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Internacionalization via sandwich doctoral: experience report in the leading country of scientific production

Roberta Ekuni¹ ¹ Universidade Estadual do Norte do Paraná**ABSTRACT**

In Brazil, scientific production is mostly carried out by graduate students. Internationalization as the fourth pillar of the university encourages international cooperation and programs for students to spend a period of internships abroad. The present report of experience aims to report a doctoral internship at Washington University in Saint Louis, focusing on research, teaching and extension activities. For the description of the experience, the descriptive analysis of the experience was used in the period from March to August of 2017. As a result, we observed: more opportunities for discussion of the research in an interdisciplinary way, amount of resources invested for research and the dynamics among Teachers Holders and teaching, research and extension activities. It is hoped that the present report may clarify and encourage more Brazilian researchers to participate in this type of internship program abroad that allows both the experience and cultural learning as well as academic growth, as well as encouraging the adoption of similar practices in our Universities, leading the limitations of this experience.

KEYWORDS

Internationalization. Higher education. International mobility.

Internacionalização via doutorado sanduíche: relato de experiência no país líder em produção científica

RESUMO

No Brasil, a produção científica é majoritariamente realizada pela pós-graduação. A internacionalização enquanto quarto pilar da universidade incentiva a cooperação internacional e programas para alunos passarem um período realizando estágio no exterior. O presente relato de experiência tem como objetivo relatar um estágio de doutorado realizado na Washington University in Saint Louis, focando nas atividades de pesquisa, ensino e extensão. Para a descrição da experiência, foi utilizada a análise descritiva da experiência no período de março a agosto de 2017. Como resultado, observou-se: mais oportunidades de discussão da pesquisa de forma interdisciplinar, quantidade de recursos investidos para pesquisa e a dinâmica entre Professores Titulares e as atividades de ensino, pesquisa e extensão. Espera-se que o presente relato possa esclarecer e incentivar mais pesquisadores brasileiros a participarem deste tipo de programa de estágio no exterior que possibilita tanto a vivência e aprendizado cultural quanto o crescimento acadêmico, bem como incentivar a adoção de práticas similares em nossas Universidades, levando em conta as limitações dessa experiência.

PALAVRAS-CHAVE

Internacionalização. Ensino superior. Mobilidade internacional.

Internacionalización via doctorado sanduíche: relato de experiencia en el país líder en producción científica

RESUMEN

En Brasil, la producción científica es mayoritariamente realizada por el posgrado. La internacionalización como cuarto pilar de la universidad alienta la cooperación internacional y programas para que los alumnos pasen un período realizando una práctica en el extranjero. El presente relato de experiencia tiene como objetivo relatar una etapa de doctorado realizado en la Washington University in Saint Louis, enfocándose en las actividades de investigación, enseñanza y extensión. Para la descripción de la experiencia, se utilizó el análisis descriptivo de la experiencia en el período de marzo a agosto de 2017. Como resultado, se observó: más oportunidades de discusión de la investigación de forma interdisciplinaria, cantidad de recursos invertidos para investigación y la dinámica entre Profesores Titulares y las actividades de enseñanza, investigación y extensión. Se espera que el presente relato pueda aclarar e incentivar a más investigadores brasileños a participar de este tipo de programa de prácticas en el exterior que posibilita tanto la vivencia y el aprendizaje cultural como el crecimiento académico, así como incentivar la adopción de prácticas similares en nuestras Universidades, teniendo en cuenta las limitaciones de esta experiencia.

PALABRAS CLAVE

Internacionalización. Enseñanza superior. Movilidad internacional.

Introduction

There is a discussion that in addition to the tripod Teaching, Research and Extension, the University should possess a fourth pillar, which is Internationalization. Internationalization goes beyond international and intercultural mobility, as it aims to expand the establishment of international networks, as well as to allow the visibility of national production (in education, research and extension) internationally (PEREIRA; HEINZLE, 2017).

Higher education is in the process of internationalization and most of the scientific production in Brazil is due to post-graduate studies (MOROSINI, 2011). One of the possibilities for a post-graduate student to have a research experience in another country is through development agencies. The Sandwich Doctorate Program Abroad (PDSE) is a program funded by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination of Personal Improvement at the Higher Education Level) (CAPES, 2011) and meets this need for internationalization.

If we look at global scientific production, data from SCImago (2017) show that the United States has more than 10 million articles in its databases. In second place is China with more than 4 million articles, that is, less than half of the first. When compared to the number of citations received, the United States continues to lead with more than 240 million citations followed by the UK with more than 60 million. Another important fact is that the greatest recognition that a scientist can receive, the Nobel Prize, has the United States as the leading country in number of researchers awarded (NOBEL, 2017). In this sense, we can consider that the United States is the leading country in scientific production. In fact, an analysis showed that the United States together with the United Kingdom and Canada are the three countries that received the most students from Brazil through international mobility, with the United States having almost 3 times more students than the second place (CHAVES, CASTRO, 2016).

Given the growing need for internationalization of higher education (MOROSINI, 2011), the present experience report aims to report on this experience, to clarify possible doubts, to point out limitations of the same and possibly to arouse the interest of other students to participate in this experience.

Description of the Experience

This is a discursive account of personal experience as a student of the PhD Program in Sciences by the Department of Psychobiology of the Federal University of São Paulo (UNIFESP), oriented by S.P. and as a visiting student in Memory Lab at Washington University in St. Louis, co-directed by Henry L. Roediger III. The internship period was from March to August 2017, totaling six months.

Choice of internship abroad

In 2011, as a master's student, there was a presentation of a paper at the 5th International Conference on Memory in York, UK by the author. This is the largest memory research event in the world, it happens every five years. One of the lectures was given by the renowned researcher Henry L. Roediger III, who spoke about *testing effect* or *retrieval practice*, a study strategy that makes the information studied via test or the attempt to recall the information, to be remembered more than the re-read ones (ROEDIGER; KARPICKE 2006). That is, this is an efficient and evidence-based study technique. This theme aroused an interest in researching on the subject. In a conversation with the researcher after the end of the lecture, e-mails were exchanged and he reported on a selection for students interested in research involving neurosciences, cognition and education, the "2nd Latin America School for Education, Cognitive and Neural Sciences" (LA SCHOOL, 2012). Following the rules of the edict, the application was made resulting in the selection of the author as one of the Brazilians to participate in the Program in 2012. At the time, this program lasted two weeks and selected around 50 students from all over the world. The main themes discussed were the importance of education being based on scientific evidence (STERN, 2005) and how neurosciences can contribute to education (SIGMAN, 2014).

These experiences were fundamental to the choice of the research theme of the Doctorate. In this sense, in 2013, was admitted to the PhD Program in Psychobiology of UNIFESP, based on theories published by Professor Roediger. In the year 2015, when the experimental design was defined, there was again a contact with the researcher, reporting on the project's theme and showing interest in carrying out an internship in his laboratory, considering that the Brazilian government had scholarships for this purpose.

After some e-mail exchanges, the researcher asked the Ph.D. advisor from Brazil to send a letter of recommendation and after that, there was the acceptance of the request for the execution of the sandwich period.

Selection in the Doctoral Program Sandwich Abroad and preparation of documents

With the acceptance, there was the search for notices that could finance the trip abroad. One of these notices was Public Notice nº19/2016 - PDSE. According to CAPES standards, the Postgraduate Program itself is responsible for selecting students who will be enrolled in the scholarship. In this case, the selection was through curriculum analysis, proposal submission and letter of interest. In this process, after the selection and sending of documents, the process for issuing the American Visa for students/researchers is quite bureaucratic, and this was one of the most complicated factors in the whole process of acceptance and preparation for going abroad. For this, in addition to the invitation letter from the overseas advisor, it was necessary for the Receiving University to issue a letter (DS-2019) stating the period of stay in the country of destination, as well as proof that there would be the

necessary income for subsistence during the period of research development in the country. This process is slow and it is recommended in advance to get all the documentation.

Health insurance is required and many universities only issue the visa document after sending the proof of the insurance contract. Through this CAPES announcement, the money covered health insurance, transportation, installation assistance and a scholarship of 1300 dollars/month. However, this money is made available to the contemplated student only near the date of the trip, it is necessary that the candidate is scheduled and has a previous financial reserve to enter the documentation.

RESULTS

Research Activities

Upon arriving at the University Abroad, the research data was already collected, according to the schedule elaborated at the time of submission of the proposal of travel abroad. This schedule is elaborated and discussed with both advisors from the country of origin and abroad. The results collected in Brazil were discussed with Professor Roediger and his team, as well as the benefit of reading and suggestions for correction of two articles written based on these collected data. It was observed the routine in the Laboratory and also how researches are done in it. During observations and conversations with the team, it was noticed that at least one experiment is carried out per year per student. There is much encouragement for collaboration among students. The structure of the laboratory is modern, state-of-the-art equipment, computers, printers, books available in the laboratory itself and there are four data collection rooms (two for groups and two for individual). The Professor also scheduled individual biweekly meetings to monitor the personal development of each student, lasting half an hour on average.

Another relevant research activity was to participate in the Lab Meetings, weekly laboratory meetings that took place every Monday with an hour of duration. Meetings began and ended punctually at the agreed time. In all the meetings some points were critically discussed: an article that had just been published, or preliminary results of research of the students of the laboratory, or articles just about to be submitted. In addition, during the meetings new ideas were suggested and discussions helped to identify improvement in the experiments.

Teaching Activities

The Professor invited the author of this article to attend as a listener his discipline (Retrieval Processes in Human Memory) that was given once a week, on Wednesdays with three hours of duration. The discipline was already almost in the middle, but from the previous knowledge acquired in post-graduation at UNIFESP, it was possible to follow it. The discipline worked as follows: every week about five scientific articles were suggested for

reading. The selection of articles always contained classic and recent literatures. In this way, it was possible to understand the construction of a concept. During class, the articles were discussed and guided by the Professor. Some classes were given by the students themselves. In addition to reading the articles after class, the teacher asked for the production of a mini-article with a key question that he provided on the subject.

In parallel, in the first three months, most Mondays there was the "Colloquium," an hour-long lecture with a visiting professor, who was usually affiliated with another University of the United States. He also spoke about emerging issues in Psychology or Neuroscience.

During this period, it was also possible to follow the "Behavior, Brain and Cognition talk series", weekly meeting of the department. All students and teachers from different laboratories in the department were invited to attend. At these meetings, a departmental teacher usually presents preliminary results of their research, and other teachers and students give suggestions for improvements in data analysis, interpretation of data, and ideas for future research.

In the last quarter, due to the *Summer break*, the Colloquium activities are suspended and an activity called *Journal Club* is started. Weekly, this activity lasted an hour and a half and happened every Thursday. Each member of the Journal Club is responsible for selecting one to three articles to the other members and conducting the discussion. The dates of each member are previously combined.

Another teaching activity that regularly enrolled students (except visiting students) do is the *Teaching Assistant*. All teachers have a graduate student who is their assistant. They give supervision to undergraduate students about the discipline, assist in the preparation and correction of tests and assignments, and often in the preparation of class slides. This helps the student learn to prepare classes and gives the teacher more time for research activities. Students are not required to be assistant teachers throughout graduate school, only for a period.

Extension Activities and Cultural Activities

During the internship period, an extension activity was carried out in which high school students visited the Department's laboratories and participated in an activity to know the laboratory and see the demonstration of an experiment. The objective was to give visitors who knew several lines of research in order to raise the interest so they will know what they want to do when they enter the graduation. This activity lasted two afternoons, during which there was the experience of assisting one of the doctoral students in the laboratory. She explained to the visitors one of the researches done in the Laboratory about false memories, that is, memories that did not happen in fact and applied the DRM paradigm that induces the formation of false memories (ROEDIGER; MCDERMOTT, 1995). Most of the students remembered words that were not spoken (false memories), which is in accordance with the DRM protocol.

There was another extension activity that occurred during this period. The *Brain Carnival* is a festival held on a weekend (Saturday and Sunday) at the city's Science Museum. The Museum invites several Universities and hospitals of the city that work with the theme "brain" and they expose booths about the researches they are carrying out in a playful and understandable way with the aim of popularizing science.

Regarding integration activities and cultural activities, about once a month or once every two months students would make a happy hour in the department's kitchen. There is a committee of students responsible for organizing the event and all teachers and students are invited to socialize. The department has a budget allocated for the accomplishment of these events, which on average last between an hour and a half to two hours.

Sporadically, the lab people would gather for lunch or to chat in a bar. This activity lasted about an hour or two in general and aimed at socializing among the lab staff. These leisure activities with the team were important because it enabled the creation of links and social interactions beyond the experience in the University, besides encouraging useful discussions to improve the research in progress.

Discussion and Final Considerations

The Memory Lab, directed by Professor Roediger is one of the most important (if not the most important) human memory research laboratory in the world. This experience, although short (six months), was very productive. In the academic world, we are constantly encouraged to participate in scientific events. It is very important that students attend these events as these can help in the process of increasing the network of contacts for internships in the future. However, it is worth pointing out that for many, language is still an obstacle (AVANCINI, 2013). When speaking about science, universities must invest in Foreign Language Programs and students should strive to learn this language, which is indispensable for an internship abroad.

Two students from the lab I've been in came from Turkey. Cultural exchanges are important. For example, it has been reported that in Turkey, the best Universities are public and all disciplines are taught in English, as well as the tests and routine of the university. All the teachers they had during graduation, did post-graduation outside of Turkey. When asked if all students were bilingual, as a response was informed that no, they learned to enter the University. According to them, this made it easier for them to enter graduate school in the United States, since many teachers had studied there and explained the process, as well as the ease with the language in knowing the technical terms of the area.

Attending meetings such as Lab Meeting and attending department meetings (Behavior, Brain and Cognition talk series) strengthens scientific thinking and causes new research ideas to emerge. This way of presenting the results, discussing with other professors and students of other laboratories consolidates the researches, as this interdisciplinarity causes

new ways of evaluating the problem to be seen. In addition, everyone learns of a colleague's research from another lab, which further increases the chances of collaboration within the department itself. This can be seen in the publications generated in which the teachers publish with other professors of the department itself.

Overall, in all activities, there is plenty of reading to do. Here in Brazil, from personal experience that I have as a teacher (undergraduate), as well as a graduate student, we do not read the number of articles they read per week (only on their own, but not in directed activities). I believe this greatly facilitates the development of critical thinking. The fact that teachers have "Teaching Assistant" also contributes to higher production, since teacher-researchers are able to devote more time to research and these more "automatic" activities are diluted, being in charge of the assistant professor, who also benefits from this activity acquiring certain experience in the teaching.

In relation to the extension, in Brazil, there are similar initiatives of university extension (e.g. SOUZA et al., 2016; VARGAS et al., 2014). In the case of activities seen, the demonstration of an experiment in the Memory Lab is important to arouse the interest of the students of High School in pursuing academic career. Often, in Brazil, there are criticisms that students should be more involved with research and not dedicate themselves to extension. However, the university extension must be valued and it is perceived that it is also present in large research laboratories in the United States.

Due to the fact that the University of destination has a strong policy regarding internationalization and diversity, in the academic environment there were no problems regarding the adaptation to the language. However, difficulties were found more in the context of cultural differences, for example, at lunch time, most days, each student has lunch alone in his own room and not all together as we usually do in Brazil. On the other hand, there were happy hours, which contributed to the interaction with them.

The most limiting factor was the short time of six months, which was not enough to start a research there, however, the Professor discussed an experimental design to be carried out in Brazil, which overcame this limitation and opened possibilities for international cooperation.

In short, PDSE experience abroad was an important experience to learn how they conduct the various research, teaching and extension activities. There was a closer relationship with Professor Roediger, one of the goals of Internationalization (PEREIRA, HEINZLE, 2017), and we established a research partnership with the counselor in Brazil. International cooperation is one of the objectives of the PDSE. It is hoped that this report of experience will encourage other students to seek this experience as well as to adopt some practices in our programs in Brazil. However, it is worth mentioning that our student mobility is still unilateral, that is, destination countries are, for the most part, the leaders in scientific production, and Brazil still receives few students in this process (CHAVES, CASTRO 2016).

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