooling, a huge percentage of individuals are not fluent even it their native language (Portuguese), hence being more challenging to offer a CLIL-based course using the English language.

TABLE I  
PARTICIPANTS OF THIS STUDY

Characterization			
Educational level	Age	IT Course	# of

	(years)		participants
Vocational (high school)	14-18	Informatics	19
Higher education	18+	Computer Networks	18
Higher education	18+	BA	28

These participants answered a questionnaire containing 5 items, being four sentences (with multiple choice) and the last one as an open question. In this last item, we offered a textbox in which the student could justify the fourth response and, hence, increase the possibilities for our analysis. All the sentences accepted multiple choices based on the following scales:

- Strongly agree;
- Partially agree;
- Disagree; and
- Neutral.

All the sentences were originally written in Portuguese for the participants, and translated into English for our analysis purposes in this paper. We delivered these items in the format of a Google Form online document through mobile learning communication technologies and applications. By using such approach, we could disseminate the questions in a faster and IT-friendly way.

We received a total of 65 responses from IT students during January, 2017. From the vocational course, 19 (n=30%) of the total of participants answered the questions. Given that the class is composed of 27 students engaged in the course, then we have more than 70% of respondents. From the technological IT higher education course, we observed 18 (n=27%) responses. Finally, from the BA higher education course, we received 28 (n=43%) answers.

### III. ANALYSES

In order to obtain a complete comprehension on the IT students’ beliefs and perceptions on how technical content delivery in English may improve internationalization for the higher education, we discuss the responses of the questionnaires from vocational and higher education IT students from IFRN, Brazil. We used a percentage examination from these different IT students groups, based on the frequency of responses for each offered item. The results were organized in pie charts to make viewing easier for each level (vocational and higher education).

Figure 1 shows results from vocational IT students for Sentence 1. We note almost all almost (95%) vocational students answered that they agree (totally or partially) with Sentence 1. None of them (i.e., 0%) disagree with the sentence offered in the questionnaire. Moreover, only few students (5%) were neutral to the sentence. These results indicate that the vocational students have (or had) a CLIL-based experience during technical courses. This is expected, since this is a controlled group that is engaged in a complete English as a

medium of instruction-based technical course in the computer network domain.

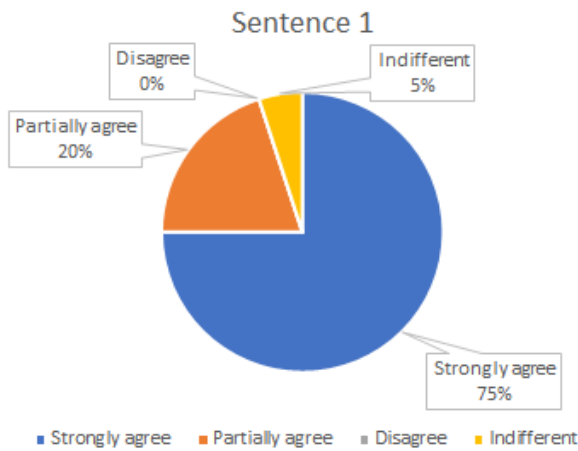


Fig. 1. Vocational students responses - Sentence 1

Figure 2 shows information from higher education IT students for the Sentence 1. We can observe that about half (59%) of the higher education students experienced a CLIL-based course. Combining Figures 1 and 2, we can conclude that receiving a CLIL program earlier (i.e., at the secondary level) may improve the internationalization of the higher education since the students comes with a better English background about his/her learning domain.

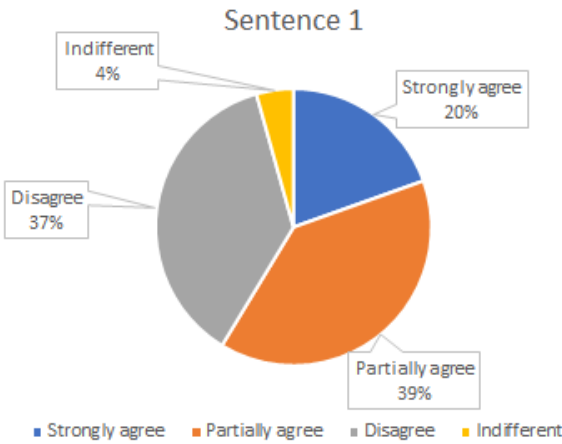


Fig. 2. Higher education students responses - Sentence 1

In Figure 3 we can analyze results from the vocational IT students for the Sentence 2. As observed in the figure, 55% of the students is used to learn through technical materials (e.g., books, papers, documents and etc.) written in English. This practice may improve their knowledge in both English and

technical contents.

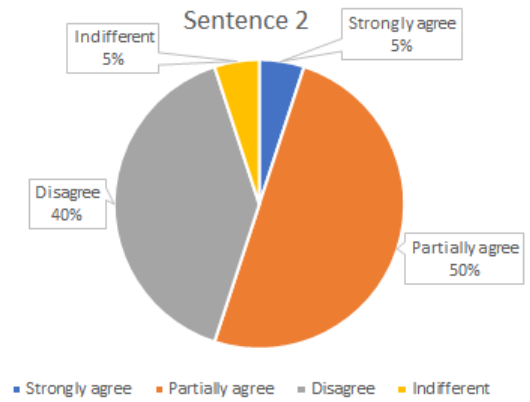


Fig. 3. Vocational students responses - Sentence 2

Figure 4 exposes results from the higher education IT students for Sentence 2. As it can be noted, about 69% of the students study technical and English-based materials. This can indicate that higher education students do need to get involved with the English language, as expected.

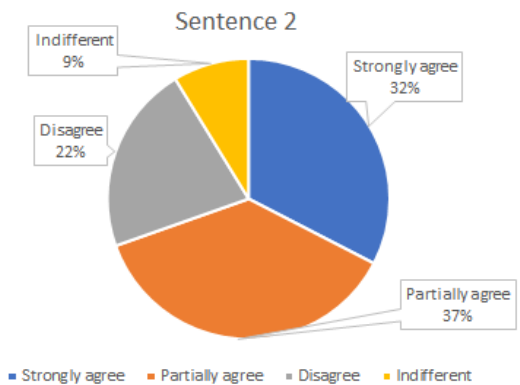


Fig. 4. Higher education students responses - Sentence 2

About Sentence 3, we plotted the Figures 5 and 6 to show results from vocational and higher education IT students. Responses in Figure 5 indicate that few (25%) vocational students feel unprepared to read and write technical content in English. On the other hand, most of them (65%) reported to be able to read and write technical contents on their learning domain in English. This is expected, since this group of students were engaged in a CLIL-based course during 11 months. As the course include content delivery jointly with the English language, the students can identify the most common words and expressions of their field of work. Hence, they can feel more comfortable when the professor requires them to write the answer of an exercise, to read a scientific paper (most relevant IT works are written in English), and etc.

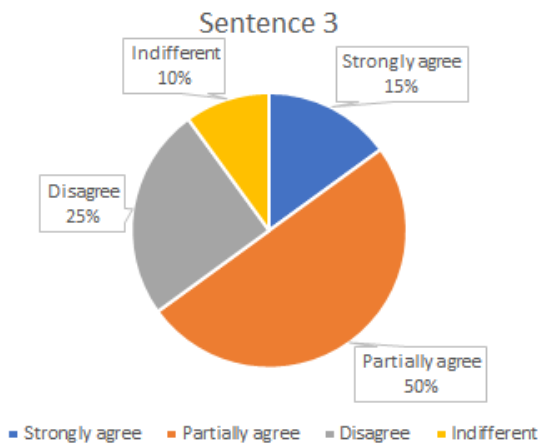


Fig. 5. Vocational students responses - Sentence 3

Unlikely the vocational students, almost half (40%) of the higher education students do not feel prepared in these activities (read/write in English), as shown in Figure 6. This can be explained since this group of students were not engaged in a CLIL-based technical course, supporting our hypothesis that offering internationalization at home courses during the secondary level can improve opportunities for higher education students.

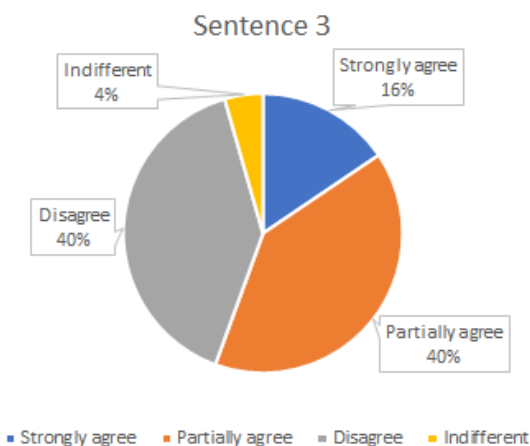


Fig. 6. Higher education students responses - Sentence 3

Figure 7 exposes results from Sentence 4 from vocational IT students. We note that a high percentage (90%) of students said that they agree with the idea of using a CLIL-based technical course. This can indicate that students are aware that they can increase their learning (and also internationalization) perspectives in the near future. Moreover, none of them (i.e., 0%) disagrees with this sentence, being only 10% of neutral opinions.

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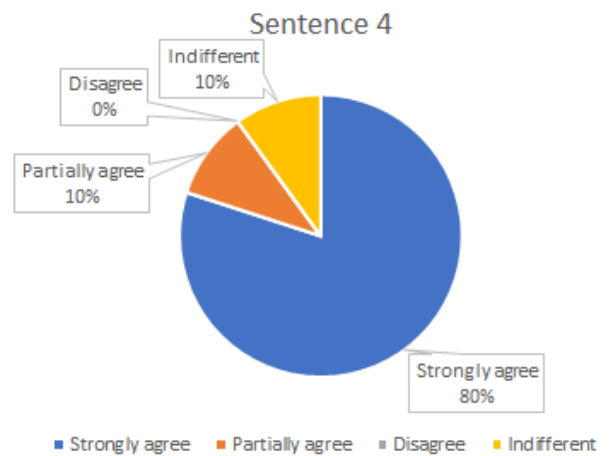


Fig. 7. Vocational students responses - Sentence 4

Figure 8 shows results from the higher education IT students concerning Sentence 4. Similarly to the vocational students, most of the higher education students (89%) also believe that they can increase their international experiences through IT courses combined with English. A small percentage (7%) of them disagree, and only 4% said that are neutral with this.

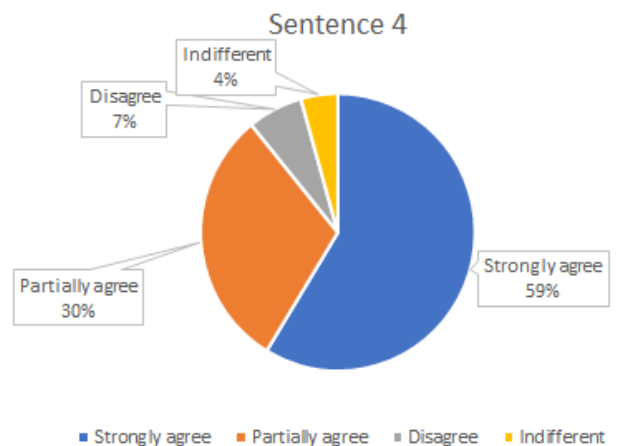


Fig. 8. Higher education students responses - Sentence 4

The next section of the paper concludes this work by summarizing our key findings, and also presents future activities in the direction of the internationalization.

#### IV. CONCLUSION

In this ongoing research, we aimed at analyzing a comprehension on the students' beliefs and perceptions about how to improve internationalization for the higher education.

Given that this can be achieved through CLIL-based courses in English, we conducted a research survey with groups of IT students at the vocational level (which were engaged during 11 months in a technical course using English as a medium of instruction) and at higher education level. Based on the answers from the students to a structured questionnaire, the results showed that when the internationalization starts using CLIL programs during secondary technical courses, the students feel more prepared to improve their professional and academic opportunities for the internationalization when getting involved in a higher education program.

Considering these preliminary findings, we are interested in conducting new studies on why the higher education students resist in receiving more English-based technical classes. To that, we aim at developing a qualitative study through semi-structured interviews to explore critical aspects which may limit the internationalization of higher education.

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#### APPENDIX

This appendix describes the questionnaire offered to all vocational and higher education students. The sentences were written in Portuguese (as below) for the students. However, we also describe (right after them) the respective translations.

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(Portuguese) Sentença 1. Tenho (ou já tive) algum professor que desenvolve (ou desenvolveu) os conteúdos de disciplina técnica do seu curso em Língua Inglesa.

(English) *Sentence 1. I have (or had) a teacher that develop (or developed) the content of a technical course in English language.*

(Portuguese) Sentença 2. Eu procuro materiais escritos em Língua Inglesa para ajudar os meus estudos em disciplina técnica do curso.

(English) *Sentence 2. I look for sources written in English Language to improve my studies in a technical course.*

(Portuguese) Sentença 3. Eu me sinto preparado para ler e escrever textos básicos, usando a Língua Inglesa, na área técnica de estudos.

(English) *Sentence 3. I feel prepared to read and write basic texts, using the English Language, related to my technical area.*

(Portuguese) Sentença 4. Cursar disciplinas da área técnica total ou parcialmente em Língua Inglesa pode favorecer minha formação.

(English) *Sentence 4. Studying courses of my technical area, total or partially, in English Language may enhance my formation.*

(Portuguese) Sentença 5. Sobre a afirmação 4, justifique a sua resposta.

(English) *Sentence 5. About the sentence 4, justify your answer.*