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BRAZILIAN RESEARCHERS' ACTIVITY IN INTERNATIONAL PUBLICATION

a comparative view between Applied Social Sciences and Engineering

A ATIVIDADE DE PUBLICAÇÃO INTERNACIONAL DE PESQUISADORES BRASILEIROS

um recorte comparativo nas áreas de Ciências Sociais Aplicadas e Engenharia

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The data in this research were collected with the explicit consent of the participants, in accordance with the requirements of ethics regulations.

The study is registered on Plataforma Brasil – Committee of Ethics in Research - (https://plataformabrasil.saude.gov.br/) under the number 82705917.2.0000.5390.

Resumo: *Leal, M. K. O. (2021). A atividade de publicação internacional de pesquisadores brasileiros: um recorte comparativo nas áreas de ciências sociais aplicadas e engenharia. (Tese de Doutorado). Faculdade de Filosofia, Letras de Ciências Humanas, Universidade de São Paulo, São Paulo.*

Apesar do aumento na atividade de publicação internacional dos pesquisadores brasileiros nas últimas três décadas, sabe-se que a produção e publicação de artigos demanda tempo e esforço consideráveis por parte dos pesquisadores, possivelmente em detrimento ao tempo efetivamente dedicado à pesquisa. Tendo em vista a crescente valorização dessa atividade pelas agências de fomento e avaliação, tanto para as carreiras acadêmicas dos pesquisadores quanto para a avaliação dos programas de pós-graduação, pode-se perceber a necessidade de compreendê-la melhor. Há um respeitável volume de trabalhos bibliométricos no que se refere aos artigos publicados, porém o processo de escrita e publicação de artigos em periódicos internacionais por pesquisadores brasileiros ainda é pouco estudado. Este estudo qualitativo coletou, através de questionários on-line, informações sobre as práticas de produção e publicação de artigos em inglês de 23 pesquisadores da área de engenharia e 18 da área de ciências sociais aplicadas, além de entrevistas com 8 pesquisadores dentro das mesmas áreas, e documentos disponibilizados por universidades e agências governamentais pertinentes ao tópico em questão. Propõe-se a análise dessa atividade com base na Teoria da atividade de Engeström - que por sua vez, apoia-se em métodos etnográficos de coleta de dados - com o intuito de explorar as formas de atividade atuais, as ferramentas de mediação, as regras e os conflitos existentes. O estudo revela uma gama variada de práticas com a finalidade de ter sucesso na publicação internacional. Destaca-se nos resultados a necessidade de provisão de melhores formas de mediação, especialmente na área de letramento acadêmico em inglês. A compreensão da atividade e dos desafios envolvidos têm o potencial de informar quais ações de suporte podem promover a otimização de recursos e o aumento da produtividade na divulgação do trabalho de pesquisadores que se encontram em ambientes semelhantes aos pesquisados.

Palavras-chave: *Letramento acadêmico. Escrita acadêmica. Publicação. Artigos científicos, Teoria da atividade.*

Abstract: Leal, M. K. O. (2021) *Brazilian researchers' activity in international publication: a comparative view between applied social sciences and engineering*. (Tese de Doutorado). Faculdade de Filosofia, Letras de Ciências Humanas, Universidade de São Paulo, São Paulo.

Despite the increase in the international publication by Brazilian researchers in the past three decades, it is known that the production and publication of articles demands considerable time and effort from the researchers, possibly to detriment of the time they effectively devote to their research work. Taking into consideration that government agencies increasingly value this activity for the evaluation of academic careers of researchers as well as graduate/postgraduate programmes at universities, the need to understand it better is indisputable. Although a respectable body of bibliometric studies on published articles can be found, there are few which investigate the process of writing and publishing articles in international journals by Brazilian researchers. This qualitative study collected, through an online questionnaire, information on the practices of production and publication of research articles in English from 23 researchers in the engineering field and 18 from applied social sciences, in addition to interviews with 8 researchers from the same fields, and documents made available by universities and government agencies concerning this topic. The analysis of this activity is addressed through Engeström's *Activity Theory* framework – which in turn relies on ethnographic methods of data collection – with a view to exploring the current forms of activity, mediation tools, the existing rules and conflicts. The research reveals a wide range of practices aiming at succeeding in international publication. The results highlight the need for provision of better mediation tools, especially concerning academic literacy in English. The understanding of the activity and its challenges may potentially inform us which actions could optimise the use of resources and increase productivity in the communication of research results by researchers in similar environments.

Keywords: Academic literacy. Academic writing. Publication. Research articles. Activity theory.

LIST OF ABBREVIATIONS

AoL	Assurance of Learning
APC	Article Publishing Charges
ARWU	Academic Ranking of World Universities
CAPES	Coordenação de Aperfeiçoamento de Pessoal de Nível Superior
CARS	Create a Research Space
CHAT	Cultural-Historical Activity Theory
CNPq	Conselho Nacional de Desenvolvimento Científico e Tecnológico
EAP	English for Academic Purposes
EAL	English as an Additional Language
EMI	English as a Medium of Instruction
ENEM	Exame Nacional do Ensino Médio
ERPP	English for Research Publication Purposes
FAPESP	Fundação de Apoio e Amparo à Pesquisa do Estado de São Paulo
GDP	Gross Domestic Product
IF	Impact Factor
IMRD	Introduction, Methods, Results, Discussion
L1	First Language
L2	Additional Language
NES	Native English Speakers
NNES	Non-native English Speakers
OARE	Open Access to Research in the Environment
RA	Research Article
SEO	Search Engine Optimisation
SciELO	Scientific Electronic Library Online
THE	Times Higher Education Ranking
WoS	Web of Science
ZPD	Zone of Proximal Development

CONTENTS

Chapter 3

Chapter 4

1

Introduction

Academics worldwide have been subjected to changes in their work environment in the past thirty years. Particularly, the movement toward the internationalisation of higher education seems inevitable (Knight & de Wit, 2018; OECD, 2009) and has brought new elements to their activities. Universities are now competing to attract international students and highly qualified faculty, and a good position in rankings such as the Times Higher Education Ranking (THE)[1] and the Academic Ranking of World Universities (ARWU)[2] is a major factor of success. In both rankings, research accounts for 60% of the assessment:[3] in the THE, 30% is attributed to research output and 30% to citation of research produced by faculty; while in the ARWU, 20% is attributed to highly cited researchers, 20% to publications in *Nature* and *Science,* and 20% to publications in other indexed journals. The importance research publication has gained in the universities' priorities is thus mostly explained: the recognition of the institutions' academic worth comes through the validation of their faculty's research output.

The relevance of research is often measured through bibliometric indexes, notably the citation of articles, citation of researchers (H-index) and the impact factor of journals (IF) where articles are published. Even though such indexes are subject to some criticism (Fernandez-Llimos, 2016; Larsen & von Ins, 2010; Moustafa, 2015), the research community as a whole seems to accept them as stamps of quality, including Brazilian evaluation agencies. With the concentration of submission of research articles in certain high-IF journals, the activity of international publication has become more competitive, which makes success even more difficult to achieve.

Internationalisation does not seem to have required much effort from universities in English-speaking countries, since major changes in

1 https://www.timeshighereducation.com/w%C3%B2rld-university-rankings/2022#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats

2 https://www.shanghairanking.com/rankings

3 https://www.topuniversities.com/university-rankings-articles/world-university-rankings/world-university-ranking-methodologies-compared

their modus operandi have not been necessary. Their main adjustment has been catering to the language needs of EAL (English as an additional language) students, so that they are able to attend classes and fulfil their academic requirements. It may be relevant to note that there are only four universities from non-anglophone countries among the top 30 in the 2022 THE ranking. This fact also suggests that competitiveness could be related to the working languages of the institutions, in addition to the raking criteria being favourable to the way universities operate in English-speaking countries.

In non-anglophone contexts, the internationalisation currently in progress has made the academic activity quite complex. Universities now need to offer international students and faculty courses to take and to teach, which brings forth the issue of language for instruction and communication. Internationalised schools in European and Asian countries have adopted English (EMI – English as a medium of instruction) to teach a large number of courses in different fields to accommodate international students[4] . In addition, websites, digital learning platforms, documents such as transcripts and certificates, institutional communication have had to be adapted so that international students may have a full experience of the university. In most universities, two working languages are currently in use – the local language and English – but there are challenges in maintaining everything within the university in both languages, such as organising parallel courses in different languages with the same content, having bilingual administrative staff, among other issues. The challenges of the internationalisation of higher education still need to be better studied and understood, especially in contexts where English-local language bilingualism cannot be taken for granted.

In Brazil, internationalisation has not reached the full range of academic activities, as they have in many European universities.

4 https://www.unl.pt/en/nova/internationalization-nova
https://www.unisg.ch/en/studium/darum-hsg
https://www.reutlingen-university.de/en/our-profile/our-profile/
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At present, most of our courses are taught in Portuguese, to which incoming international students and faculty need to adapt. Professors' and students' L2 proficiency level may vary, and institutional documents and communication are in Portuguese. If our institutions intend to become fully internationalised to be part of the global network, major changes will be required. On the other hand, discussions must take place to determine what the priorities of our universities are – whether internationalisation should take precedence over other concerns, especially considering that our public universities are primarily supposed to bring benefits to our local population. In this regard, providing Brazilian students with more access to higher education may seem more beneficial to our society than internationalisation. Currently, the most evident step towards internalisation for Brazilian academics is the growing demand for international publication, addressed in this study.

Brazilian research work is mainly centred in research-intensive public universities (Clarivate Analytics, 2018), conducted by faculty leading research groups and postgraduate programmes. Therefore, to enhance the participation of Brazilian researchers in the international scene, pressure has grown on universities to produce better research and publish more internationally. CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), under the Brazilian Ministry of Education, works on ensuring the quality of postgraduate programmes, by assessing them through the productivity of faculty and students. Better grades are assigned to programmes that have publications in well-ranked international journals. Postgraduate programmes which fail to fulfil the requirements are downgraded – losing autonomy and funding – and extinguished if they do not improve. Aiming at obtaining good grades from CAPES, many postgraduate programmes have made publication of one or more articles in well-ranked journals a requirement for PhD candidates to complete their degrees[5].

5 https://leginf.usp.br/?resolucao=resolucao-copgr-no-8162-de-22-de-dezembro-de-2021

Nevertheless, the demands for international publication have not necessarily been matched with actions to support researchers and increase their success rate. The material conditions – funding, premises, equipment, human resources, etc. – are often insufficient for the type of research considered high-quality, and other conflicts also interfere with the activity.

International publication has become a central issue in the careers of most scholars, thus an analysis of how it affects their academic activities is necessary to understand the processes and the difficulties entailed. Although quantitative studies of the production of Brazilian researchers are easily found (Clarivate Analytics, 2018; Mugnaini *et al*., 2014; Packer, 2014; Vasconcelos *et al*., 2008); there are fewer qualitative studies investigating the process of writing and publication (Cunha *et al*., 2014; Ferreira, 2012, 2015; Martinez & Graf, 2016). Differently from most of the previous studies, this research gathers information from researchers on how they navigate through the demands of today's academic activity, comparing their perspectives with the related institutional discourses.

Even though the internationalisation of research publication has been a strong movement in the Brazilian academy, there have been few studies (Guimarães *et al*., 2020; Nery, 2017) that investigate the various aspects of this phenomenon. In particular, how researchers are managing the growing institutional demands and how they are adapting to changes. For instance, most of the faculty did not need to prove their level of English language proficiency during their hiring process, but they are now required to produce research articles in English for publication in well-ranked journals and use it as a working language in international projects. There is little information on how scholars acquire the additional language, how they learn to write research articles in English, how they produce articles for publication, how they guide postgraduate students toward international publication activity.

This study aims to contribute to the understanding of the main issues that influence the research and publication activity of Brazilian scholars in the context of the internationalisation of higher education. This topic deserves a closer investigation, as it is a critical point in scholars' careers in all universities that seek to be recognised for their academic excellence. In this study, input from researchers was obtained concerning their practices: their strategies to deal with demands, the resources they have access to, and the difficulties they find to maintain their academic activities. Information from researchers from two fields – applied social sciences and engineering – were collected on the hypothesis that their needs and practices may differ. A survey questionnaire and interviews were used to gather the data from the participants, in addition to documents that provide information about the regulations and conditions of their work.

The research questions address the activity of research writing and international publication:

1. What are the most critical conflicts in the current publication practices, from the researchers' point of view? Are there significant differences between the two fields of study?

2. What mediation tools need to be addressed in order to meet current challenges in research writing and publication practices? Are there significant differences between the two fields of study?

3. How could some of the existing conflicts be mitigated to generate more advanced forms of activity? (Engeström, 2015) Are there significant differences between the two fields of study?

The main theoretical approach used in this study is the Cultural Historical Activity Theory, developed by Engeström (1999, 2015), which allows the analysis of the emerging conflicts and brings a new understanding of the relationships among the factors that build the activity. All human activities have contradictions (Engeström, 2015), and the intensity of the contradictions may make an activity impossible to be

maintained in the current form. The main goal of this research is to identify the existing contradictions and explore how they could be mitigated, especially concerning institutional and collective actions.

This book is organised as follows: chapter 2 contains a summary of the main concepts of the Cultural Historical Activity Theory (CHAT) by Engeström, as well as a review of the main literature concerning the issues of research writing and publication. Chapter 3 explains the methodology used for collecting and analysing data from three different sources. Chapter 4 analyses the data through the CHAT framework and discusses the results. Finally, chapter 5 contains the concluding remarks and suggestions of possible actions which may mitigate conflicts, as well as future research that will bring more knowledge about the activity of research and publication in the context of internationalisation.

2

Review of Literature

This literature review aims at summarising the theoretical basis for the analysis of the data, as well as highlighting the main issues in research writing and publication in L2 which have been studied and discussed by various authors. The first part consists of the basic theoretical concepts of Cultural-Historical Activity Theory and the framework developed by Yrjö Engeström (2015) to analyse human productive activity, which will be used in this study. The second part Is organised in six sections: 1. Writers' issues related to the adoption of English as the language of research publication; 2. Issues related to institutional demands and policies for research writing and publication; 3. Issues in the publication process generated by competitiveness; 4. Economic issues and material conditions in research publication; 5. Academic writing instruction; and 6. Existing studies in Brazil on writing for publication and scientific publication activity. The last section is divided into four subsections: statistical and bibliometric studies, articles criticising institutional policies and practices of the communities, articles on quality--related issues, and Brazilian research on issues related to the adoption of English as the language of research publication.

Academic activity and practices have been deeply affected by the intensified globalisation of markets and capitals in the past 25 years (OECD, 2009). Higher education has become increasingly more internationalised, and research is moving from a local focus (Bennett, 2014) towards international interest and cooperation (OECD, 2009). As a consequence of the more global visibility sought by universities and research institutions, publishing research articles (RAs) in journals which have international reach has become a priority (Lee & Lee, 2013; T Lillis & Curry, 2010; Salö, 2017). New policies of performance evaluation and rewards have been implemented, which has had repercussions on scholarly practices (Lee & Lee, 2013; T Lillis & Curry, 2010; Pérez-Llantada, 2012; Salö, 2017).

In the context of increasing demands on scholars for research publication, this study approaches the activity of writing RAs in English

and having them published in high-visibility international journals by non-native speakers, and the issues arising from the relations entailed in the activity. The specific focus of this work will be on Brazilian researchers, and their practices and perceptions. The theme of research writing for publication by non-native speakers of English has been researched mainly in Europe (Bennet, 2014, 2017; Ferguson *et al*., 2011; Lillis & Curry, 2010; Pérez-Llantada, 2012; Salö, 2017), and in Asia (Cargill *et al*., 2017; Flowerdew, 2000; Lee & Lee, 2013; Zhao, 2017); however, the literature regarding the activity in Brazil is far less extensive.

2.1. ACTIVITY THEORY

2.1.1. Introduction

The available literature concerning research on scientific writing and publication reveals that these are very complex activities. The analysis of such complexities requires a theory that does not oversimplify the components, their relationships, and especially their conflicts.

A remarkably suitable framework for this purpose is provided by Cultural Historical Activity Theory (CHAT) for its dialectical mode of thinking and analytical structure for complex, conflicting, and dynamic human activity. The framework used in this study was developed by (Engeström, 1999, 2015) whose work involves the application of this theory in the analysis of various professional activities.

The basic concepts of activity theory are explained below, so that the theory may be later connected to the analysis of the activities of research article writing and publishing, to be discussed later in this dissertation.

2.1.2. A brief history and basic concepts

Russian psychologists Vygostsky and A.N.Leont'ev studied the development of human cognition, building the foundation of the cultural-historical approach in the 1920s. Vygostsky is recognised as the creator of the idea of mediation through tools for the completion of tasks and the ZPD (Zone of Proximal Development). The ZPD refers to the learners' expanding ability to perform tasks when guided by an adult, while they would not be able to do so independently (Daniels, 2001), which is a fundamental notion in modern pedagogy. The concept that culture and society, rather than external factors, lead to human cognitive development, is the basis of Vygostky and Leont'ev's work (Leont'ev, 2002).

Later, however, Vygotsky and Leont'ev diverged in the further development of the theory. Vygotsky's cultural-historical theory considered that communication between individuals was indispensable to explaining individual consciousness. In A.N. Leont'ev understanding, on the other hand, the context of individual practical life and activity was more important in the development of cognition (Leont'ev, 2002). Also, in A.N. Leont'ev's view, as practical activities became collective, goal-oriented endeavours, memory – a major focus of his research — also developed into a mediated form in order to achieve collective objectives (Sokolova, 2002).

The two basic principles of activity theory are summarised by D.A. Leont'ev:

> All human mental processes, functions, and structures emerge, develop, and change in an object-related activity that links an individual to the world; (2) all human mental processes and functions are derivatives of external activities, and as such they are themselves the forms of object-related activity, by maintaining within themselves the reduced structure of external activity. (Leont'ev, 2002, p. 51)

The Russian activity theory of human psychology was formulated by A.N. Leont'ev and his group of researchers, known as the Kharkov group, emphasising the importance of the relationships between the individual, the world, and the object activity to the development of the human mind. It became a theoretical paradigm in psychology in the late 1930s and early 1940s (Leont'ev, 2002).

The concepts of socially based cognition, mediation, and ZPD developed by the Russian psychologists were the basis of CHAT. German philosophers Marx and Engels also played a crucial role in the formation of the theory. Their dialectics was applied to the material world, and their theories about the organisation of production and the complex relationships created by capitalism within human activity were incorporated into cultural-historical theory (Engeström, 1999, 2015).

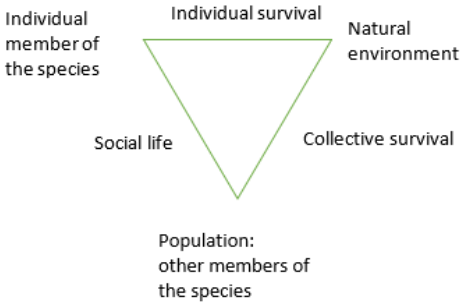
Cultural-Historical Activity Theory considers human activity a complex, historically and socially situated, tool-mediated and dynamic endeavour. CHAT has been developed into a theory that tries to make sense of various human activities, including their complexities and contradictions. It has further evolved into a tool to understand the mechanisms of change and support the transition into new, improved forms of activities (Engeström, 1999, 2015).

Today, CHAT is applied in a wide range of fields, including information technology (Kaptelinin & Nardi, 2017; Karanasios & Allen, 2018), education (Eriksson, 2014; Jenlink, 2001), healthcare (Engeström & Pyörälä, 2021; Sadeghi *et al*., 2014) and business (Robin, 2008; Vakkayil, 2010). This varied application provides a framework for understanding each activity and, in some cases, supporting its development by analysing contradictions and helping subjects towards mediated solutions (Carroll, 2003; Sannino & Engeström, 2018).

2.1.3. The representation of human activity

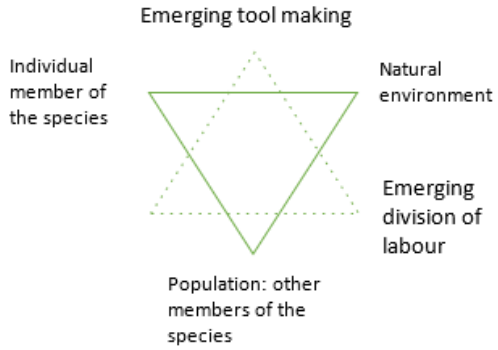
Human activity evolved from animal activity as societies and their cultures also evolved. In animal activity, there are the individuals of a species, the population of the species, and the natural environment with which they contend. The interaction of an animal with the population and the environment results in individual and collective survival and basic social life (Figure 1a) (Engeström, 2015). As humans evolved, they started organising collectively, divided labour, and developed tools (Figure 1b) (Engeström, 2015). With the consolidation of human social organisation, human activity could be represented by a new model (Figure 2) (Engeström, 2015), which will be used for the purpose of representing the activities under analysis in this research.

Figure 1a — The general structure of the animal form of activity



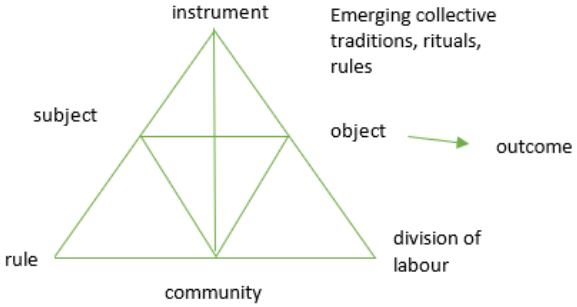
Source: Engeström 2015, pp. 60,61.

Figure 1b — Structure of activity in transition from animal to man



Source: Engeström (2015, p. 60, 61).

Figure 2 — The basic structure of human activity



Source: Engeström (2015, p.63).

2.1.4. Contradictions

Dialectical materialism – the philosophical approach by Marx and Engels to the material world – proposes the idea that contradictory aspects are part of all activities, and the resulting tensions drive the changes which may transform or dissolve those contradictions.

The concrete reality, in a dialectical perspective, is inherently contradictory, and this provokes reality to change (Santos *et al*., 2018).

As Cultural-Historical Activity Theory is strongly rooted in Marxist concepts, contradictions perform a key role in human activity (Engeström, 2015). Conflict arises from the existence of two different values that can be attributed to all things: exchange value and use value. The exchange value is defined by the monetary value that is attributed to objects and activities, while use value is attributed subjectively, attached to the capacity of satisfying a requirement or need. These two features constitute all things in capitalism, conflicting and inseparable at the same time. This primary contradiction interacts with other elements, producing further conflicts.

Four levels of contradictions are identified by (Engeström, 2015) and are represented in Figure 3:

a) Primary contradiction: within each corner of the model there are inner contradictions generated by the clash between use value and exchange value. For instance, the perception that one's salary is too low for the work that is done, or that a certain merchandise is too expensive are examples in which this conflict surfaces.

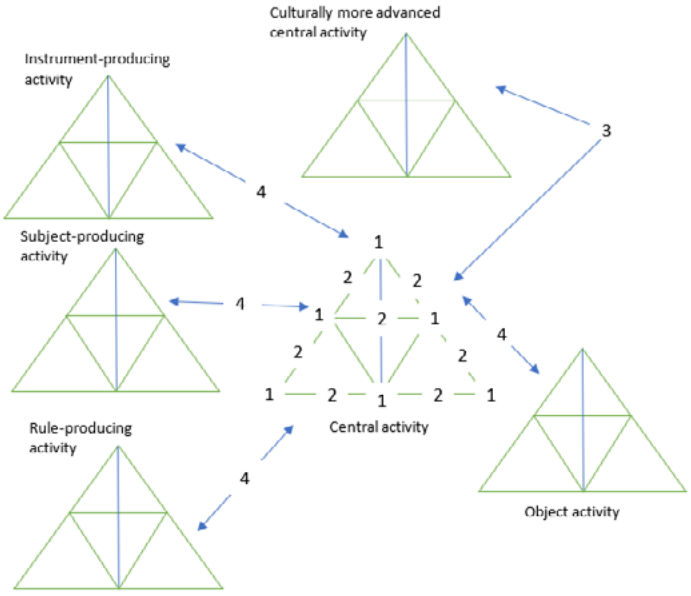
b) Secondary contradiction: between the corners of the model there usually are divergences. For instance, a subject of an activity often disagrees with the rules that regulate how the activity works (e.g. a student very often contests rules that organise the activity of school-going).

c) Tertiary contradiction: when an activity changes and gains a different form, the new object often diverges with the object of the previous form of the activity. For example, in a situation where the object of the school-going activity for a group A of students is socialising with friends and for a group B, the object of the same activity is learning mathematics, there is a conflict between those two objects. It is important to emphasise that multiple forms

of the same activity exist simultaneously, especially as different communities work on their own transformations.

d) Quaternary contradiction: some activities generate the elements for other activities. For example, the activity of going to medical school generates doctors, who are subjects of the activity of healing patients. The quaternary contradiction is the conflict arising between the outcomes of the former activities and the elements of the next activity. For instance, the doctors who come out of medical school may not fit the requirements of the activity of healing patients.

Figure 3 — Four levels of contradictions withing the human activity system



Source: Engeström (2015, p.71).

Contradictions are inherent to human activity and have a fundamental role in generating transformation (Engeström, 2015). The intensification of conflicts demands a solution, the search of which moves

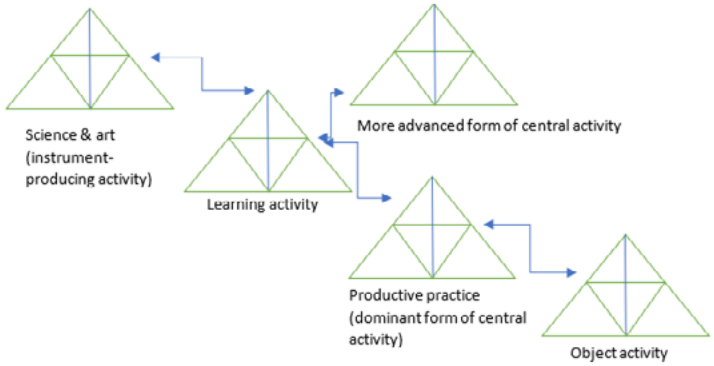
the activity towards a new form. However, real expansive transformation only occurs with great effort and with the mediation of learning activity.

2.1.5. Learning Activity

In Engeström's concept, learning activity is very different from learning within school-going or learning within work activity. Learning is the activity through which humans become able to transform their own productive activities, especially as they perceive the inadequacies and the conflicts in their activities' current form.

Learning activity has the crucial function of enabling subjects to a) understand each of the elements involved in the activity, b) understand the nature of the conflicts within their activity and how they relate to the context, c) form instruments which they may make use of in order to find solutions, and d) collectively move towards a new form of the activity. Engeström defines that "learning activity is an activity-producing activity" (2015, p.99). The place of this activity is illustrated in Figure 4.

Figure 4 — The place of learning activity in the network of human activities



Source: Engeström (2015, p. 101).

In the learning activity, self-awareness – "metacognition" (Engeström, 2015 p. 101) – is the critical element for initiating change towards a new form of activity. By recognising the critical conflict – "double bind" (p. 139) — which makes the current practice untenable and understanding the role of the other elements of the activity, the subjects are able to start their search for a solution.

In this framework, Engeström (2015) features three instruments which help promote transformation: a) a "springboard" (p. 225), a temporary motivator in moving the conflict towards a solution; b) models which help theorise a new form of the activity; and c) a "microcosm" (p. 260), a small-scale experiment of the new form of the activity. Engeström advocates for the activity theory researcher's involvement in the process as a facilitator, supporting and guiding the participants in the more difficult phases of the change. These formative interventions (Engeström, 2011, p. 84) aim at encouraging participants' involvement and help them analyse and devise a new form of the activity, so that the current contradictions are no longer an issue. After the new form of the activity is put into practice, in an attempt to free it from the previous critical conflicts, new contradictions will certainly emerge. When these contradictions are perceived as critical by participants, a new cycle of transformation is expected to be initiated.

This movement, named expansive learning (Engeström, 2011), is a collective and interactive development towards a significant change in the activity. The process of change necessarily entails the engagement of all participants, who need to reconceptualise the activity into a new form. While he recognises that complete changes of this type are not simple to actually be materialised, Engeström concedes that miniature cycles of learning – i.e. small initiatives towards change — are quite common, which could potentially evolve into full expansive learning.

Even when the community is engaged in the transformation, challenges in the process emerge, particularly in the shape of resistance within and from the practice of the current form of the activity. The author (Engeström, 2011) reports that these challenges surface most

frequently during the implementation of changes, when the activity actually starts to transition into a new form.

The most important achievement of expansive learning, Engeström (2011) emphasises, is the agency acquired by the participants in the process. As participants realise their power and ability to influence the development and the outcomes of the transformation, they become more involved in taking actions, therefore becoming more committed to the ongoing change and new ones in the future.

While the new form of the activity is possibly improved, it is far from contradiction-free — as any human activity. When the community changes their practice, new conflicts and contradictions arise, which will eventually spur further cycles of transformation.

2.1.6. The case of the School of Arts & Design during the COVID-19 Pandemic

As a concrete example, the case of an Australian School of Arts & Design was studied by Marshalsey and Sclater (2020) in the light of CHAT, after the COVID-19 pandemic forced a radical shift of educational structures. The rules of the activity were suddenly changed, and

meeting and studying in-person on campus was no longer possible. The community had to devise a new form of the activity – distance learning – which came with major challenges.

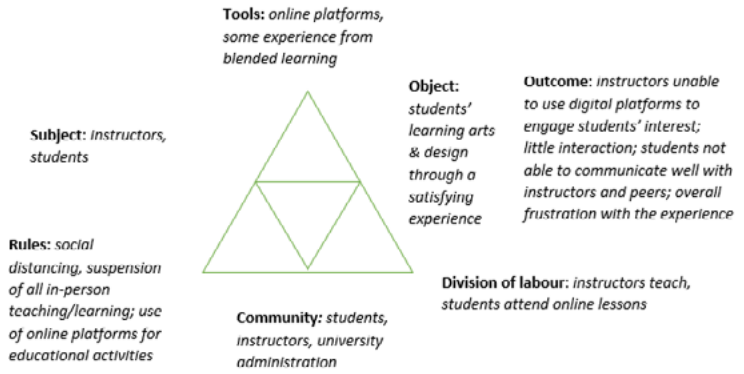
The new form of the activity was far from an improved version of the previous form, but not developing it would have probably meant its interruption for an undetermined length of time, which was not an option for the community. Since the staff and the students were somewhat familiar with the concept of blended learning, the community relied on this experience to change from in-person to distance learning. It was also full of conflicts at first, as instructors and students had to understand and learn how to manage the technological tools, such as digital platforms

and video conferencing, in addition to dealing with issues such as not having access to software and unstable or limited internet connection. Consequently, the object of the activity of teaching/ learning in a creative, stimulating, and enjoyable environment was difficult to achieve.

The distance was a hindrance to the sense of community of students and faculty, since their in-person interaction was a source of bonding, exchange of ideas and creation of joint projects. Distance learning through online platforms was also perceived as an obstacle to the communication between students and instructors. Not having a face-to-face interaction prevented students from informing instructors of their learning needs and instructors from catering to them.

Instructors reported having to spend more time preparing lessons to deliver over the digital tools, having to learn how to use the resources by trial and error at the same time as adapting lesson contents. They also had difficulty in gauging students' engagement and reactions to adjust their lessons on the spot, as they were used to doing so in the physical classroom. (The diagrams presented in Figure 5 below are not part of Marshalsey and Sclater (2020). They have been drawn to illustrate the activity systems narrated by the authors).

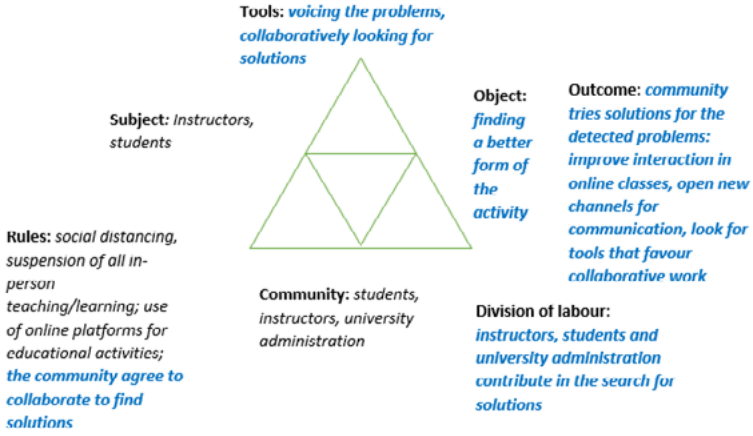
Figure 5 — Distance learning activity



Source: This author

As the community recognised and voiced their issues with the new form of the activity, they worked on ways to improve the teaching/ learning experience (Figure 6). The community had the university provide training and support for instructors and students to use the new digital tools, and instructors started making their lessons as interactive as possible. The community tried different digital tools until they found three platforms which allowed the best collaborative learning experience; instructors and students would negotiate and agree on which platform to use for their lessons. The strategies adopted included especially a more horizontal relationship in the learning environment. Students started taking turns in sharing and discussing their work in the online classroom, which increased collaboration and participation. They also worked on collaborative documents and whiteboards to take notes and support lessons and contributed by finding videos online and suggesting to instructors those which they thought would be useful for learning.

Figure 6 — Learning activity: transforming distance learning



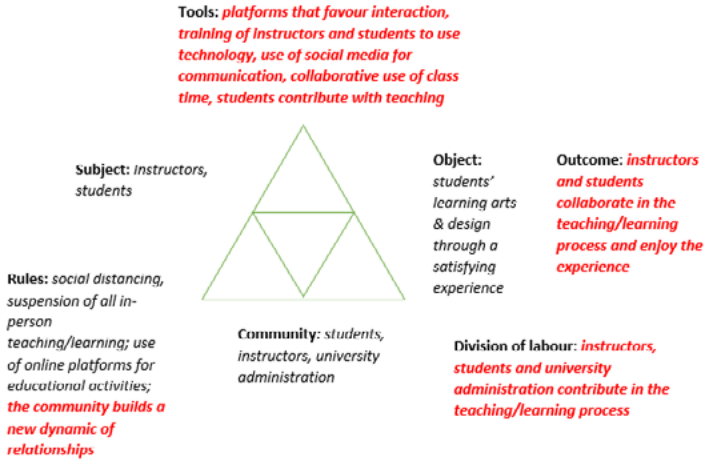
Source: This author

Although many conflicts were still part of the resulting new form of the activity, it was possible for the community to achieve the main object of the activity by collaborating to solve the most serious conflicts.

In this example, even though there were no activity theory researchers involved in the facilitation of change, it is clear that all those engaged in the activity were active participants in the process of transforming the very unsatisfying distance learning experience into the best teaching/learning possible under the circumstances. Students and instructors detected the problematic areas of the activity and collaborated in finding solutions, especially to improve interaction and build relationships over the online tools.

The new form of distance learning (Figure 7) contemplated the demands for more interaction and participation, but other issues remained unaddressed. In addition to the problems of online teaching/learning partially solved by the collaborative transformation, students had reported missing other features of life on campus, made impossible by the pandemic. They missed the physicality of manually working on artistic production and sharing it with the group and complained about the lack of opportunities to socialise and informally spend time together to discuss ideas, for example. Even though the critical issues seemed dealt with in the best way possible, the unattended ones were still a source of discontent and would probably surface as conflicts in need of solutions soon.

Figure 7 — New form of the activity: distance learning



Source: This author

2.2 ISSUES IN L2 RESEARCH WRITING AND PUBLICATION

2.2.1. Writers' issues related to the adoption of English as the language of research publication

The fact that English has become the primary language for scientific communication has generated a number of issues which have been discussed by different authors. The main themes being studied are the native/ non-native dichotomy, the language standards demanded by publishers, linguistic injustice, the Anglo-cultural writing conventions and epistemology, language, and literacy brokering.

The basic division between researchers who are native speakers (NES) and non-native speakers (NNES) of English brings forth a difference which puts the latter at a competitive

disadvantage. In order to achieve the level of English proficiency demanded for publication, NNESs need to spend time, make the effort and invest in resources to learn the foreign language, a circumstance which may divert researchers from further developing their main activity (La Madeleine, 2007; Woolston & Osorio, 2019). Although being NNESs disadvantages them in this aspect, researchers acknowledge that a common language is necessary for multilingual contexts, and that such a language is currently English (Pérez-Llantada, 2012).

Currently, the instructions given to authors by publishing houses regarding the language of their RA manuscripts varies widely. Until recently, major journal publishers specifically stated that a native-like command of English was expected. A fresh search of publishers' sites has produced different results. References to the demand of native-like command of English have been excluded, although most publishers still recommend that NNES researchers have their manuscripts revised by NESs[6], and that professional editing services validated by the publisher should be used to ensure the language of the manuscript is appropriate. Some guidelines have been (over)simplified, instructing authors to have manuscripts "spell-checked and grammar-checked", as if these would be enough to ensure effective communication, while others require authors to submit manuscripts in "good English, American or British usage"[7], which indicates that actual practices may not have changed, despite the shift in the publicly available discourse.

As Pérez-Llantada *et al*. (2011) and Lillis and Curry (2010) found in their studies of NNES European researchers, the achievement of a high level of proficiency in English is not always realistic. Given this

6 https://www.springer.com/br/authors-editors/journal-author/journal-author-helpdesk/preparation/1276#c1260

7 https://www.elsevier.com/__data/promis_misc/RESINV_GfA.pdf

fact, authors have advocated for more flexibility in publishers' demands (Ferguson *et al*., 2011; Pérez-Llantada, 2012; Lillis & Curry, 2015) in this aspect. Additionally, (Lillis & Curry, 2015) addressed publishers' recommendation of revision of manuscripts by NESs by challenging the assumption that native speakers have uniform linguistic and disciplinary knowledge, stating that 'native speaker' is not a standardising label or guarantee of quality assurance. Tribble (2019) further adds that the notion of naiveness is "undefinable, indescribable and unhelpful" (p. 58). To mitigate publishers' demands on language standards, Ferguson *et al*. (2011) suggest that the increase in article submissions from NNES researchers should be met with different actions from publishers, by incorporating more NNESs as referees, reviewers and editors of major journals, thus allowing for more flexibility.

Linguistic injustice in the publication activity based on the NES/NNES dichotomy is an ongoing discussion. Hyland (2016, 2019), Zhao (2017) and Habibie (2019) claim that the real dichotomy is between novice and experienced writers. The authors consider that former face difficulties in mastering particular features of academic writing such as logical argumentation, objectivity and clarity, formality, and high frequency of nominalisation, regardless of their L1. On the other hand, Politzer-Ahles *et al*. (2016) argue that the challenge is undeniably greater for NNES writers, who have to acquire the additional language before facing the task of learning such specific features. While linguistic injustice is seen as a 'myth' by some authors (Hyland, 2016, 2019; Zhao, 2017), several others give evidence to the contrary (Bardi & Muresan, 2014; Belcher, 2007; Bennet, 2017; Flowerdew, 2000; Lillis & Curry, 2010; Politzer-Ahles *et al*., 2016; Uzuner, 2008)

As a consequence of the adoption of Anglo-cultural writing conventions as well as the language, complexity is added to the task of learning how to write RAs in English. Depending on researchers' L1, writing in L2 might mean adopting a completely different style in structuring sentences and paragraphs, as Santos and Silva (2016) found in their

study of article abstracts in English written by Portuguese speakers. One of the best-known conventions, Swales's (1990) CARS model for the introduction of RAs, is shown to be the key to the acceptance of RAs in a study by Zhao (2017, p.49) of NNES writers in social sciences. Hartse and Kubota (2014) also recognise that writers have better chances of having their work accepted by journals when they follow existing conventions, rather than deviating from them. Tribble (2019) additionally warns that writing instructors need to be aware that rebelling against conventions is not in the novice writers' best interest, as it does not help them gain access to the activity of publication.

The view that language carries inherent social and cultural values is not strong among science writers, who tend to consider it clear and transparent (Lillis & Curry, 2010, 2015). The awareness of this view and the knowledge of the differences of cultural norms when writing in distinct languages are key to an effective communication in the foreign language, as Yousoubova (2011) reported in her study of a Russian researcher writing grant proposals in the USA. The study indicates that the L2 writer struggled to understand and learn how to forward the positive aspects of his proposal in a marketing-like move. As some NNES researchers learn and shift towards Anglo-cultural values in order to have their research work published in English, it has been reported that other epistemologies are starting to lose importance and becoming neglected, as Negretti (2014) observes in the case of the traditional Italian academic culture, and Martín *et al*. (2014) note with respect to the changing cultural values in the Spanish medical field, with the adoption of rhetorical conventions from the Anglophone centre.

In order to successfully publish their RAs in English-medium journals, NNES often need to rely on language and literacy brokers (Lillis & Curry, 2010). Language brokers are the people involved in improving the linguistic aspects of manuscripts, which might encompass a wide range of roles – from informal reviewers such as fellow researchers, family members or friends, to professional translators specialised in

specific fields of study. In Flowerdew's (2000) case study, the English language professional hired to revise a Chinese speaker's manuscript was essential in its acceptance for publication. In Ferguson et. Al's (2011) study, most scholars had used the services of professional translators in order to produce their RAs. Luo and Hyland (2019) also highlight the critical role of reliable translators for the publication activity of NNES scholars with limited English language proficiency.

Literacy brokers, key actors in the activity of writing and publishing RAs, assists authors in improving their manuscripts' structure and rhetoric to shape them according to the journals' requirements. Literacy brokers might be editors, reviewers, theses supervisors or editing professionals who contribute towards that goal. In Flowerdew's (2000) study, for example, the editor of the journal was key in shaping the NNES author's manuscript for publication. While their intervention may be essential in the acceptance of manuscripts, Lillis and Curry (2015) point out that it is crucial that authors verify the significance of the alterations made to the text, in order to evaluate the changes in meaning.

In the Brazilian context, there are a number of factors that make the adoption of English as the language of publication problematic to scholars. Except for the brief initiative of the federal programme Language Without borders (2012-2019)[8], the Brazilian tertiary education has not had a comprehensive L2 instruction programme. Individuals are assumed to have an adequate level of L2 proficiency, and in order to achieve it, they often need to resort to private language schools.

Formal EAP instruction is mostly unavailable in public and private institutions (Ferreira, 2021), yet researchers are supposed to produce scientific articles in English and succeed in having them

8 Language without borders / *Idiomas sem fronteiras* was taken over by the Association of Federal Institutes (ANDIFES) after the federal government decided to extinguish the programme. Currently, its scope is restricted to the 51 associated institutions in the ANDIFES-IsF organisation, out of a total of 107 federal universities and institutes (https://www.andifes.org.br/wp-content/uploads/2022/05/EDITAL-OFERTA-COLETIVA_1SEM2022.pdf). Previously included state universities no longer benefit from the programme either.

published in well-ranked international journals. Support structures common to universities in English-speaking countries, such as writing centres and academic writing courses for undergraduate students are also not in place (Ferreira, 2021). Further, as professional translation and editing services are rarely accessible due to budgetary constraints (Leal, 2021), researchers often struggle to fulfil the institutional demands for research article publication.

2.2.2. Issues related to institutional demands and policies for research writing and publication

Many authors report the growing tendency of governments and universities to demand international publication from their scholars in the globalised world (Burgess, 2017; Flowerdew, 2000; Lillis & Curry, 2010; Pérez-Llantada, 2012; Perez-Llantada *et al*. 2011; Salager-Meyer, 2008; Salö, 2017; Swales, 2009)Swales, 1990. These authors indicate that official policies that accompany such demands include promotions, tenure, increase in salaries, cash rewards, and requirement or advantages for employment. These policies can have varying effects, most of which may be seen as deleterious for research and knowledge. As high stakes are placed on international publication in English, research with a view to producing publishable RAs of international interest has become the goal of many researchers, rather than producing knowledge which might be locally important (Lee & Lee, 2013; Pérez-Llantada, 2012; Salö, 2017)universities in South Korea have participated in an aggressive movement to globalize their institutions through the medium of English by hiring English-proficient faculty. To attain tenure, faculty must publish in international indexed journals (IIJs. As a result, researchers may now be more aware of the exchange value of their work than previously, since some institutions seem to be more focused on attaching financial value to RA publication through prizes and other rewards than on the production of knowledge itself (Hvistendahl, 2013).

Perez-Llantada (2012) and Salö (2017) warn us that these changes should be critically regarded for their negative effects. The increasing focus on publication of research articles in English has caused the decline in the use of national languages in academic production and the loss of prestige of more traditional forms of publication such as books. In addition, high stakes competitiveness has provoked the growth of fraudulent practices in the academy (Hvistendahl, 2013; Qiu, 2010).

As official policies increasingly value publication in English, RAs published in other national languages are becoming less relevant. In a study by Lee and Lee (2013), after Korean evaluation agencies attributed twice the value to publication in international journals compared to Korean ones for career advancement purposes, profound changes took place. Scholars started submitting all possible work as RAs in English, which in turn had the effect of transforming Korean journals into repositories of papers which had been rejected by international journals, causing Korean to practically lose its prestige as an academic language. Similarly, Salö (2017) criticises the Swedish government policy of withdrawing financial support to national journals while increasing the value of international publication in English, which has negatively affected the existence of Swedish as a scientific language. Cash rewards policies for publication in China, which may exceed a scholar's yearly salary if they have an article accepted by a well-ranked journal, consider only WoS indexed journals in English (Quan *et al*., 2017). Publication in Chinese journals has become an activity for researchers and students from universities ranked as lower quality, "tier 3" as pointed out by Quan *et al*'s study (2017, page 4). (Raitskaya & Tikhonova, 2020) also report a tendency of NNES elite researchers who publish in English to disengage from the rest of the research community who can only publish in its local language and is considered less relevant for this reason.

The inclusion of Ras in international journals in the Portuguese evaluation system and the corresponding change in the publication practices by scholars is discussed by Bennett, (2014), who is particularly

concerned with the possibility of the disappearance of Portuguese as an academic language. Further, Badillo (2021) claims that as 84% of Latin American RAs published in 2020 were in English, not only are local academic languages at risk, but academic culture has been changing under the shift to Anglo cultural standards, to the detriment of cultural variety and local identities.

Since the RA has become the most valued type of publication in the Anglo cultural research world, changes in policies have also followed, and a shift in publication practices is in progress. As Burgess (2014, 2017) reports, evaluation agencies in Spain have adopted Anglophone centre ideologies and research publication practices, rating RAs higher than – and to the detriment of – other traditionally prestigious forms such as books, chapters, and monographs. Badillo (2021) confirms that scholars now prioritise writing and publishing RAs in English over other types of publication, which are gradually disappearing.

Negative effects of the official emphasis on high-visibility journal publication also include ethical issues, such as those reported by Qiu (2010) and Hvistendahl (2013). Since the

Chinese evaluation and rewards system placed high stakes on international publication, a growth in practices of fraud, plagiarism, fabrication of results, ghost writing and writing on non-existent research was discovered. In the highly competitive Chinese academic environment, some researchers are reported to having resorted to dubious practices in order to achieve publication, including buying authorship of articles (Hvistendahl, 2013) and peer-review fraud (Haug, 2015). The black market of ghost writing and other questionable practices in the country was estimated at about US$ 150 million in 2009 (Qiu, 2010). Moreover, the number reported to be growing as the result of the combination of governmental pressure, large rewards to researchers who are successful at international publication, and lack of punishment for those who are caught in the wrongdoing. According to Qiu (2010), the absence of punitive actions is suggestive of little interest in suppressing dishonest practices, provided the goal of international publication is achieved.

Not all scholars are willing to completely submit to the pressures and demands, however. Curry and Lillis, 2014 reveal that some multilingual scholars adopt different tactics and strategies to pursue institutional and personal goals with as little conflict as possible, both by publishing required RAs in English in international journals and by working on projects involving other languages. In terms of publication in English, these scholars develop networks for cooperation with peers from other countries while making the choice of producing important work in their national languages, in order to favour local knowledge and facilitate access to students and colleagues who might regard English as a hurdle. Salö (2017) also reports that Swedish academics in the humanities field have adopted a critical stance towards the policy of publishing exclusively in English, especially as their studies are strongly tied to the local context and culture. Additionally, these scholars claim that the national population has the right to access those studies in their native language.

It is also important to note that institutional demands are not necessarily accompanied by the corresponding support (Ferguson *et al*., 2011; Hultgren, 2019). Although NNES scholars are expected to produce RAs and have them published in English, many times it is the responsibility of the researcher alone to achieve success. Perez-Llantada *et al*. (2011) and Martin *et al*. (2014) emphasise that most scholars in their studies would benefit greatly if universities offered language support and instruction. Burgess (2014) argues that translation costs should be covered by the institutions which demand publication in English rather than by the scholars, which is the current practice.

2.2.3. Issues in the publication process generated by competitiveness

A massive growth in the number of submissions of manuscripts to high-visibility journals has occurred due to institutional pressure across the globe (Aarssen *et al*., 2008; Raitskaya & Tikhonova, 2020).

As a consequence, there have been ramifications to the publication process, especially related to the competition generated by the limited number of articles that can be published by these journals (Larsen & von Ins, 2010) and the high value attached to the acceptance of an RA. As the use of journal impact factor for scholars' assessment further intensifies competition, authors' dependence on publication weakens their position in the asymmetrical relationship with editors and reviewers. In addition, in an effort to succeed in publication, scholars tend to focus their work on the research topics that are favoured by journals and try to produce the types of results which are considered noteworthy (Fanelli, 2012; Matosin *et al*., 2014).

One of the widely used criteria to define a journal's importance is its impact factor (IF), a measure considered controversial (Fernandez-Llimos, 2016; Moustafa, 2015; Muller, 2018), but used by official agencies, nonetheless. The impact factor of a journal is determined by the number of times its articles from the previous two years have been cited over a year. A high IF means the journal's articles are read and cited frequently. Since the IF of the journals where their articles are published is part of the evaluation, researchers are not willing to disregard it; on the contrary, they consider journal IF a priority when submitting their papers. The concentration of manuscript submissions on high IF journals further increases rejection rates (Aarsen *et al*. 2008), which raises the perceived value of successful publication even more. However, Moustafa (2015) argues that although IF is assumed to be evidence of quality, it is biased and has harmful effects. He claims that IF is unreliable, since it can be easily manipulated by editors, who only need to select papers which cite their own journal's previous articles (Mostafa, 2015) or require such citations as a condition for publication (Muller, 2018). In addition, the methodology to calculate it is not statistically valid. Fernandez-Llimos (2016) and Muller (2018) agree that IF is biased and claim that it is a business-oriented measure and not in the best interest of science. Muller (2018) further argues that as governments and institutions treat science and knowledge as a form of business,

productivity – speed and quantity of published articles — becomes a priority over the quality and depth of the produced knowledge, with obvious deleterious effects.

The increasing competition for publication in high IF journals, allied to the high stakes invested in scholars' success in having their work published, make editors and reviewers greatly influential in the careers of a large number of researchers (Alleoni, 2014). Although judgement is supposed to be objective and unbiased, circumstances such as time constraints, workload (Myers, 2009), depth of knowledge, personal stance and interest in the subject might affect decisions at different levels (D'Andrea & O'Dwyer, 2017). The asymmetrical power relations between authors, editors and peer reviewers significantly influences the process of revision prior to publication. Although journal gatekeepers' role is mainly to ensure the quality of the articles published, the suggestions for alterations tend to be accepted by authors, due to the importance of successful publication in their careers. Authors might be willing to accommodate any changes requested by reviewers and editors so as not to risk having their submitted manuscript rejected. In extreme cases, even substantial changes to the author's main claim in the study have been conceded in order to achieve publication (Lillis & Curry, 2006, 2010).

Competitiveness makes high-visibility journals very selective regarding the themes of published RAs. Articles containing "results that are of local but not of global interest" or considered "low priority compared to other candidates for publication" (Leibovici, 2017, page 1) are often rejected immediately, without peer review. In order to have better prospects of having their work published, researchers favour "hot research topics" (Moustafa, 2015, page 3) — the topics of international interest currently being discussed in journal articles in their fields of study. As a result, potentially important but unexplored research areas are left untouched, as publication is prioritised over research and generation of knowledge (Moustafa, 2015). Research topics which are important to developing countries, such as endemic diseases and poverty-related

social issues may be left unresearched — and unsolved — because scientists are focused on researching popular topics for international publication. The limited resources in poorer countries may be wasted on studies which bring little benefit to their populations, instead of focusing on their development. It seems cohere—t for government policies in such countries to encourage research of local interest, rather than directing the efforts of their scientists to research for international publication. However, such policies would interfere with the participation of the country's universities in the international scene through the rankings ruled by the volume of publication in prestigious journals, a goal which is prioritised by many governments and university administrators.

Lindner *et al*. (2018) also recognise the connection between competitiveness for publication and "hot" research topics, adding that institutional incentives play an important role. They criticise the current reward systems based on bibliometric evidence, which lead several researchers to study the same limited range of topics and compete for the publication of articles with similar content. The authors also claim that reward systems should be based on quality, innovation and amount of knowledge produced, rather than successful publication and citations. In their view, this change in policy would encourage researchers to study new areas and boost scientific progress.

Research aiming mainly at international publication and conducted on topics unrelated to local problems can be detrimental, especially to developing countries. Research in poorer countries – often publicly financed – which brings little knowledge and few benefits to local populations does not contribute to the country's improvement and drains valuable resources in the process. It would be ideal for policy makers to acknowledge that research and knowledge that meet the needs of the population should take precedence over international publication.

As research articles on selected topics are published by top journals and develop into discussions among participating academics in the field, another consequence surfaces. Participation in knowledge

production becomes exclusive to researchers who have access to the current discussion in English (Curry & Lillis, 2014; Hultgren, 2019). Apart from the language barrier, the cost of this access can also be an obstacle. Journal subscriptions are typically taken out by university libraries. However, as they are expensive, universities in developing countries cannot always afford them. This constitutes yet another hurdle for the participation of scholars from poorer nations in the activity.

A study by Mueller-Langer *et al*. (2020) confirms that access to literature is an important issue for developing countries and their researchers. They claim that the initiative of online open access to research articles in the field of environmental studies (OARE) has engendered a growth of nearly 30% in research output from lower-income countries, compared to other fields which kept their practices of expensive journal subscriptions.

Although open access publication is a growing movement, Salager-Meyer's (2008) concern that the current structure favours the perpetuation and widening of the gap between rich and poor countries still seems to be valid. Research, especially the type that produces international publications, demands high investment, which many developing countries cannot afford (Madsuha *et al*., 2021; Van Helden, 2012). According to Gibbs (1995), developing countries counted for only 5,3% of the money invested in research worldwide at that time. The proportion of publications in well-ranked journals in 1995 was very low – 1.4% in prestigious journals such as Nature and Science. Journals tended to explain that the low quality of research and language issues were mostly responsible for the rejection of manuscripts from developing countries. Between 2011 and 2016, the only developing country among the 10 countries with the most publications in international journals was China, due to its massive investment in research and publication (Clarivate Analytics, 2018).

Brüggmann *et al*. (2017) concur with other researchers' claims, through a scientometric study of articles on the topic of a common

respiratory viral infection that affects high and low-income countries alike. They conclude that the inequities of resources invested in research results in "minimal publication productivity" (p.1) from developing countries, emphasising the existing disparity.

Additionally, the negative/positive results balance in high-visibility journals is reported to be very different from reality (Fanelli, 2012; Matosin *et al*., 2014; Moustafa, 2015), as there is a strong bias against publishing negative results (Fanelli, 2012; Vaux, 2013). Apart from distancing researchers from risky work, this bias, associated to the pressure to produce publishable articles, might also drive them into unethical practices, such as fabrication of results (Fanelli, 2012). However, as Fanelli (2012) points out, negative results are fundamental in scientific research because they indicate hypotheses which have already been tested and need not be tried again. The omission of these results from the literature does not help to guide researchers towards more productive pursuits.

Muller (2018) criticises more broadly the indiscriminate use of metrics for performance assessment in all activities, especially regarding the suppression of negative results. By placing excessive importance on positive numbers, governments may be driving institutions to produce artificially "played" (p.76) results to meet the established quantitative parameters. Such parameters, aiming at improving performance, have had the opposite effect, perverting some of the existential goals of institutions. Among the cases narrated in Miller's book, there are two which illustrate this effect particularly well. Instead of providing high-quality education to students, some universities have lowered their standards in favour of increasing the number of graduating students to meet the requirements of eligibility for government financial support. By keeping high standards, more students would fail or drop out, disqualifying the university from obtaining the desired funds. In another example, since the survival rate of patients became part of their assessment criteria, some hospitals started refusing difficult and risky cases, in order to lower the death/patient ratio. The institutional goals – qualifying

students and treating patients in need – have been distorted to satisfy the new assessment requirements of positive results, which may imply the avoidance and/or erasure of negative results.

A major factor that weighs heavily against developing countries is the fact that research and production of knowledge validated in the Anglo-cultural tradition demands high investment (Clarivate Analytics, 2018; Hultgren, 2019; Salager-Meyer, 2008). Such investments include the costs of undergraduate, graduate and postgraduate education to qualify researchers, paying researchers' salaries, infrastructure in the form of laboratories, equipment and materials, access to technology and updated literature, and supporting networking and collaboration efforts with international counterparts through conferences and exchange programmes. In addition, in order for NNESs to produce and submit articles in English to well-ranked journals, it is often necessary to hire professional translation and editing services. Publishers may require the payment of a submission fee and, once an article is accepted, publication costs (Article Publishing Charges — APC) also apply (Kowaltowski *et al*., 2022).

While these conditions seem to be taken for granted in well-funded universities and research institutions in developed countries, the shortage of resources common to institutions in developing countries tends to keep the activity of knowledge production out of their reach. (Canagarajah, 2002) illustrates how even basic material conditions might be a problem in a developing country, emphasising that favourable conditions are essential for research as the Anglo-cultural academia conceives it. Paucity of resources may result in lower quality research, which is a major reason for the rejection of RA manuscripts by prestigious journals. Since research output is closely linked to the distribution of wealth, the current structure — in which only rich countries can produce high-quality research — tends to widen the gap between rich and poor countries (Salager-Meyer, 2008).

Hultgren (2019) also acknowledges that economic inequities are more significant than linguistic disadvantage, observing that international publication of RAs in high-ranking journals is strongly correlated to GDP. About 63% of published RAs are attributed to 10 countries, whose GDP concentrate 66% of the global economic output. She claims that inequities materialise in the form of funding for research activity, access to expensive journals, and resources for publication in these journals, restricting knowledge production to those who can afford it.

While some authors discuss the connection between economic inequities and scientific production, Santos (2018) proposes a completely different understanding of what should be considered knowledge, named Epistemologies of the South. He criticizes the practices imposed by "capitalism, colonialism, and patriarchy" (p. 1), principles which have determined the domination of Eurocentric/ Western-centric monocultural views in most of the world since colonial times.

Santos (2018) claims that scientific knowledge produced through rigorous methodology and impersonal, objective observation is the only type considered valid because the Western-centric forces have determined so, to the exclusion of other types of knowledge. Oral traditions, indigenous cultures, and traditional medicine, for example, are not considered valid knowledge because of the strict parameters that were set to guarantee Eurocentric hegemony. By contrast, Epistemologies of the South encompass diversity, recognise that cultures from the so-called periphery are as important as any, and challenge the narrow view of the world imposed by colonisers.

The neoliberal practices common to the Epistemologies of the North can be detrimental even to the scientific production of the North itself, according to the author:

The censorial tools take many different forms: ranking educational institutions according to capitalist criteria of excellence; the positivistic and monocultural formatting of syllabi and scientific and professional

careers, disciplining and silencing rebel scientists; . . . control of scientific creativity by invoking strict criteria of economic utility or academic performance (for instance, publications evaluated according to so-called impact factors rather than by their innovative character). (p. 122-123)

Santos's (2018) work includes a wide range of sources – some more validated by the North than others – to build a well-founded argument. However, whichever form of resistance against oppression is proposed, reality still works very strongly against it. Educational structures, academic practices and institutional demands are mostly organised according to Western-centric values. In this context, scientific research does not have any value if it does not follow the established standards of acceptability, and a researcher's worth is measured through bibliometric tools.

Participation in the activity of research and international publication seems incompatible with such resistance, except for those who have already participated enough to have earned the respect of their peers, such as Santos, Canagarajah, and Fairclough. Newcomers venturing into a stance of resistance risk being met with scepticism by the established community, if not simply being dismissed as undeserving of any attention, not having proved their worth in the validated forms of participation.

2.2.4. Academic writing instruction

Academic writing instruction emerges as an issue, not only for NNESs in English-speaking academic contexts, but also for NESs (Hyland, 2019; Tribble, 2019; Wingate, 2015). Although it is a part of the curriculum in most tertiary education institutions in the USA, academic writing is rarely taught as a regular component of the curriculum in the UK and in many other contexts, including Brazil.

Wingate (2015) observes that a tacit acquisition of academic writing skills is often expected in tertiary education, an approach that has become less successful due to the increasingly varied students'

backgrounds. Formal instruction is offered as a centralised, general-purpose subject, usually consisting of study skills, writing techniques, and common rhetorical features and structures.

In the specific case of NNES students, weaknesses in academic writing are primarily – and unsuitably — addressed with remedial work on language features rather than academic literacy and discipline-specific conventions, which only contributes to the further exclusion of these students from access to the discourses of their disciplines (Wingate, 2015). Wingate supports the idea that academic literacy should be studied in a subject-specific environment, with the collaboration between a literacy expert and a subject expert. Martinez and Graf (2016) study results seem to corroborate this solution. They conclude that supervisors – subject experts – lack the confidence to guide their postgraduate students who are writing articles in English for the completion of their degrees, for lack of formal training in literacy brokering.

Tribble (2019) summarises EAP writing instruction paradigms into four groups: intellectual/rhetorical, genre informed, academic literacies, and "critical"(p.56) approaches. Among these, he considers that the genre informed writing instruction – drawing on genre and corpus analysis (Hyland, 2008; Swales, 2009, 2004) – is the most useful for the purpose of allowing novices to participate in the activity. He argues that by encouraging novice writers to antagonise institutional stances and standards, "critical" approaches such as critical discourse analysis (Fairclough, 1989, 2010) and those questioning linguistic imperialism (Canagarajah, 2004; Pennycook, 1994) do not contribute to the engagement with the institutions and the community sought by novice research writers.

Awareness and a critical stance towards the distortions generated by the current academic practices and assessment standards seems to be a healthy exercise for all those participating in the research community. For NNESs, awareness of the hurdles imposed by having to write in an additional language and follow norms established by a foreign culture is also important. However, it is clear that researchers need

to decide whether they wish to engage in the activity – problematic as it is — by abiding by the existing rules, or be marginalised by resisting to them, especially when they are not well-known in the community. Advocacy for more tolerance or flexibility will mostly likely be met with suspicion from peers, if not with criticism for lack of competency. For novices, particularly, becoming part of the community entails learning the adopted practices and following the established rules.

Academic writing instruction is not a widespread practice in Brazilian tertiary education, even in Portuguese (Mello & Rodrigues, 2021; Sousa & Fuza, 2021). In most undergraduate and graduate courses, academic literacy in L1 seems to be taken for granted, as it is seldom offered as a subject. In general, poor background is blamed for the weak writing skills displayed by students, and little action is taken to remedy the situation. General academic literacy courses described by Stella & Silva (2018) and genre and discipline-informed pedagogies in Portuguese advocated by Motta-Roth (2018) are still quite rare in Brazilian universities, despite having been identified as a need (Motta-Roth, 2011). Courses are mostly dedicated to graduate level students, still to be extended more broadly to undergraduate levels across different disciplines.

Common pedagogical interventions in English for Research Publication Purposes (ERPP) may come in the form of workshops and short courses offered at universities and research institutions – as indicated by Ferreira (2018) and confirmed by the survey in the study. Although the intentions of the organisers of these workshops may be the best, these short sessions rarely go beyond superficial advice to potential authors and accomplish very little in terms of writing instruction.

Although an increase in the demand for more solid, genre-based courses on writing for publication in English such as the one described by Ferreira (2018) has been observed recently[9], there are still few

9 An increase in demand has been observed, with five graduate level ERPP courses having been taught in recent years by Professor Marilia Ferreira and members of the research group under her guidance.

initiatives. In order to meet the needs of the community, such courses would have to be regularly available to graduate students and researchers in all major research universities in the country. In addition to academic writing courses, policies to support the writing and publication activity need to be implemented. Actions such as the creation of writing centres, involvement of disciplinary specialists in academic writing instruction, provision of L2 instruction, and provision of continuous education to EAP instructors would greatly benefit the research community (Ferreira, 2021).

2.3. STUDIES IN BRAZIL

Studies on the publication activity in Brazil are often conducted in terms of statistics and bibliometrics (Carvalho Neto *et al*., 2016; Clarivate Analytics, 2018; Mcmanus *et al*., 2021; Mugnaini *et al*., 2014; Packer, 2014; Sidone *et al*., 2016). Literature on the topic of writing for publication is less frequent and focuses mainly on two areas: criticism related to government policies and scholars' practices (Antunes, 2015; Domingues, 2014; Zuin & Bianchetti, 2015) and quality-related problems, especially regarding the quality of the research and of the writing (Albuquerque, 2009; Alcadipani, 2017; Falaster *et al*., 2016; Kuhlmann Jr., 2014, 2015). Articles focusing on the implications of the adoption of English as the language of research publication are less frequently found and address different aspects, such as the correlation between scholars' L2 proficiency and volume of publication (Cunha *et al*., 2014; Vasconcelos *et al*., 2008, 2009), EAP writing instruction (Ferreira, 2015; Fuza, 2017), literacy brokerage (Martinez & Graf, 2016; Junaid, 2021), and the need of policies to support scholars' EAP writing and the internationalisation of universities (Ferreira, 2021).

2.3.1. Statistical and Bibliometric studies

Quantitative studies on the activity of publication by Brazilian researchers reveal a growth in the number of RAs published in English in international journals. However, researchers adopt different approaches and consequently focus on different aspects of this growth in their studies.

By analysing reasons for the growth in Brazilian publications between 1998 and 2012, Mugnaini *et al*. (2014) found that, in addition to the increase in the number of Brazilian RAs in international journals, there was growth in the indexation of Brazilian journals in the Web of Science and SciELO (Scientific Electronic Library Online) databases. They attributed these changes to the fact that different fields of study have different publishing practices: while some fields prefer to publish primarily in international journals, others invest in strengthening national journals in order to have them recognised as high quality both by Brazilian agencies and internationally.

Even though open access national journals with content in English have earned some recognition, they are unlikely to rival international commercial publications, according to Carvalho Neto *et al*. (2016). The main reason for their assessment is that the Qualis[10] rating system by CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) ranks international journals more highly than national ones. Therefore, researchers seeking to advance their academic careers prefer to publish their work where they will be better evaluated. The authors state that, is a significant rise in the quality of national journals is intended, a change in evaluation policy and journal ratings will be necessary in order to persuade researchers to publish their best work in these journals.

10 The Qualis system classifies the jounals in A1, A2, B1, B2, B3, B4, B5, according to their importance in each field. More information from https://www.gov.br/capes/pt-br/centrais-de-conteudo/documentos/avaliacao/arquivo_qualis.pdf.

An increase in the number of articles in English in Brazilian journals in the open-access SciELO database was reported by Packer (2016) and Andrade (2022). Packer attributes this growth to SciELO's recommendation for journals to publish a larger proportion of articles in English, with a view to reaching a wider audience. The program has had journal editors working towards that goal, which resulted in a rise from 48% to 62% in the total number of articles published in English between 2011 and 2015. In 2021, this proportion rose to 77%, with articles in Portuguese decreasing steadily in the past decade (Andrade, 2022). Despite the views against the prevalence of English as the dominant language of knowledge dissemination (Badillo, 2021; Bennet, 2017; Santos, 2018), the research community in general and policy makers, specifically, still recognise publications in high-impact journals in English as the most valuable form of research output, attaching academic career performance evaluations and graduate programme assessments to this type of publication. (CAPES 2017[11], 2021[12])

A report by Clarivate Analytics (2018) to CAPES situates Brazil in the global picture by statistically comparing it to other countries. It shows that although Brazil has increased its share of the global research publications, the impact of its research is lower than the world average. There is still little collaboration with industries and international institutions compared to other countries, and research is mainly conducted on topics of local interest. The report identifies strengths and opportunities in scientific research in Brazil by referring to high citation index as synonymous to quality.

Although Antunes (2015) and Moustafa (2015) challenge the article citation index as a measure of quality, CAPES — the main government regulating agency for graduate and research programs – still validates it, as well as other bibliometric measures such as journal impact factor (IF) and authors' H- index.

11 http://cad.capes.gov.br/ato-administrativo-detalhar?idAtoAdmElastic=240
12 http://cad.capes.gov.br/ato-administrativo-detalhar?idAtoAdmElastic=6742

McManus *et al* (2021) present a study of Brazilian research and publication, compiling data referring to public and private universities, as well as research institutes. According to their data collection, large, older public universities which concentrate most of the nation's graduate programmes are the best-performing, considering the indexes validated by CAPES and generally accepted by the research community. Newer federal universities have incipient graduate programmes and little academic production, if at all, and non-profit private universities are far smaller and therefore have a less representative volume of publications, although their work is well-ranked. Research institutes function in very specific niches, making their contribution small overall.

In McManus *et al*'s (2021) view, the bibliometric data available must be interpreted considering the array of factors which generate them, rather than the results alone. Their interpretation includes the laws and regulations related to higher education, funding, the practices of some fields, the characteristics of the universities, and governmental policies. The authors claim that research funding should not be conditioned to indexes, as the practices of distinct fields generate diverse data because they function differently. Therefore, bibliometric data is not valid in comparisons across different fields for decisions on whether research projects deserve financing. For example, researchers in medical and natural sciences publish a large number of papers in a short time, exchange information quickly and cite often, generating high indexes. Other fields — notably humanities and social sciences — publish fewer articles at a slower pace, which in turn generates fewer citations and lower indexes. Based on these numbers, humanities and social sciences may receive a small fraction of the funding compared to medical and natural sciences, following the current criteria. However, such data do not necessarily reflect the importance of the respective research or the needs of the fields. In addition, they argue that the current use of indexes – especially referring to researchers and their previous work — to provide research funding undermines innovation, because resources tend to concentrate on the hands of the same groups of

people and their established research lines. Instead, projects containing newer, innovative ideas should be given more attention and be financially supported for their potential for the generation of knowledge.

McManus *et al* (2021) confirm that funding is critical to research output, and the severe research federal funding reduction since 2015 is most likely the cause of the decrease in international publications occurring after 2016, especially by researchers in federal universities. Federal universities also have to face a complex array of regulations to obtain non-governmental resources, made even more difficult when funding comes from abroad through international cooperation projects. Internationalisation, one of the high priorities stated by CAPES, is hindered by the government's own rules, as inflexible laws and regulations constrain the possibilities of cooperation and exchange with foreign institutions. Having foreign researchers working in a federal university alongside Brazilians, for example, is made difficult by specific hiring regulations in federal institutions. It is paradoxical for the government to impose obstacles to the international cooperation that it demands and to impede available external funding from reaching Brazilian research projects after it has withdrawn its financial support.

Even though some institutions are performing quite well, for more universities' graduate programmes to achieve the goals set by CAPES, McManus *et al* (2021) conclude that the existing regulations need to be made more flexible, funding policies need to be improved, and resources should be more wisely distributed.

2.3.2. Articles criticising policies and practices

Brazilian authors who criticise institutional pressure on scholars claim that this policy is detrimental to science and encourages unethical practices (Domingues, 2014; Zuin & Bianchetti, 2015) in addition to affecting teaching and researchers' health negatively (Silva, 2019).

According to Domingues (2014), the *publish or perish* rule can lead to competition rather than cooperation, fraud and plagiarism. Furthermore, he classifies the peer review system as slow, subjective and mainstream-driven, and points to the need for solutions which lead to better ethics, more cooperation, and the creation of higher quality work. As alternatives to the current practices, he offers two possibilities. The first, adopting "slow science" – a movement that boycotts the frantic pace demanded by today's research and publication activity. The movement defends that science needs time to be "digested" (Domingues, 2014; p.246), but the current rushed rhythm resulting from institutional pressures does not allow for it. The second would be to shift from pre-publication peer review to a post-publication peer review system, so that the readers of the published articles may comment and evaluate the produced research. An additional strategy would be to make all articles available online, allowing the whole community to participate in the feedback process and discussions.

The feasibility of these ideas and the reaction of the commercial publishers to them are still unclear, however. Unless such changes are thoroughly planned, the credibility of the

system within the community could be at risk. Among the foreseeable problems, the potentially massive volume of publications might make organisation unmanageable, and the lack of pre-publication peer reviews may have a negative impact on the overall quality of the articles. Although the possibility of multiple post-publication reviews seems democratic, whether the community would actively engage in the improvement of other researchers' production, and whether contributions would be welcomed by authors is unknown. Commercial publishers can be expected to actively resist such changes by emphasising the weaknesses of the system, since they go against their best interests. It is also doubtful that the research community who endorses the current practices might accept radical changes to an activity which is central to their careers and modus operandi.

Zuim and Bianchetti (2015), similarly, consider the *publish or perish* adage harmful to research, science, and the university, associating it to ethical issues of plagiarism, redundancy, and irrelevance of publication. They converge with Domingues (2014) on the need for emphasis on research and better ethics rather than the burden of publishing in response to institutional pressures. The pressure to publish in well-ranked international journals is pervasive in research environments worldwide (Salö, 2017; Lillis & Curry, 2010, Lee & Lee, 2013), but support systems, ability to respond to such pressures, and types of responses may vary. Better support systems with L2 instruction, EAP writing instruction, and funding for research make researchers better equipped to comply, while movements of scholars' resistance against growing demands have also risen (Santos, 2018).

Zuim and Bianchetti (2015) also draw our attention to the fact that the algorithms of search engines feed the most read and most cited articles back to the top of search lists, making them even more so; and that the digital culture might shift the focus from research itself to the activity of publishing to be noticed.

Popularity bias is generated by algorithms as a result of the frequency in which an item – article, webpage, video — is searched for or cited. The higher the frequency, the closer to the top of the list the item will be displayed by search engines. Ciampaglia *et al*'s (2018) study confirms that algorithms may place popularity above quality, although items may coincide in terms of quality and popularity. In addition to researching, writing, and publishing, engaging in actions such as social media activity and search engine optimisation (SEO) to promote one's publication has also become part of authors' responsibility, being strongly recommended by publishers on their websites. Researchers' involvement in social media activity may vary, however, as well as their ability with the available tools and platforms. While implying that authors should actively promote their own publications, commercial publishing houses also offer professional services to help improve the visibility of accepted articles,

expecting authors to willingly hire services which could enhance their popularity, and consequently the probability of citation.[13]

Antunes's (2015) study has a different approach, in that it criticises the use of journal impact factor and citation index as measures of quality. He challenges the validity of these indicators for being highly variable and unreliable. Since different areas of study have completely different profiles of citation indexes and impact factors, he claims that using them for evaluation is a questionable practice, although a number of studies – especially bibliometric ones — rely on these indicators (Clarivate Analytics, 2018; Cunha *et al*., 2014; Vasconcelos *et al*., 2008). Other researchers also challenge the use of simplistic bibliometric indexes for quality assessment (Koltun & Hafner, 2021; Stephan *et al*., 2017).

Recently, institutions have decided not to rely on IF for hiring and promotion decisions (Woolston, 2021) and for funding projects (Stephan *et al*, 2017). Nevertheless, that is not a general tendency: most countries and institutions continue to keep their evaluation systems strictly connected to bibliometric indexes (Nassi-Calò, 2017). Brazil is part of the latter group, using the Qualis system to classify journals based on their IF and allocate research funding (Stephan *et al*. 2017).

In Brazil, CAPES has a strong influence on research and the functioning of universities, since the agency assesses graduate programmes, which in turn are the major centres of research in the country. Poorly evaluated programmes are extinguished, and grades determine whether universities are allowed to have PhD programmes (Brasil, 2021[14]; Schwartzman, 2022). The Qualis system devised by CAPES determines the points earned from publication by each graduate programme. In order to earn the most points, researchers' manuscript submissions aim at journals with A1 rating, even when they think a different

13 https://authorservices.taylorandfrancis.com/making-sure-your-article-gets-seen/
https://www.wiley.com/network/researchers/promoting-your-article/10-easy-ways-to-make-sure-your-article-gets-read
https://www.elsevier.com/connect/authors-update/top-tips-making-your-article-visible-with-seo

14 https://anup.org.br/legislacao/110057-2/

journal would be a better vehicle for disseminating the findings among their community (Pires *et al*., 2020).

Silva (2019) also criticises the *publish or perish* adage, but he claims that the current policies affect far more than publication practices and career evaluation. Since most researchers are also professors at universities, they need to divide their time and energy between research and teaching. The latter entails notably time-consuming activities – preparing lectures, working on new methodologies, grading students' assignments and tests, office hours, supervision – and, although dedication to teaching reduces the hours left for research, it is essential in the preparation of future researchers and qualification of competent professionals. Currently, as research output is the most valued measure of a scholar's worth, professors tend to be more focused on research and publication than teaching. Thus, the instruction of undergraduate and graduate students is relegated to a second place in scholars' priorities. Silva (2019) warns that undervaluing teaching could threaten the future of research and the whole society, and a significant change in the evaluation system is needed.

Further, the author reports that in a study on highly productive scholars from Brazilian federal universities – those involved in multiple research projects and high-impact publications –, the incidence of stress-related heart diseases and other health problems were sharply higher in comparison with the general population, endangering their lives and careers.

In Silva's evaluation, there is a need to reassess and revise the current processes of evaluation of researchers, graduate programmes, and journals. In his view, the current system negatively affects researchers' careers and health and graduate and undergraduate programs, in addition to working against the best interest of our society.

Indeed, following the worldwide tendencies in research output assessment and university raking systems, Brazilian authorities seem to have lost sight of the particular needs of our country. Brazil is a developing country with limited means, so prioritising investments to

maximise their effect is of paramount importance. Public resources must be allocated in research wisely, aiming at the social, cultural, and economic development of the country. Researchers should be institutionally supported to focus on the benefit their work could bring to our society, rather than the points they might earn from publication in international journals. If these coincide, there is no harm; however, the former should always take precedence over the latter. In addition, as Silva (2019) indicates, teaching should be acknowledged and valued as an important part of professors' work. Unfortunately, due to the pressures of the current evaluation system, research and publication essentially monopolise scholars' focus and energy, allowing them little time to do other work, which is less valued but equally important.

2.3.3. Articles on quality-related issues

One of the frequently approached topics about Brazilian research writing is the low quality of the content and of the presentation in submitted manuscripts. Albuquerque (2009) and Mendes-da-Silva (2020) list a number of reasons for rejection of submissions in Brazilian journals: inadequate methods, inappropriate discussion of results, insufficient information from literature, lack of clarity and objectivity, unacceptable language errors. Albuquerque specifically identifies inadequate training in research work and lack of scientific writing instruction as the main causes for these problems.

Falaster *et al*. (2016) indicate similar reasons for the rejection of articles in the business administration field: faulty methodology, lack of relevance, badly organised ideas, and low-quality.). The authors recommend that researchers mature their ideas before attempting to write for publication and suggest that institutional demands may have a role in the production of hasty and poor-quality work.

The low quality of RAs written by Brazilians is also criticised by Kuhlmann Jr. (2014, 2015), who claims that this problem harms the advance of scientific knowledge. Similar to Albuquerque (2009), the author attributes the low quality of research to graduate courses' failure in properly training novice researchers on scientific methods and theory.

Alcadipani (2017) assesses that in the field of business management – a branch of applied social sciences – the quality of research in Brazil is very low compared to studies in developed countries. In his opinion, usual practices in those countries, such as presentation of studies in international conferences for peer evaluation, makes the production of knowledge more collaborative and far more sophisticated, giving international researchers ample advantage for publication. By contrast, Brazilian scholars do not have the opportunity to take part in international conferences as often, so their work has not been reviewed by peers prior to submission for publication. He claims that this difference in practices makes the competition for publication unfair. Alcadipani (2017) adds that national journals should not be published in English, because their readers are primarily local researchers and students, rather than an international audience.

Although Alcadipani does not state it clearly, he might imply through his claims that the considerable time and effort spent by Brazilians on writing and revising manuscripts in English for international publication are wasted, as submissions are mostly rejected because of the difference in quality. However, the current institutional policies pressurise scholars to persist, regardless of the provided conditions.

2.3.4. Brazilian research on issues related to the adoption of English as the language of research publication

Studies on the influence of English language proficiency on publications by Brazilians scholars were conducted by Vasconcelos *et al*.

(2008, 2009) and Cunha *et al*. (2014), who found different factors which affect publication in English, using journal impact factor and citation index as parameters.

A quantitative study with a population of over 52,000 Brazilian researchers was conducted by Vasconcelos *et al*. (2008, 2009), comparing their English language proficiency – as stated in their Lattes[15] system resumé — with research output and the impact of their work. No other studies have been found with a similar approach. The main finding was that low language proficiency and poor writing skills negatively influence researchers' production and visibility. Better writing competence correlates with greater production, more publication in indexed journals, and more citations as a result. The authors emphasise that although the language factor tends to be neglected by policy makers, promoting English proficiency, and writing competence is essential to improve the visibility of Brazilian research work.

A different approach was adopted by Cunha *et al*. (2014), who studied a group of 30 Psychiatry postgraduate students at one of the most important medical schools in Brazil. They found that most students were highly proficient in English and, even though support in academic writing was necessary, language alone was not a substantial factor in publication. Students' supervisors' expertise and citation indexes were more significant in the publication of articles in more or less influential journals. Each student had their supervisor as a co-author of the manuscript they submitted. In this study, the better the supervisor's indexes and credentials, the more influential was the journal which accepted the manuscript. Although the study does not specify which journals published which articles, these results suggest that blind review might not be the usual practice in this community, and that authors' prestige is a significant factor in acceptance for publication. Alternatively, it is also possible to speculate whether the specificity of the studies might indicate which research groups the articles originated from, and therefore,

15 https://buscatextual.cnpq.br/buscatextual/busca.do?metodo=apresentar

who the supervisors were likely to be. This hypothesis also implies that authors' prestige is a facilitator for publication in well-ranked journals.

Recent research on the Brazilian literature has revealed that there have been few studies on current writing practices for publication, L2 academic writing instruction and implications, researchers' opinions and attitudes towards the current practices, institutional demands for publication, and corresponding support.

Ferreira (2015) acknowledges that there has been little research in the field of academic writing and publication in English in Brazil. Her study of a group of graduate students in an academic writing course is one of the few in this area. The main findings are that the L2 proficiency required for a strong rhetorical stance and argumentation is generally lacking. Even when the L2 proficiency level is higher, students lack the skill to construct meaning through writing, the notion of audience, as well as the awareness of rhetorical functions, especially in the introduction of RAs. Notwithstanding the clear need for instruction, there are very few initiatives towards promoting the academic literacy of Brazilian researchers. Workshops on academic writing in English — currently the most frequent pedagogic intervention — are obviously ill-equipped to address such deep-rooted issues.

On the topic of academic writing instruction, Martinez and Graf (2016) observed that despite the fact that PhD supervisors are responsible for socialising their students by co-authoring and brokering their first publication, they lack the awareness and the confidence to prepare them to develop autonomy for further work. Such a lack of confidence seems to stem from not having received proper training as literacy brokers. Although the participating supervisors are experienced writers of scientific texts in their fields, the fact that their tacit knowledge of writing for publication has not been formally validated seems to make them insecure about instructing supervisees.

In Martinez and Graf's (2016) study, a participant reports that academic writing instruction is not addressed by the university, but a course should be provided, since all PhD students are required to write and publish at least one article before they complete the programme. Although their supervisors' revisions improve their manuscripts, their feedback is not very helpful in developing students' writing abilities. Supervisors would certainly profit from being trained on how to give helpful feedback, as would their students. In addition, publication in English is expected, but as English language instruction is not addressed by the university, it can be inferred that L2 proficiency is taken for granted. Nonetheless, participants in this study report that their knowledge of English is not enough to write research articles, and given the lack of provision of support, translation services are hired at their own expense.

Taking into consideration the lack of other support from the university, Martinez and Graf (2016) indicated that supervisors have a key role in their PhD students' academic success. In addition to guiding research, they are possibly the only source of academic writing instruction available to their supervisees. Thus, strengthening their abilities in instructing students will certainly bring substantial benefits to their community.

Sousa and Fuza (2021) investigated the documents and academic activities at a Brazilian public university concerning the institution's internationalisation efforts. The authors identified a key issue in the fact that academic literacy is not contemplated in their graduate and postgraduate programmes, either in L1 or L2. The university was recently established, and most faculty members had been working at the university for less than ten years, having completed their required degrees at other universities. Currently, the few professors who actively participate in international activities and publication do so based on their own knowledge, experience, and connections from their PhD or postdoctoral programmes elsewhere, while many still do not have access to the activity. The authors found that there is little support in terms of L2 language and literacy brokerage for professors, which constitutes a hurdle for

international exchange and publication. They also evaluate that consistent initiatives to promote academic literacy in both L1 and L2 are critical to improve the academic performance and boost the internationalisation of the university's graduate and postgraduate programmes.

Silva (2021) discusses the growth of English medium journals in non-English speaking countries. She observes that policies in various countries have pushed journals into changing their language of publication into English, which results in the "silencing of knowledge produced and reported in other languages" (p. 149). Despite the irony of Brazilian journals being published in a language other than Portuguese, she observes that there is little rejection to the use of English for publication among scholars, mainly because the alternatives may hinder their career ambitions. In addition, journal editors have a positive attitude towards not using Portuguese, as the evaluation of journals also improves when articles are published in English. In her view, the implications of scientific monolingualism need to be better understood and evaluated.

We can observe that the current tendency towards scientific monolingualism and Anglo cultural epistemology is relentless. The policies and practices which support this tendency bring consequences, many of which can be considered detrimental to local development, as the literature summarised in this chapter indicates.

Ferreira (2020) alerts the community that the current demand for internationalisation of the Brazilian universities will not take place without the corresponding actions to support it. Although the first step for internationalisation is a common language – in the case, English — the low English language proficiency provided by basic education is not currently compensated for in higher education. In addition, there are scarcely any initiatives to foster academic literacy within universities, and even fewer for English writing instruction. Consequently, most undergraduate and graduate students – as well as researchers – are poorly prepared for the internationalisation of the academy. Without concrete actions, such as English language instruction, academic

literacy initiatives, and discipline-language integrated writing instruction, Brazilian students and scholars are unlikely to participate in the international community in a significant way.

The internationalisation of the higher education is a worldwide tendency. Publication of research papers in English in international journals and ranking of universities using research publication as one of the key factors are part of this movement. In order to respond to institutional pressures, Brazilian scholars need to be better equipped with an additional language for internationalisation – English, currently — and academic literacy. However, most institutions and the government seem oblivious to the fact that in order to achieve full internationalisation, support in these key areas is of paramount importance.

This literature review presents several topics to be explored. Among the most important are the existing conflicts within the practices of the research communities and the institutional policies compared to the support provided. It is also significant that few studies have addressed the researchers' attitudes and views on the current pressures and expectations on their research output, while the metrics of their academic production are the parameters used to assess their worth.

Therefore, in this study, most of the data was collected from researchers through questionnaires and interviews, bringing the contribution of their views in the understanding of the current activity of research writing and publication in the context of Brazilian universities.

A particular interest of this study is how researchers who publish internationally acquired two indispensable tools for research writing for publication: English language proficiency and EAP writing ability, which are not generally available at Brazilian universities, according to the literature.

3 Methodology

This qualitative study aims at understanding the activity of research and international publication and the processes involved, especially as the pressure for internationalisation of higher education grows and researchers are now required to be part of this movement early in their careers. The activity of international publication is known to be competitive and understanding and acknowledging the particular difficulties encountered by Brazilian researchers might raise the awareness of participants and institutions to face them.

This research was conducted on the hypothesis that experienced scholars who participate in the activity of publication in international journals could provide information on what hurdles they found, how they overcame them, and what they consider necessary for more Brazilian researchers to take part in it.

For a deeper comprehension, information was gathered on how researchers engage in the activity, how the communities behave, and what conditions are provided by institutions. Different steps of data collection were taken, and CHAT was chosen as the framework to analyse the activity and the existing conflicts.

The research questions address the activity of research writing and international publication:

1. What are the most critical conflicts in the current publication practices, from the researchers' point of view? Are there significant differences between the two fields of study?

2. What mediation tools need to be addressed in order to meet current challenges in research writing and publication practices? Are there significant differences between the two fields of study?

3. How could some of the existing conflicts be mitigated to generate more advanced forms of activity? (Engeström, 2015) Are there significant differences between the two fields of study?

3.1 DATA COLLECTION

Data was collected through 41 responses to a survey questionnaire, eight interviews with researchers who participate in research writing and international publication, and publicly available documents which define some of the rules for the activity.

The use of Cultural-Historical Activity Theory for analysis normally entails a close observation of members of the community in action – including keeping records of interactions, following various people throughout their working day, and sitting in work meetings, for example. These aim at interpreting the behaviours of the people involved while they engage in the activity being studied. From the observation, the CHAT researcher would analyse the processes, promote a collective discussion of the main contradictions, and support them in finding a new, improved form of the activity (Engeström, 2015).

However, the nature of the particular activity which is the focus of this study presents a challenge, as direct data collection of this type is made very difficult, for various reasons. The process of writing a manuscript, submitting it, and interacting with editors for publication, for example, is not easy to follow and observe. Writing is mostly done individually, preferably in a quiet, isolated place, for concentration. Each researcher has their own writing habits, many of them producing their texts over the weekends and evenings. Authors would not be available to discuss their issues while writing their articles. In addition, when the text is co-authored, the researchers usually interact electronically, exchanging drafts and attaching notes to one another's work. Also, unless the authors are willing to share, the interactions between authors and editors and peer reviewers are not accessible to third parties. Therefore, instead of observation, the data about the process of writing and publication was collected through a survey questionnaire.

A large part of the data consists of researchers' interpretations and opinions, which were gathered through interviews since they were not observable. Their past experiences, their own observations, and their views could only be collected to the extent that they were willing to share. Thus, the gathered data offers us the perspective of Brazilian researchers who engage in the activity, adding to the knowledge already available from the literature.

The data collection for this research has been divided into separated steps – literature and documents, survey questionnaire, and interviews — with a view to covering different aspects of the activity. Information was gathered through literature and publicly available documents, an online survey responded by researchers with experience in international publication, and interviews with researchers. The data from different sources allow for a deeper analysis of the behaviours, attitudes, and motivations behind the scholars' practices than any single source might have provided. The main conflicts in one of the central activities in these researchers' careers can be thus better understood.

3.1.1. Literature and Documents

In addition to the literature reviewed in Chapter 2, the following publicly available documents were accessed online (links confirmed on July 11, 2022):

- CAPES evaluation parameters (Portaria 59, 21/03/2017; Portaria 122, 05/08/2021)
  http://cad.capes.gov.br/ato-administrativo-detalhar?idAtoAdmElastic=240
  http://cad.capes.gov.br/ato-administrativo-detalhar?idAtoAdmElastic=6742
- Career evaluation parameters from two research-intensive public universities

https://www6.usp.br/wp-content/uploads/manual-CAD-Janeiro-2018.pdf
https://cppd.paginas.ufsc.br/files/2018/01/RN114_2017CUN_Progress%C3%A3o_Docente-1-Filnal.pdf

- Regulations for graduate programmes from two public universities;
https://www.prpg.usp.br/attachments/article/5034/Regimento_Resolucao7493_2018.pdf
https://www.unifesp.br/campus/san7/images/pdfs/regulamento.pdf

- Guidelines from three publishing houses;
https://www.springer.com/gb/authors-editors/journal-author/journal-author-helpdesk
https://www.wiley.com/network/researchers/preparing-your-article/get-published-your-how-to-guide
https://www.elsevier.com/authors/submit-your-paper

The information was gathered mainly to relate the existing rules with the current practices.

3.1.2. Survey Questionnaire

3.1.2.1. The Participants

The participants of the survey questionnaire were selected through recommendation by professors known to this researcher. Since the goal of the study was to understand the practices of Brazilian scholars in international publication, it was a requirement for participants to be authors of articles published in international journals. Once researchers completed a survey, they were asked to recommend two or three more scholars for the survey. Through this network, participants were gathered from different institutions – public universities in several states, private universities in São Paulo state and a public research institute in São Paulo city.

As most responses came from engineering (23), mathematics, physics, and chemistry (14) researchers, there was a strong likelihood that the information reflected the practices of these related fields of study. On the hypothesis that a completely different field of study might function differently, the questionnaire was deployed a second time, aimed at researchers from the field of applied social sciences, such as business management, public administration, and architecture. Eight responses had been gathered from applied social scientists in the first deployment of the questionnaire. In the second, ten new responses were obtained, which provided a reasonable balance to the 23 responses from the engineering field. This research considers the responses from these two groups – 23 engineers and 18 applied social scientists.

The study of the two different fields – engineering and applied social sciences – is proposed to observe how differently the participants in these broad areas might behave and engage in their communities' practices. This comparison is based on the assumption that communities behave in specific ways, according to their own particular values and practices (Lave & Wenger, 1991). The choice of different communities was deliberately made, aiming at understanding how their work is affected by institutional demands and conditions, and how differently they address the arising issues. The engineering field is reputed for its pragmatic approach to problems and search for material proof (Bulleit, 2016), while the applied social sciences field seems to rely on questioning the reasons for certain phenomena, interpretation of evidence, and rhetoric to build their cases (Klein, 1992). The comparative analysis will also allow us to verify whether — and in what ways — such differences may surface in the form of attitudes and behaviours towards the activity of research writing and publication.

3.1.2.2. The Survey Questionnaire

The survey sent to participants aimed at gathering information on the following topics:

a) The mediation tools researchers make/ have made use of in order to:

- Learn how to write RAs in L1 and L2
- Produce their RAs
- Have their RAs published

b) The difficulties they find

- In the process of writing
- In the process of having their RAs published

c) Their view on how these processes may be improved

d) Their attitudes towards the role of publication in their careers

The information on question types and design were drawn from basic principles of survey research methods (T. Burgess, 2001; Malhotra *et al*., 2005). Multiple choice and Likert scale questions were favoured for their simplicity to respond, aiming at increasing the typical expected response level of approximately 30% (Malhotra *et al*., 2005). Open-ended questions were kept to a minimum number, having been used only when answers might vary widely or when questions focused on participants' opinions, attitudes, and more personal answers.

A first draft of the questionnaire was discussed with the LLAC[16] research group to sharpen objectivity and clarity. The resulting revised questions were piloted with six experienced researchers who would not participate in the actual survey, and their feedback was used to further refine the questionnaire before the final version was sent to participants. The 23 questions were organised into five groups, even though they were not separated as such in the questionnaire presentation.

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The first group (questions 1 - 5) aimed at drawing the participants' profile by collecting their name, age, field of study, and type of research institution/ university. This information will be compared with other data from the questionnaire in order to verify whether and how these features might influence their publication practices and attitudes towards this activity.

The second group (questions 6 – 9) intended to gauge participants' self-confidence in their academic writing skills and obtain information on how they acquired those skills both in L1 and L2. Possible answers included resources such as theses advisors (Martinez & Graf, 2016) and graduate courses, as well as an open alternative for participants to answer freely. The open answer was designed to gather additional information on academic writing instruction – a topic that has been poorly researched in Brazil. This group of questions aimed at collecting information that addresses the mediation tools used by participants to learn to write research articles in Portuguese and in English.

The third group (questions 10 — 12) focused on writing for publication in English and whether and how the foreign language might make the writing process more difficult. This group of questions aimed at collecting information that addresses the tools they used to produce their articles and publish them. One question asked participants to evaluate whether and to what extent writing in English meant taking longer to produce an article (La Madeleine, 2007), while another asked which parts of an IMRD (Introduction, Methods, Results, Discussion)--type article were challenging to write. The latter was based on the assumption that some parts of an article would be rhetorically more complex to write (Ferreira, 2015), and were intended to gauge participants' level of awareness of their own difficulty when producing different parts of an article. Another question aimed at learning about the frequency and types of translation, editing and revision resources which participants might use in the process of producing an article.

The fourth group (questions 13 – 19) aimed at learning about participants' difficulties in the publication activity and their interaction

with journal reviewers and editors. This group of questions aimed at collecting information that addresses the difficulties the researchers find in the process of writing and having their articles published. Two questions focused on feedback on their use of L2: whether and when they received negative feedback from editors and reviewers, and what type of comments they generally received. Two questions focused on participants' strategies to improve their use of L2 in response to the negative feedback they had received. One question asked participants about the difficulties they found in the process of having an article published, and three questions focused on the types of changes requested by editors/reviewers and how the authors dealt with such requests.

The fifth group (question 20 – 23) focused on the participants' attitudes towards their publication activity in English. One question asked them to assess the importance of factors such as visibility of their work, partnerships, incentives, and pressure in the decision to publish their work in English. Another was intended to gauge the extent to which they agreed with other researchers' positions reported in the literature about the widespread use of English for international publication (Amano *et al*., 2016; La Madeleine, 2007; T Lillis & Curry, 2010; Pérez-Llantada, 2012). Two questions focused on resources and institutional support for the publication activity of novices: one asked the participants to rate the importance of support and resources such as academic writing courses and English courses, and the other asked them to name important resources other than the ones previously listed.

Eight senior researchers from public and private institutions were interviewed. Three are from the engineering field and five from the applied social sciences. In addition to being researchers, the interviewees also fulfil one or more of the following roles: university professor, graduate student supervisor, literacy and/or language broker, research team coordinator, head of research department, peer reviewer for various journals, and journal editor (Table 1 below) This wide range of roles performed by the participants allowed for the collection of a wealth

of information, as multiple views were expressed. Interviewees are referred to by letters and numbers for differentiation, in order to keep their anonymity. The engineers are E1, E2 and E3, and the applied social scientists AS1, AS2, AS3, AS4 and AS5.

3.1.3. Interviews

3.1.3.1. The Participants

Table 1 — Interviewees' Academic Activities

	AS1	AS2	AS3	AS4	AS5	E1	E2	E3
Public Institution				■	■		■	■
Private Institution	■	■	■			■		
Full time professor	■	■	■		■	■	■	
Part-time professor				■				
Full-time researcher								■
Literacy broker		■					■	
Supervisor	■	■	■		■	■	■	
Admin. Role	■		■			■		
Peer reviewer (national journal)				■	■	■	■	
Peer reviewer (international journal)				■	■	■	■	
Editor (national journal)				■			■	
Editor (international journal)							■	

Source: This author

3.1.3.2. The Interviews

The interviews were designed to obtain further information about participants' attitudes and their experiences in the research activity and publication practices. Interviews were conducted in Portuguese so that interviewees would feel at ease to express their views, and were recorded and transcribed for thematic coding and analysis (Adu, 2019). The excerpts of the interviews on this document are presented in both English – translated by the author of this study — and their original Portuguese versions.

The interviews were semi-structured (Wilson, 2014) and took between one hour and thirty minutes and three hours, depending on the interviewees' availability. All interviews – conducted in-person or through online meeting tools – were audio or video recorded with participants' consent. Questions explored their experiences and participation in the activity of producing academic articles and having them published, as well as their experiences being involved in various ways, from the point of view of their role in the process.

Starting with information about their background, the interviews approached the following topics:

- A description of the usual practices of research and academic writing for publication in the interviewee's field.
- A description of each interviewee's current practices of/ participation in academic writing for publication.
- The resources they make use of
- Interviewees' perception of differences between current demands on academic researchers and those in the beginning of their careers.
- Interviewees' perceptions of the current difficulties which could be mitigated by institutional support.

- Interviewees' perception of conflicts within the activity.
- Comments, personal views, and experience on the publication activity.

3.2. ANALYSIS

This study relies on qualitative methods in order to understand the culture of the communities of both fields, so that the activity can be described as accurately as possible. It approaches the data with a postpositivist interpretative framework (Table 2) (Creswell, 2013), even though Engeström (2015), author of the theory on which the analysis is based, defends its application as a transformative tool (p. 254).

Table 2 — Interpretative Frameworks and Associated Philosophical Beliefs

Interpretative Frameworks and Associated Philosophical Beliefs				
Lnterpret-ative Frame-works	*Ontologica/ Beliefs (the nature of reality)*	*Epistemologica/ Beliefs (how reality is known)*	*Axiologica/ Beliefs (role of values)*	*Methodologica/ Beliefs (approach to inquiry)*
Post-positivism	A single reality exists beyond ourselves, "out there." Researcher may not be able to understand it or get to it because of lack of absolutes.	Reality can only be approximated. But it is constructed through research. Interaction with research subjects is kept to a minimum. Validity comes from peers.	Researcher's biases need to be controlled and not expressed in a study.	Use of scientific method and writing. Object of research is to create new knowledge. Method is important. Deductive methods are important, such as testing theories, specifying important variables, and making comparisons among groups.

Pragmat-ism	Reality is what is useful, is practi-cal, and "works."	Reality is known through using many tools of research that reflect both deductive (ob-jective) evidence and inductive (subjective) evidence.	Values are dis-cussed because of the way that knowledge reflects both the researchers' and the partici-pants' views.	The researc' process involves both quantitative and qualitative approaches to data collection and analysis.
Trans-formative/ Post-modern	Participation bet-ween researcher and communi-ties/ individuals being studied. Often a subjec-tive-objective reality emerges.	Co-created findings with multiple ways of knowing.	Respect for indi-genous values; values need to be problematized and interrogated.	Use of collabora-tive processes of research; politi-cal participation encouraged; questioning of methods; highlighting issues and concerns.

Source: Adapted from Cresswell (2013)

Engeström (2015) claims that true transformation originates from within the activity, as subjects and the community perceive the need for change and actively engage in it, generating a new form of the activity. In his view, a researcher's analysis of the intricacies of the activity through CHAT may offer support in the mediation and facilitation of the process of change.

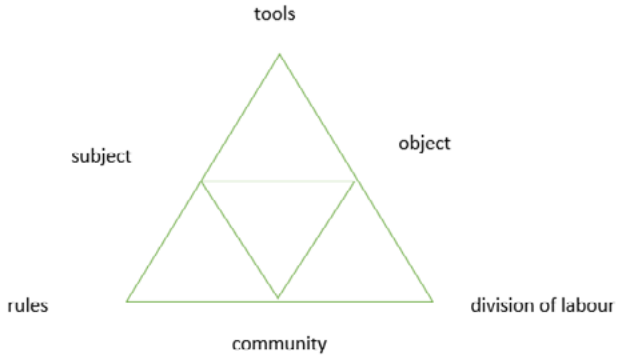
As participants – especially through interviews – voice their concerns, it is possible to discern what conflicts they recognise and what transformations they envision, even if these may not materialise easily. In the current study, we aim at understanding the activity in its complexities and conflicts. In addition, we hypothesise possible scenarios including changes suggested by participants and their desired outcomes. In this sense, we may consider it as a pre-transformative analytical tool.

It is also interesting to observe that both the Engineering and Applied Social Sciences are fields in which research is most commonly

carried out through a pragmatic lens – i.e. reality is understood as useful and practical, with evidence often linked in cause-consequence relationships. There seems to be a latent expectation that the changes the participants advocate for – if implemented — would result in direct consequences in their reality.

In the analysis through CHAT, we make use of a graphic representation of the elements of the activity (Figure 8). The rules (bottom left) and tools (top) are the elements which most often influence the outcome of the activities. The rules regulate the functioning of the activity, determining whether/ which tools to mediate the activity are provided, and what behaviours are expected from the subjects and the community.

Figure 8 — Graphic representation of activity for CHAT analysis



Source: Engeström, 2015

3.2.1. Literature and Documents

The key features of the community's practices collected from the literature and documents are summarised and analysed through the CHAT framework. The main contradictions evidenced through the data are discussed and graphically represented in the triangles. The contradictions (Engeström, 2015) are emphasised as follows:

primary contradictions are indicated by red circles, secondary contradictions by red arrows, tertiary contradictions by orange and blue arrows, and quaternary contradictions by angled red arrows.

3.2.2. Survey Questionnaires

The answers were collected, organised, and converted into graphs, from which the data was compared and analysed. The graphs may contain information from both fields or present them separately, in order to make the comparisons clearer or more relevant. The data is quantified, but due to the small number of participants, the results do not represent the whole community. However, the responses to the questionnaire provide valuable information about the experiences, behaviours, and attitudes of the two groups of researchers who took part in this study.

Relevant data is analysed through the CHAT framework in order to represent the emerging contradictions. These contradictions are also graphically emphasised through coloured circles and arrows.

3.2.3. Interviews

The eight interviews were transcribed and coded thematically (Adu, 2019) with the aid of the *QDA Miner Lite*[17] software. The codebook was devised after the main themes were identified by reading the transcripts thoroughly several times.

The codes were classified under the respective themes, and the interview transcripts were marked so that the *QDA Miner Lite* software could be used to organise and summarise the data. There is an

17 https://qda-miner-lite.software.informer.com/4.0/

interpretative component involved, as the themes and codes were devised by this researcher, and the coding is necessarily carried out manually. A successful pilot test for validation was carried out with a peer applied linguist; nevertheless, for feasibility reasons, only a few samples of the interviews' transcripts were used.

The number of times each code was marked (incidence), how many interviewees mentioned the code (cases), and the number of words of each incidence were tabulated through the software and converted into spreadsheets. The tables containing cases, incidences and number of words are presented in the results section.

The most relevant codes were considered for analysis, especially those which were mentioned often and those which were clearly an issue – detected through a proportionally high number of words. After the transcripts were coded, the emerging themes were analysed through the CHAT framework. The analysis took into consideration the three main themes and the codes pertaining to them. Some topics, albeit interesting, did not have enough contributions from participants to produce a significant comparative analysis, and are not discussed.

After the transcripts were read, relevant issues were analysed through the CHAT framework in order to understand the contradictions in the activity. First, the applied social scientists' contributions were analysed, then the engineers'. Last, a comparison of the main points is summarised in the results section.

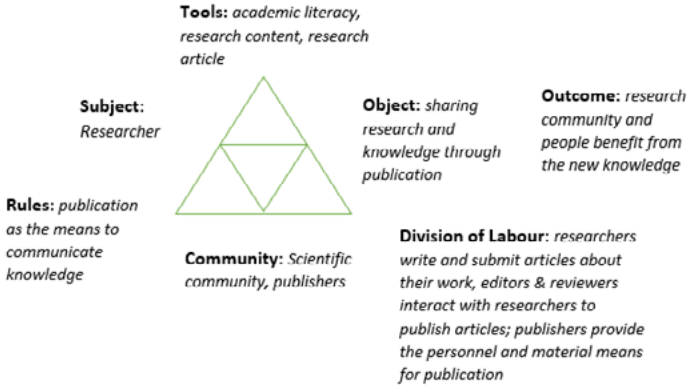
4

Data Analysis, Results and Discussion

4.1. INTRODUCTION: THE COMMUNICATION OF RESEARCH

Originally, the activity of publication was the means the research community adopted to communicate the new knowledge generated through its work. Since science is supposed to bring benefits to people, communication of new discoveries is essential so that they reach their destination. Scientific communication is at the core of researchers' work. Figure 9 (Activity 1) illustrates the basic form of the activity, in which subject, rules, tools, object, community, and division of labour have a function in achieving the result of both the research community and society benefiting from the newly generated knowledge.

Figure 9 — Activity 1 — Communication of research through publication



Source: This author

However, other than in exceptional circumstances — such as the worldwide cooperation in the fight against the COVID-19 pandemic — the scientific community has become more intricate in its practices, especially due to external influences. The involvement of governments and institutions through their policies affects the participants by pressurising them to modify their practices, often with unpredicted consequences. Since monetary value was attached to the activity of publication

and competition for rewards was introduced, the original activity has assumed several different forms, many of which may be detrimental to science's main goal: expanding knowledge for humanity's benefit.

4.2. LITERATURE AND DOCUMENTS

This section will illustrate and analyse some of the main issues discussed in the review of literature (Chapter 2 of this dissertation) and emphasised by the practices of commercial publishing houses. The information on the latter is available online from each publisher's official website[18]. The analysis through the CHAT framework is focused on the conflicts which manifest through the gathered information.

4.2.1. Writers' issues related to the adoption of English as the language of research publication: The NES — NNES dichotomy in publication

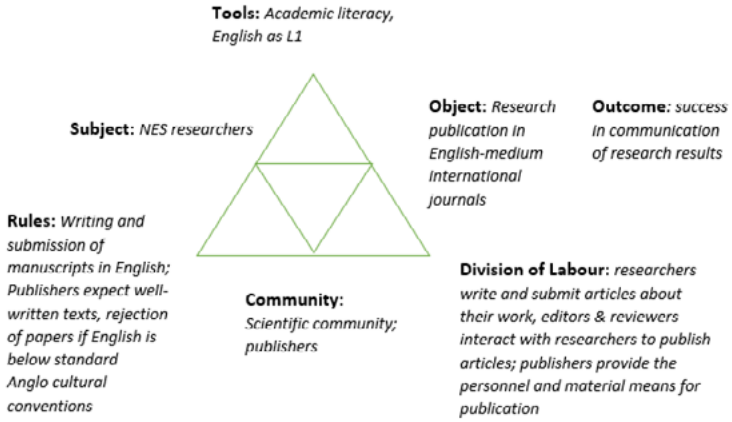
The activity of research communication in the current form was devised mainly by the research community in the English-speaking developed world. It is a means through which scientists have been registering, communicating, and discussing their findings for centuries (C. Myers & Wright, 2018). It has been changed by the dynamic interaction of subjects, the community, and rules over time; hence, the current form of the publication activity is the result of this interaction. Figure 10 (Activity 2a) illustrates the general current form of research publication in this tradition.

Having been created and developed by English speakers, today's research article, in its most prestigious form, is a genre whose

18 https://authorservices.wiley.com/home.html
https://www.springernature.com/gp
https://taylorandfrancis.com/who-we-serve/academia/authors/
https://www.elsevier.com/authors

conventions were shaped by an English-speaking research community within their culture (Strauss, 2017). In addition, as researchers are highly educated – having studied for more than 20 years — their command of English may be expected to be excellent. It seems natural that the NES researcher, who has been educated through academic genres in this culture, will produce the same genres as he advances in his career.

Figure 10 — Activity 2a — The activity of publication in international journals by NES researchers



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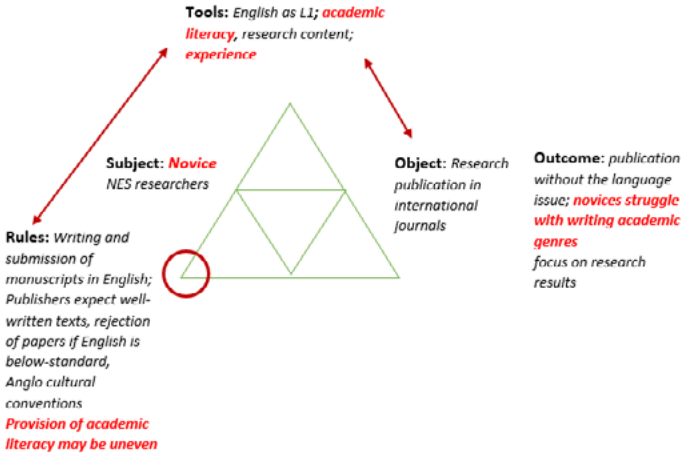
The activity of publication in English-medium journals has expanded to reach research communities from non-English speaking countries. By joining an existing activity, these new participants (NNES) are expected to abide by the existing rules, even though they may not be fully prepared to do so or even completely understand such rules. Although there is a general perception that NNES researchers are at a disadvantage because of the language difference, some scholars claim that the difficulty lies elsewhere.

According to Hyland (2016, 2019), Zhao (2017) and Habibie (2019) the difficulty in writing does not stem from the fact that authors are NNES. In their view, all novice researchers, regardless of their native

language, struggle with academic genres and will only gain mastery with time and experience. Illustrated in Figure 11 (Activity 2b), this explanation entails a secondary contradiction between the sought object and the tools, as novices still need practice to use them well.

Figure 11 — Activity 2b — Publication in international journals by novice NES researchers



Source: This author

Wingate (2015), however, notices a key fault within the educational system. As the current policies do not provide academic writing instruction in higher education, students are assumed to know how to write academic genres. In this case, there is a primary contradiction within the rules, as novice researchers are expected to produce academic genres without support.

Further, a secondary contradiction is configured between the rules and the tools: the former determines that academic genres be produced, while the tools may not be in place for novices. According to Wingate (2015), that is particularly true in British higher education.

Another secondary contradiction can be observed between the tools and the object, as the tools may not be enough for novice

researchers to successfully achieve publication; they may not know how to write academic genres, for lack of instruction (Wingate, 2015) or practice (Hyland, 2019).

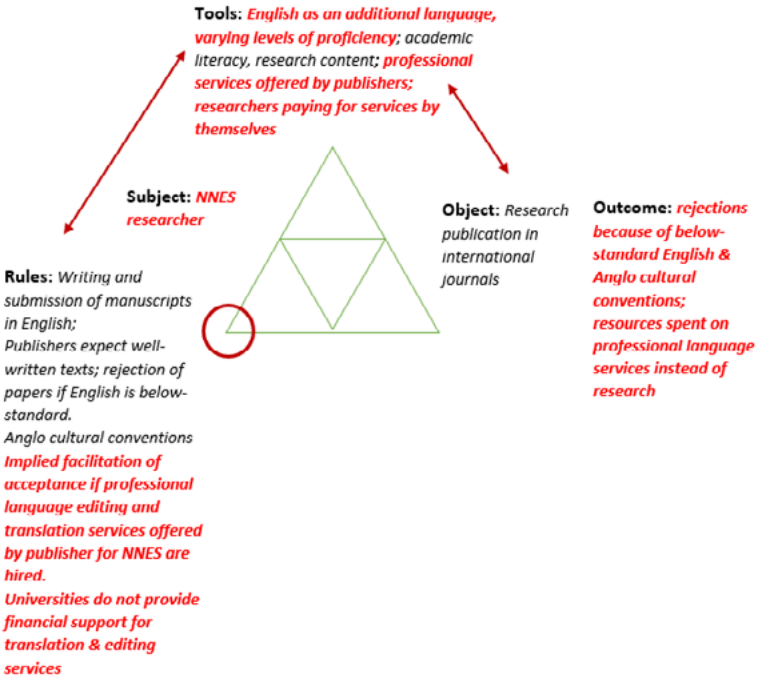
According to the literature, there are conflicts in the activity of writing for publication when NNES engage in it. As Lillis & Curry (2010) and Perez-Llantada et. Al (2011) report, it is not realistic to expect that all NNES researchers achieve a high level of L2 proficiency. Thus, being able to write manuscripts which can compete on equal terms with those from NES authors is not an easily achievable goal for NNES, especially considering that journals' rejection rates are extremely high. Publishers' sites specifically state that it is the authors' responsibility to present a well-written manuscript, checking that there are no grammar or spelling errors. Such surface features of texts are not the main difficulty, however. Conveying meaning in writing when one's command of the language is deficient can be a very demanding task. In addition, the RA genre is rhetorically complex and built on Anglo-cultural conventions; nevertheless, this aspect is downplayed by publishers, and there is no mention of it in the instructions to authors.

Instead, all publishers offer their own sanctioned translation and editing services directed at NNES, promising to "help create the best possible outcome for your work"[19], "sharpen your manuscript quality"[20] or "improve the flow and writing of your paper"[21]. All offered services are guaranteed to be done by American or British native speakers, implying that NNESs' command of English is not good enough for publication. In addition, as publishers attach a disclaimer that dissociates the offered services from the manuscript's acceptance, they may also imply that as the language aspect is spotless, a possible rejection will be due to the quality of the research.

19 https://wileyeditingservices.com/en/
20 https://www.tandfeditingservices.com/services/
21 https://webshop.elsevier.com/language-editing-services/language-editing/

Figure 12 (Activity 2c) illustrates a primary contradiction in the rules when NNES researchers are involved. Translation services are necessary for NNES to submit manuscripts to international English-medium journals and are offered by publishers. Even when NNES scholars write papers in English, editing services are often required. Even though universities demand publications in English, many do not pay for the required services.

Figure 12 — Activity 2c – Publication in international journals by NNES researchers.



Source: This author

A secondary contradiction is also revealed: the rules do not provide the tools for the activity, although they are supposed to regulate such tools. As the university does not recognise researchers' needs and denies support for language brokerage, a hurdle is created for

publication. In the case reported by Pérez-Llantada *et al*. (2011), the researchers paid for the services themselves in order to submit their articles, although they disagreed with the institutional policy.

Another secondary contradiction is revealed between the tools and the object, as there is little compatibility between the available tools and the object. Researchers' language proficiency is often lower than required for publication, so they are not able to achieve it on their own. The language services offered by publishers are quite expensive, but the institution refuses to bear the expense, leaving little alternative other than for authors to pay for translation themselves. Another course of action for researchers is writing the article in English as best they can (Ferguson *et al*. 2011), although they are not satisfied with the way their ideas are expressed. They submit their manuscript aware that rejection is a likely result.

The outcomes may vary, depending on how researchers deal with the language issue. Rejection is a common result when a non-proficient NNES writes a manuscript in English and submits it to a high IF journal. The revision of grammar and spelling recommended by publishers will not address the deeper issues, such as author's voice and the rhetoric framing required for acceptance in the community. The language services may be helpful, but the journals' high rejection rates – often higher than 90% - are a difficult barrier to overcome.

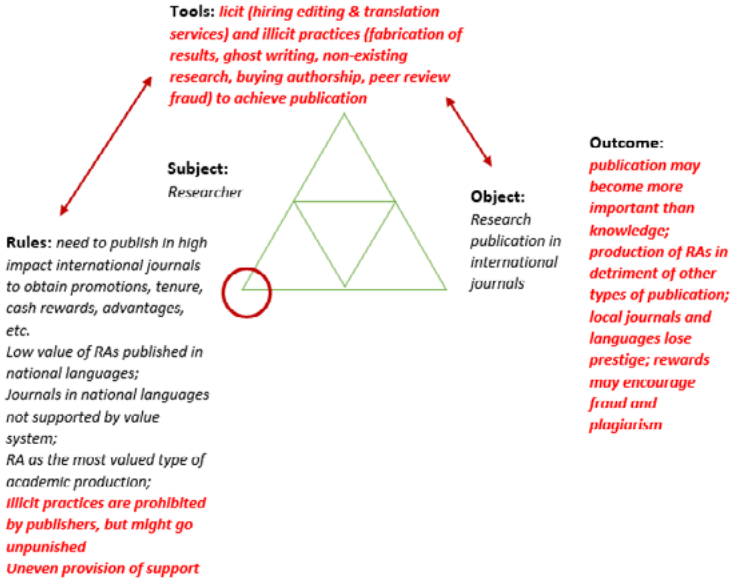
4.2.2. Issues related to institutional demands and policies for research writing and publication

The literature informs us that worldwide, the policies adopted by governments and institutions have shifted toward valuing the publication of research articles in high-impact journals over other forms of research output (Lillis & Curry, 2010; Perez-Llantada *et al*. 2011; Perez--Llantada, 2012; Burgess, 2017; Salö, 2017).

Those policies seem to have signalled to researchers that publication should be prioritised above all else. Consequently, some members of the community may resort to tools necessary to achieve publication, as failure will put their academic careers at risk.

In Figure 13 (Activity 3a), there is a primary contradiction in the rules, as they establish the publication in international high IF journals as the object, but do not provide the tools that will mediate this achievement. The policies require this type of publication so that scholars can be eligible for promotions, tenure, rewards, and other forms of recognition.

Figure 13 — Activity 3a – The activity of publication in international journals as a response to institutional demands



Source: This author

A secondary contradiction can be observed, as strictly prohibited tools are sometimes used because the licit tools provided are not enough for the achievement of the set object. Academic fraud, in the

forms of ghostwriting, fabrication of results, and non-existent research (Hvistendahl, 2013; Qiu, 2010) are examples of tools that some scholars have used in the attempt of being successful in the activity. The secondary contradiction is reinforced, as the uneven provision of licit tools affects the mediation of the activity of publication. Especially in the academic periphery, this provision tends to be less contemplated within rtigoal policies. Another secondary contradiction can be seen between the tools and the object, because of the inadequacy of the tools used – licit and illicit – for publication.

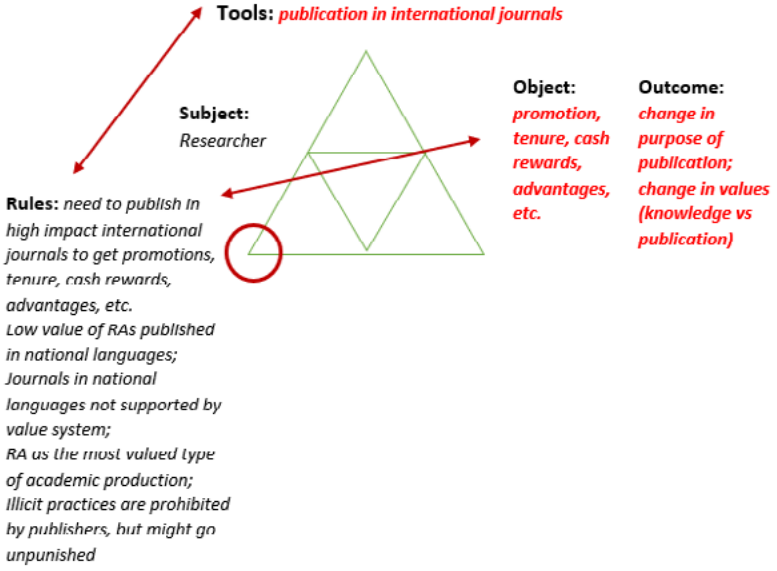
The policies which overemphasise publication in international journals have generated several negative outcomes, especially in non-English-speaking countries: national journals using their own languages have been deprived of prestige (Badillo, 2021; Lee & Lee, 2013)universities in South Korea have participated in an aggressive movement to globalize their institutions through the medium of English by hiring English-proficient faculty. To attain tenure, faculty must publish in international indexed journals (IIJs, and other traditional forms of divulging knowledge are declining (Perez-Llantada, 2012; Salö, 2017).The fact that much in the academic careers of scholars depend on this type of publication may be an encouragement for illicit practices.

Policy makers certainly did not adopt such measures with the intent to undermine the original activity of science communication. Rewards and advantages were probably meant as incentives for scholars to produce more research for the common good. However, human interpretation and behaviour do not always work according to plan, and deleterious consequences have followed.

After monetary value and other rewards were attached to publication (Hvistendahl, 2013; Qiu, 2010; Quan *et al*., 2017) some scholars have started considering that publication was necessary if they wished to obtain promotions, tenure, and other rewards. Rather than the object of the activity, publication has now become the tool so that rewards can be achieved.

As illustrated in Figure 14 (Activity 3b), there is a primary contradiction as the rules no longer organise the activity as originally intended. Instead of regulating the activity of publication, the policies have triggered a major change. The incentives set to encourage publication have, for some, become the object of the activity, and the publication itself has become the tool to achieve them. Consequently, communication of new knowledge can become less relevant than the rewards to be earned, and since science is no longer the priority, fraudulent practices may seem justified and not as harmful. In this case, *Activity 3a* may be considered a tool-producing activity for *Activity 3b*.

Figure 14 — Activity 3b – Publication in international journals as a response to institutional demands: a new form of the activity



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Secondary contradictions also arise as the rules did not determine that publication was a tool, or that rewards were the object.

Tertiary contradictions abound as the various forms of the activity operate simultaneously, in different layers. Overlapping and conflicting reasons to motivate researchers to publish underlie the activity. While the primary focus remains on knowledge production and communication to bring benefits to humanity through publication (*Activity 1*), publication has also become the goal to be achieved because researchers' academic careers depend on it (*Activity 3a*). Furthermore, after significant rewards were attached, these may have become more attractive than the production of knowledge itself, generating distortions to the activity (*Activity 3b*), which conflict directly with what science and research are supposed to mean for humanity. Even in conflict, these reasons drive scholars towards publishing, and pressure seems to be ever-growing. In this regard, (Mattedi & Spiess, 2017) confirm that attaching monetary value to evaluation through publication metrics has generated fraudulent practices which are detrimental to science, a point also emphasised by (Muller, 2018). Mattedi and Spiess (2017) also claim that the current evaluation based on publication of research articles, rankings generated through metrics, and uniform international standards applied regardless of context needs to radically change in order to move "beyond today's productivist obsession in science" (p.16), retrieve the original purpose of science communication and restore scientific values such as academic freedom and political independence.

4.2.3. Issues in the publication process generated by competitiveness

Since most governments and institutions have made publication in high IF journals valuable, the competition for the limited space in these journals has become even fiercer (Aarssen *et al*., 2008; Larsen & von Ins, 2010). As a consequence, gatekeepers' power has multiplied, as they exert great influence over authors' academic careers by accepting or rejecting manuscripts (Hoenig, 2015). As indicated in Figure 15 (Activity 4a), the asymmetry in power constitutes a primary contradiction, as the division of labour becomes deeply uneven in this form of the activity.

Figure 15 — Activity 4a – Publication in high IF journals (developed countries)

Source: This author

Some of the key tools for a manuscript to be accepted are: a) research on a topic that interests a high IF journal (Lindner *et al*., 2018; Moustafa, 2015), b) funding which supports the research with equipment, and methods which are recognised as valid (Altbach, 2007; Hultgren, 2019), c) compliance with gatekeepers' requests for changes (T Lillis & Curry, 2010) and d) citation of articles from the same journal to which the manuscript is submitted, in order to help raise the IF even more (Moustafa, 2015; Muller, 2018).

As indicated in *Activity 4a*, there is a secondary contradiction between the rules and the tools, as not all tools are explicit, such as the need

to comply with gatekeepers' requests and the required citations from the same journals to raise the journal's IF. Another secondary contradiction can be observed between the tools and the object, since even the key tools do not directly lead to publication in this very competitive environment.

As discussed in chapter 2, two other negative consequences of the way this activity works are the loss of depth in research, as speed and volume of publication are demanded, and the concentration of research on a limited range of research topics determined by the publication in high IF journals. This productivity approach does not contribute to improving science and knowledge (Mattedi & Spiess, 2017; Muller, 2018).

In developing countries, some of the important elements of the activity are different from those in developed countries. Fundamentally, the limited funding available and the way it is spent strongly influences the activity. Governments and institutions in developing countries seem oblivious to the fact that the conditions for participating in this competitive endeavour are very different from those in developed countries.

The rules determine that in order for any new knowledge produced to be recognised as such by the community, the conditions for its production have to be validated. This means that rigorous methods, which may include expensive materials, equipment and premises, and access to updated literature, are expected as a precondition for research. However, when local conditions are considered, developing countries have additional challenges. Governments and institutions in poorer countries have to decide how to allocate their limited funds, and a generous budget for research is not realistic, especially since it does not bring immediate benefits (UK Department for International Development).In addition, many public authorities tend not to take research evidence into consideration for policy making, which seems to undermine the expense justification (UK Department for International Development[22]). As a result, primary contradictions within the rules become

22 https://assets.publishing.service.gov.uk/media/57a089aced915d622c000343/impact-of--research-on-international-development.pdf

evident. As indicated in Figure 16 (Activity 4b), even though competitive research requires substantial investments to be conducted, funding is not always available. While the demand for international publication in high IF journals rises through career evaluation processes, it seems there is little reason for further investment – and pressure for output — if research results are not used to benefit the population through policy making. There is a strong primary contradiction in demanding research and publication if the produced scientific evidence is ignored by the same authorities who demanded it.

Figure 16 — Activity 4b – Publication in high IF journals (developing countries)

Source: This author

The primary contradiction in the division of labour is accentuated, as the power asymmetry between gatekeepers and researchers is further emphasised with the addition of language and textual convention issues to already existing problems of research validation caused by limited funding.

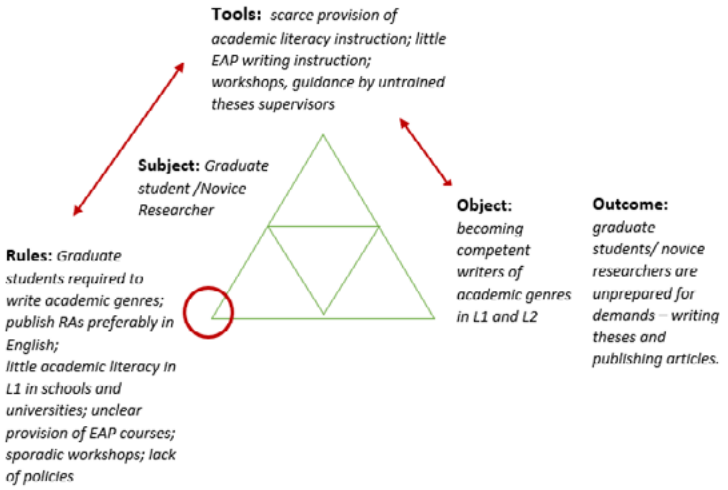
Secondary contradictions can also be observed, as little funding is made available through the rules. In competitive international research and publication, restriction of funding has a major negative impact on necessary tools, such as equipment, materials, and updated literature. Therefore, there are contradictions between the rules and the tools – the rules fail to provide adequate tools – and between the tools and the object – the available tools are incompatible with the object.

The outcomes of the activity for developing countries are clearly unfavourable. There are evident inequities in the conditions to participate in the competitive activity (Altbach, 2007; Brüggmann *et al*., 2017; Hultgren, 2019; Madsuha *et al*., 2021; Van Helden, 2012), but several authorities remain blind to such inequities, and insensitive to their scholars' needs. In addition, the focus on research topics determined by publishers makes researchers deviate from the areas in which research is needed for the benefit of the populations in poorer countries. Instead, the limited resources – both human and financial — are spent on research which may have little positive impact on local populations (Altbach, 2007; Salager-Meyer, 2008)I first refer to the center-periphery dichotomy in terms of scientific output, placing emphasis upon the relation that exists between science and technology development, on the one hand, and social and economic development, on the other. I then analyze the main problems faced by most peripheral journals and the role nation states play in scientific activities in developing countries. I then address issues such as the world power structures, the social organization of developing countries, growing North/South disparities and the question of collaborative research. The discursive (i.e., language related.

4.2.4. Academic writing instruction: a subject-producing activity

As the literature indicates (Ferreira, 2018, 2021; Motta-Roth, 2011), Brazil lacks policies for the provision of academic literacy in Portuguese as well as in English. Figure 17 (Activity 5) illustrates the contradictions in the activity of producing subjects – postgraduate students, and novice researchers – who are prepared to write academic genres competently as a significant part of their academic lives.

Figure 17 — Activity 5 – Producing authors for academic genres in Brazil



Source: This author

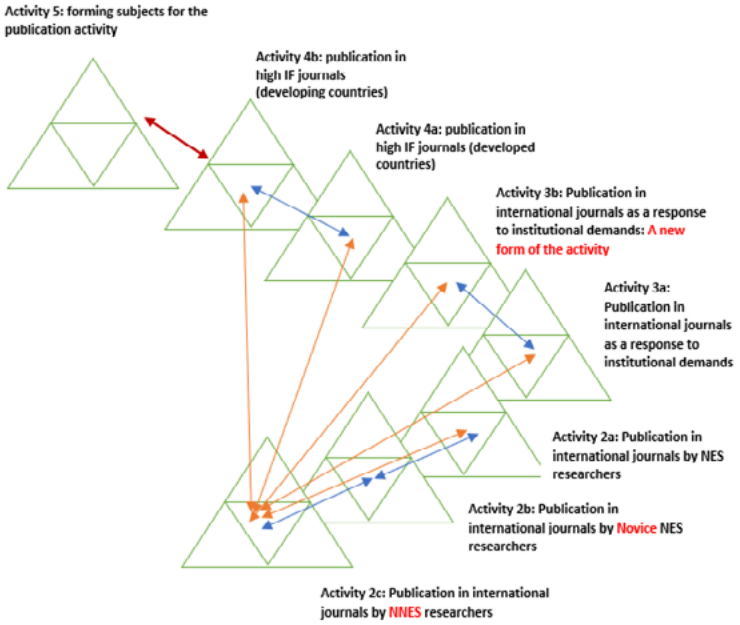
There is a clear primary contradiction in the rules of this activity. While the rules require that graduate students publish RAs in well-ranked journals as a condition to complete their degree, there are no clear institutional actions that provide the corresponding instruction. Consequently, novices are not prepared to produce academic texts in either language – L1 or L2, having had little or no practice before having to submit a manuscript in English to a journal.

Secondary contradictions can be observed between the rules and the tools, as well as between the object and tools. The tools are not provided by the rules because policies are not in place. Thus, the tools are not adequate to mediate the achievement of the goal. The literature indicates that in the absence of regular academic literacy and writing instruction (Sousa & Fuza, 2021), the most common interventions are short workshops (Ferreira, 2018) and support from theses supervisors (Martinez & Graf, 2016; Junaid, 2021). The former usually consist of pieces of advice from an experienced researcher who is successful at publishing, while the latter rarely promotes the autonomy of the novice researcher/ graduate student.

A quaternary contradiction emerges as this subject-producing *Activity 5* fails to provide the subjects who will be successful in *Activity 4b*. To successfully accomplish the goal of *Activity 4b*, given all the existing hurdles, researchers' competence in writing academic genres could be decisive. However, since this competence is not developed, there is yet an additional obstacle to be overcome

The red arrow in Figure 18 (Activity System 1) below illustrates the quaternary contradiction between the subject-forming *Activity 5* and the activity of publication in high IF journals *4b*. In addition, there are tertiary contradictions among all forms of the Activity of publication *4a* (in developed countries), *4b* (in developing countries), *3a* (publication as a response to institutional pressures), *3b* (publication as a response to institutional pressures – a new form of the activity), *2a* (NES researchers), *2b* (novice NES researchers), and *2c* (NNES researchers). They occur simultaneously, as they are different forms of the activity with competing and conflicting existences, with the same object: publication of RAs in international journals. For visual clarity, the orange arrows only illustrate the conflicts between *Activity 2c* and the others, but the conflicts apply to the relations between each activity and all the others.

Figure 18 — Activity System 1 — Publication of RAs in international journals



Source: This author

Particularly strong tertiary conflicts – illustrated with blue arrows — can be observed between a) *Activities 4a* and *4b*, as the goals are the same while the conditions for the achievement are not; b) *Activities 3a* and *3b*, as in the new form of the activity the object shifts and becomes the tool, and c) *Activities 2a, 2b,* and 2c, as differently qualified subjects try to achieve the same results.

4.3. SURVEY QUESTIONNAIRE

4.3.1. Introduction

The data from the questionnaire give us a glimpse of how these researchers participate in the activity of publication. Although their practices cannot be quantitatively generalised for the whole community of Brazilian researchers, these results bear invaluable information about their experiences, the material conditions provided for their research and publication, their need for support, and attitudes towards different aspects of their work.

The answers provided to the survey questions are summarised in graphs and followed by a discussion; the contradictions that surface are graphically represented in the CHAT framework.

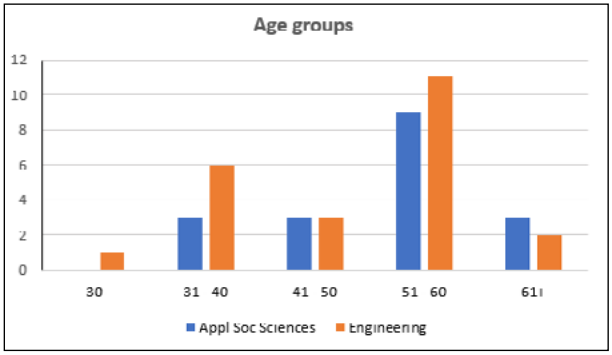
4.3.2. Participants' profile

The total number of participants in the survey was 41, being 23 from engineering and 18 from applied social sciences.

Most participants in the survey are older and more experienced. The largest group consists of respondents aged between 51 and 60 (20). The very small number of researchers younger than 30 years old in this survey might be partly explained by the fact that the average ages for achieving master's and doctorate degrees in Brazil are 30 and 34 respectively, according to CAPES[23].

23 https://dadosabertos.capes.gov.br/dataset/discentes-da-pos-graduacao-stricto-sensu-do-brasil

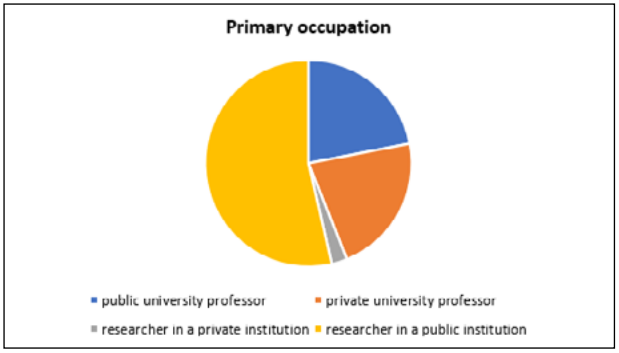
Figure 19 — Participants' age groups



Source: Survey data

It may be plausible to infer that researchers' publication activity intensifies as their academic careers and research work develop after the acquisition of their doctorates. Therefore, on average, active research publishing probably starts when researchers reach the age of 35, approximately. In this survey, all participants teach in higher education (undergraduate and/ or postgraduate) as well as do research work. The primary occupation indicated in Figure 20 illustrates what they consider as their main activity, probably because it takes up a larger proportion of their time.

Figure 20 — Participants' primary occupation



Source: Survey data

Most participants (31) work either in public universities or public research institutions; therefore, their research activity depends primarily on governmental policies and support (Contini & Séchet, 2005). One quarter (10) of the respondents are privately employed, which is similar to the proportion of 30% reported by the literature regarding researchers in private institutions in Brazil (Contini & Séchet, 2005; Nunes & Oliveira, 2011).

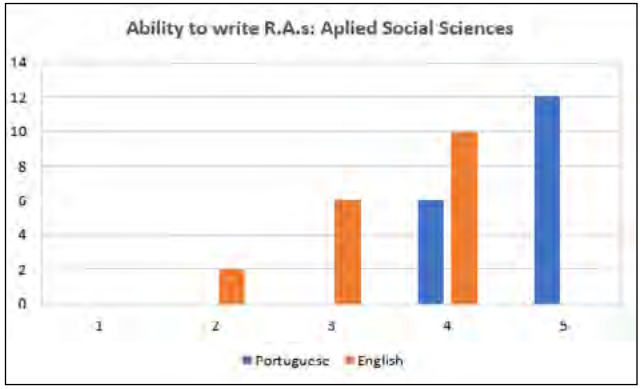
4.3.3. Academic writing: participants' self-assessment of their ability and instruction

Survey questions:

Q6: Como você avalia a sua habilidade de escrever artigos acadêmicos em Português?
How do you evaluate your ability to write academic articles in Portuguese?

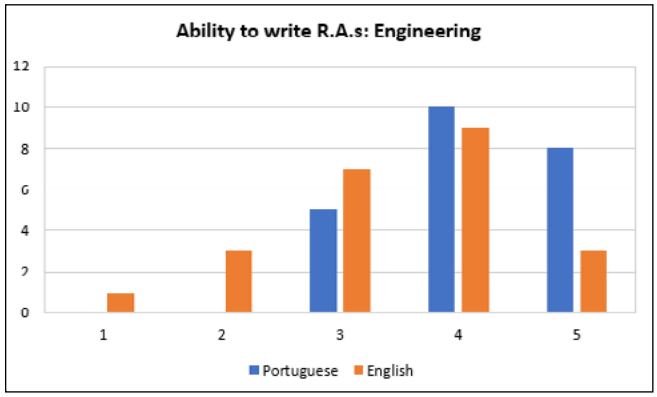
Q8: Como você avalia a sua habilidade de escrever artigos acadêmicos em Inglês?
How do you evaluate your ability to write academic articles in English?

Figure 21 — Participants' self-evaluation of their ability to write Ras – Applied Social Sciences



Source: Survey data

Figure 22 — Participants' self-evaluation of their ability to write RAs — Engineering



Source: Survey data

Concerning Portuguese, all participants rated their skills between 3 and 5 (reasonable to very good), on a scale of 1 to 5. In comparison, when their ability to write R.A.s in English was evaluated, there was a tendency to rate their skills less favourably.

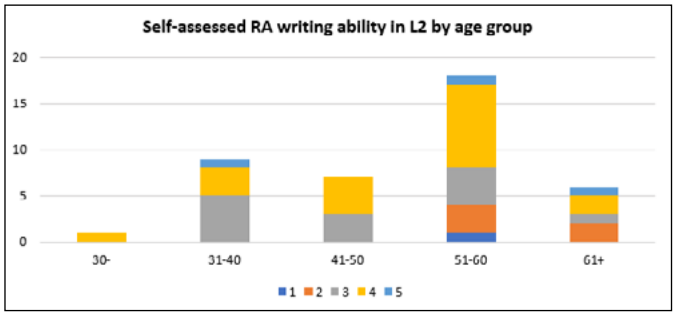
In the applied social sciences, most respondents (12) graded their skills at writing RAs in Portuguese as 5 (very good). When English is concerned, the highest grade given was 4 (good), by 10 of the respondents. While this group of researchers is highly confident in their abilities in producing RAs in L1, they are clearly less so in their abilities in L2. The largest group still evaluated themselves as 4 (good) rather than 3 (reasonable), which could imply that they are aware of the additional effort required to write In L2, but also that their efforts have produced fairly positive results.

Most researchers from the engineering field assessed themselves as 4 (good) both at writing RAs in English (9) and in Portuguese (10), showing slightly less self-confidence in their skills in Portuguese than the other group, but also displaying a similar level of confidence in

their L2 writing abilities. Differently from the other group, a small number (3) of respondents rated their ability in English as 5 (very good).

Notwithstanding the fact that a small number of respondents evaluated their skills in English with low grades, it is noteworthy that most appear to be quite confident in their abilities to produce RAs in L2, probably due to their experience in the activity.

Figure 23 — Participants' self-assessment of academic writing skills in English by age group



Source: Survey data

The participants' self-assessed writing skills in their age groups show that only older groups rated their skills negatively. The data indicate that self-confidence in respondents' academic writing skills is heterogeneous in all groups, neither extremely high nor low in any of them. The group aged 51-60 is the most heterogeneous, with more than half (10 out of 18) of the participants having rated their skills as 4 or 5, while also displaying the lowest evaluations, with 4 respondents rating their skills as 1 or 2. In the younger groups, 30-, 31-40 and 41-50, participants evaluated their skills only positively, rating them mostly as 3 and 4.

Several factors may have influenced the profiles shown by the data. Older researchers are likely to have had less exposure and access to English language instruction in their youth – in the 1970s and 1980s — due to less developed means of communication than more recent generations, which might be accountable for some researchers' less

developed L2 skills. However, having had more experience in research and writing for publication, many of them seem to have developed their abilities in order to meet the demands of the activity confidently.

Younger generations, on the other hand, are more likely to have had exposure and access to English language instruction from a young age, which may provide them confidence in their L2 abilities. Nevertheless, since research and writing for publication require practice and experience, their self-evaluations might reflect the need for further improvement in this aspect.

Survey questions:

Q7: Você teve orientação para desenvolver a sua escrita acadêmica em Português?
Did you receive guidance to develop your academic writing in Portuguese?

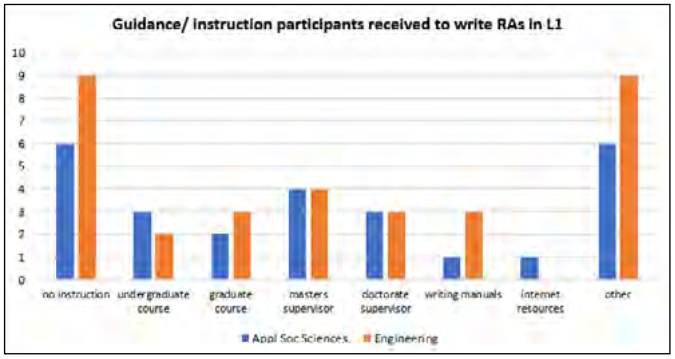
Q9: Como você aprendeu a escrever artigos acadêmicos em Inglês para publicação internacional?
How did you learn to write academic articles in English for international publication?

The data in Figure 24 shows that, in Portuguese, most researchers reported not having received instruction to write RAs. Both in applied social sciences and engineering, few participants had the opportunity of taking either undergraduate (5) or graduate (5) level courses on this topic. Master's (8) and doctorate (6) theses supervisors were indicated as the primary sources of academic writing instruction. This data is consistent with the literature (Martinez & Graf, 2016; Motta-Roth, 2011; Sousa & Fuza, 2021), and confirms that academic literacy is taken for granted, given that policies to promote it in L1 are not in place.

Since formal academic writing instruction is rarely offered, graduate students' learning how to write academic genres usually depends on the quality of guidance theses supervisors are able to provide.

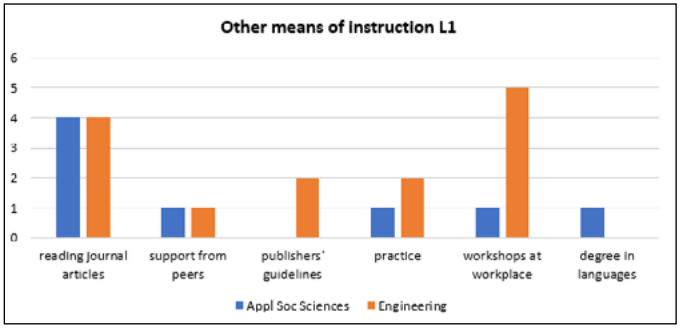
As researchers perceive the need to improve their academic writing skills, other means are sought, the most popular of which, among the participants of this survey, were reading journal articles (8) and participating in workshops on writing (6). Although the quality of these workshops may vary widely depending on the provider, length, purpose, and whether there is writing practice and feedback, they appear to be a valuable source to participants. Additionally, researchers used writing manuals (4) and publishers' guidelines (2) as sources of instruction.

Figure 24 — Guidance/ instruction received by participants to write RAs in L1



Source: Survey data

Figure 25 — Other means of instruction to write RAs in L1

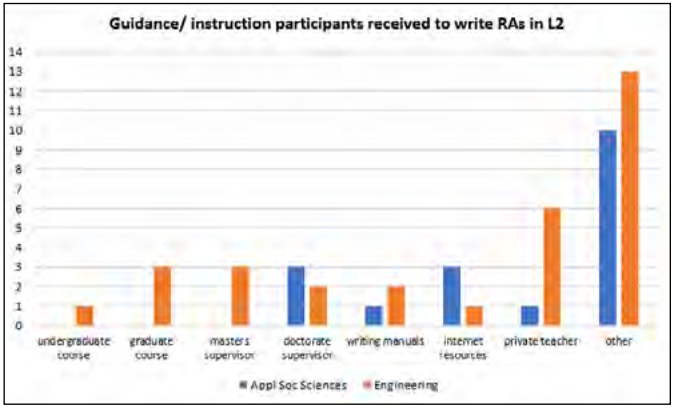


Source: Survey data

According to participants' information, academic writing instruction in English is even less available than in Portuguese. Only 4 participants, all from the engineering field, reported having taken courses, and 8 participants, 5 from engineering and 3 from applied social sciences, reported having received guidance from master's or doctorate theses supervisors. Most of the researchers in this survey have had to acquire the skill of writing academic articles in English independently, receiving little support from the institutions where they have studied or worked.

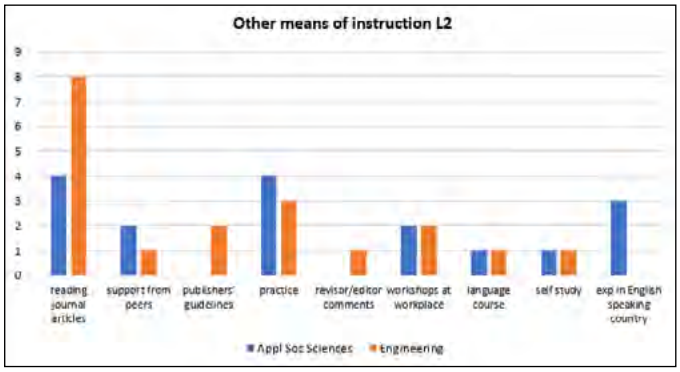
Participants resorted to other means, among which reading RAs in L2 was the most popular (12), followed by hiring a private teacher (7), practising (7), participating in workshops at the workplace (4), and using internet resources (4) (Figures 26 and 27).

Figure 26 — Guidance / instruction received by participants to write RAs in L2



Source: Survey data

Figure 27 — Other means of instruction to write RAs in English



Source: Survey data

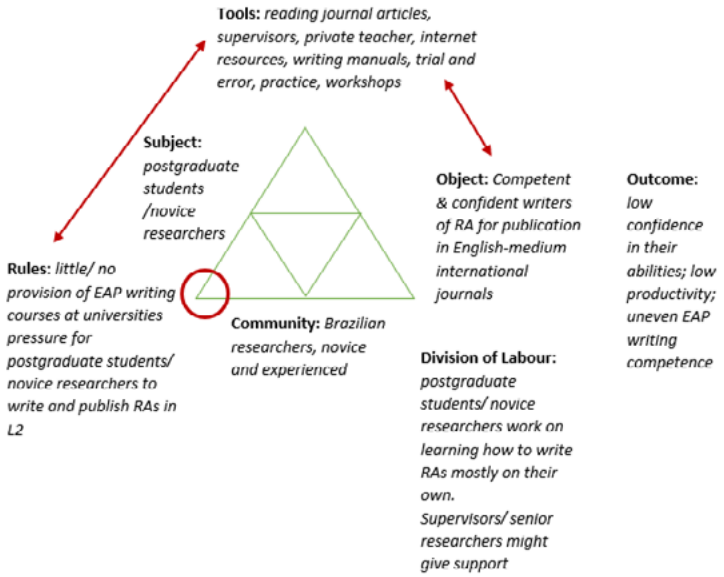
While reading RAs as a source of instruction may be valid when learners are aware of the features they need to observe and understand, they might be oblivious to relevant characteristics of the genre, otherwise. As a consequence, this form of instruction can vary in effectiveness, depending on how prepared the reader is to extract information from the texts. A hypothesis to be further explored is that researchers read published articles in search of models to follow when they need to write research papers of their own. Whether they look for language features – lexis, phraseology -, rhetorical moves or other guidance will probably depend on how developed their language skills are and the perception of their own needs.

As resources such as private teachers, writing manuals, and resources available on the internet may vary widely in quality, it may be reasonable to question the reliability of the gain in academic writing skills through these means. It is clear, however, that some of the participants perceive them as valid and helpful, attributing their abilities to those sources.

The survey indicates that, in applied social sciences and engineering, both in L1 and L2, academic writing instruction is not provided systematically by universities. However, research institutions, universities, and agencies expect researchers to master the skill of writing

articles and publish their research results in RAs in English, preferably in high-impact journals. The subject-producing activity from the survey data is illustrated in *Activity 6* (Figure 28).

Figure 28 — Activity 6 – Subject-producing activity: Writers of RAs in English



Source: This author

There is a primary contradiction within the rules, as universities do not provide the tools to support the subjects in becoming competent and confident writers of RAs in English — as the institutions expect.

The secondary contradiction between the rules and the tools is also evident. Because there is little provision of support, novice researchers need to resort to available means to learn how to write RAs. Another secondary contradiction is made evident, as the mediation by the tools available is inadequate for the activity. For researchers to become competent and confident writers of RAs in English, better tools are necessary, such as EAP writing and L2 instruction, in addition to supervisor training as literacy brokers. Even with these tools in place,

practice would still be required to prepare researchers to fully achieve their object. In the current form of the activity, becoming a competent and confident writer of RAs in English demands a tremendous amount of individual effort, which does not necessarily ensure success.

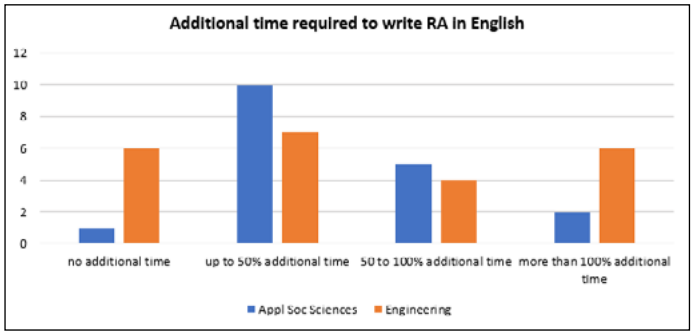
4.3.4. Writing for publication

Survey question:

Q10: Comparado ao português, de quanto tempo adicional você precisa para produzir um artigo em inglês?
In comparison to Portuguese, how much additional time do you need to produce an article in English?

The vast majority of the researchers indicated that they need to spend considerably more time when writing an RA in English, as compared to Portuguese. Seventeen (17) participants said they needed up to 50% additional time, 9 reported needing 50 to 100% more time, and 8 reported needing more than 100% additional time (Figure 29).

Figure 29 — Additional time needed to write an RA in English in comparison to Portuguese



Source: Survey data

The group of engineers revealed to be more heterogeneous, with 6 respondents in each extreme: requiring no additional time and requiring more than 100% additional time. The applied social scientists have their largest group (10) requiring up to 50% additional time than when writing in L1, with fewer members (5) requiring up to 100% and only 2 requiring more than 100% additional time.

Although the surveyed groups differ considerably between them, most researchers (34) reported that writing RAs in English take more time than in Portuguese. These results converge with the view that writing in English puts NNES at a competitive disadvantage (S. Burgess, 2014; La Madeleine, 2007; Uzuner, 2008), as they need to spend time and resources producing RAs, detracting from their time for research itself. As institutional pressure for international publication grows, questions concerning researchers' awareness of related issues can be raised for further investigation: whether they perceive the paradox of having to produce a greater number of articles which are more time-consuming to write; whether they are aware that the demand for extra time and resources to write articles in English may be detrimental to their research work; whether they perceive this as a disadvantage in relation to NES researchers; and what their attitudes towards these issues are.

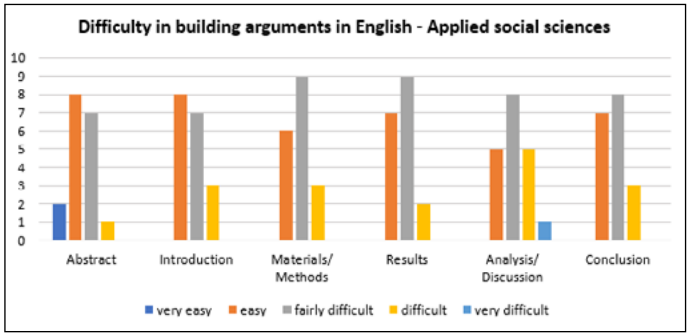
Survey question:

Q11: Que grau de dificuldade de escrita você atribuiria para formular a argumentação em cada seção de um artigo acadêmico em inglês?
How would you rate your difficulty in building the arguments in each section of a research article in English?

Consistently with their self-evaluation of academic writing skills in English (Figures 21 and 22), participants generally did not consider writing any section of an RA very easy. Most sections were reported to be 'fairly difficult' to write by a large number of respondents, indicating that most researchers struggle to produce their RAs in English. Overall,

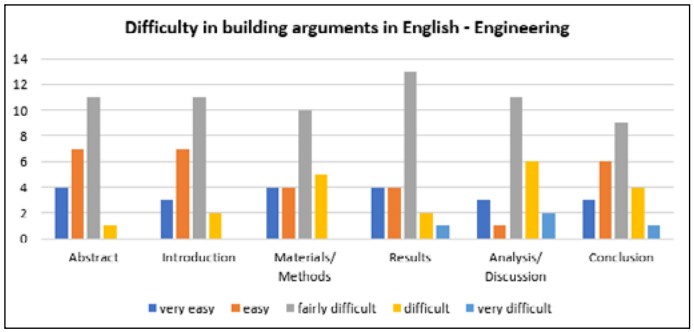
the sections in the beginning of the RA were considered less difficult to write, increasing in difficulty in later sections, and with the peak of difficulty in the analysis/ discussion part (Figures 30 and 31).

Figure 30 — Difficulty building arguments in English – Applied Social Sciences



Source: Survey data

Figure 31 — Difficulty building arguments in English — Engineering



Source: Survey data

In general, applied social scientists tended to assess the different sections of RAs in the middle range, between 'easy' and 'difficult' to produce, rather than the extremes 'very easy' or 'very difficult'. Most sections were considered 'easy' or 'fairly difficult', with a peak of the 'difficult' evaluation for the analysis/ discussion section.

Comparatively, the group of engineers displayed a more heterogeneous perception of the difficulties imposed by each section. Although there was a predominance of the 'fairly difficult' evaluation in all sections, the 'very easy' assessment was reported by at least 3 respondents in all sections, and 'very difficult' was reported in half of them.

The abstract was considered the easiest section of the RA. It was evaluated as 'very easy' and 'easy' by 11 engineers and 10 applied social scientists. Possible explanations may be related to the fact that being a short piece of writing, it may be rewritten without much trouble if necessary. Additionally, publishers establish a maximum number of words and sometimes determine the items to be included in the abstract, which makes producing this piece a type of guided writing exercise.

Although the literature points out that Brazilian writers often fail to fulfil the CARS moves (Swales, 1990) in the introduction of RAs (Aranha, 1996; Dias & Bezerra, 2013; Hirano, 2009), this section was not reported as particularly difficult by the respondents, being rated as 'difficult' by only 5 respondents (2 engineers and 3 applied social scientists) and, 'easy' or 'very easy' by 18 (10 and 8, respectively).

While the description of materials and methods was considered 'difficult' by a minority (5 engineers and 3 applied social scientists), it was not considered simple either. It was rated as 'fairly difficult' by about half of the respondents (10 and 9, respectively). This can be partly explained by the fact that even though clarity and logical sequence are demanded in this section, it is rhetorically less sophisticated, in that the writer may not need to persuade the reader or make strong claims through complex argumentation.

The results section was not considered particularly difficult, with 21 'fairly difficult' evaluations (13 engineers and 9 applied social scientists). Only 5 participants (3 and 2, respectively) considered this section 'difficult' or 'very difficult'. Authors are expected to organise their findings (Skelton, 1994; Swales & Feak, 2012) and highlight the most

significant ones. It is possible that participants find it reasonably challenging to adequately emphasise the significance of results.

Participants considered the analysis/ discussion section as the most difficult one to write. Eleven engineers rated it 'difficult' and 3 rated it 'very difficult', while only 3 considered it 'very easy' and 6 'easy'. In the applied social sciences group, this is the only section which was considered "very difficult" by a participant in the survey.

In the analysis/ discussion section, authors need to "assert the value" of the research (Skelton, 1994 page 458) and show how the results fit into the context. Swales and Feak (2012) state that, in order to comment on data properly, it is necessary to have linguistic resources to carefully show one's positioning as well as the findings. When these demands are considered, it becomes clear that the task is quite complex, especially when the author is writing in a foreign language. Participants are clearly aware of the fact that this section is very challenging to write.

Participants in the applied social sciences group rated the conclusion as less challenging than the analysis/ discussion section, and roughly comparable to the results section. They tended not to use extreme evaluations of difficulty for this section. In the engineering group, however, the answers were heterogeneous. Nine respondents considered it 'fairly difficult', while 9 others considered it 'easy' or 'very easy.' Four think it is a 'difficult' section and only 'thinks it is 'very difficult.' The engineers do not seem to have particular problems writing this part of the research article. According to Swales and Feak (2012), strong conclusions are expected to include reasonable speculation based on the data, explanations, and implications of what the results mean.

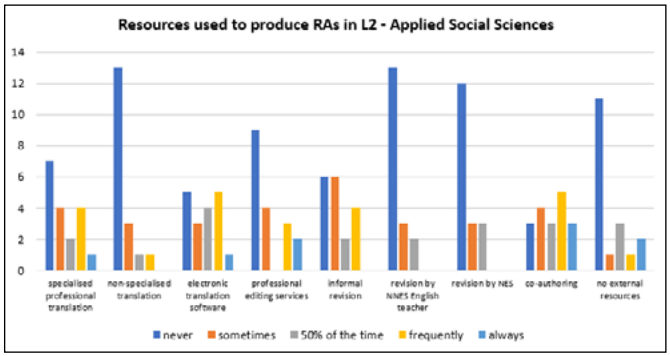
Survey Question:

Q 12: Que recursos você utiliza para produzir seus artigos em inglês?

Which resources do you make use of to produce your articles in English?

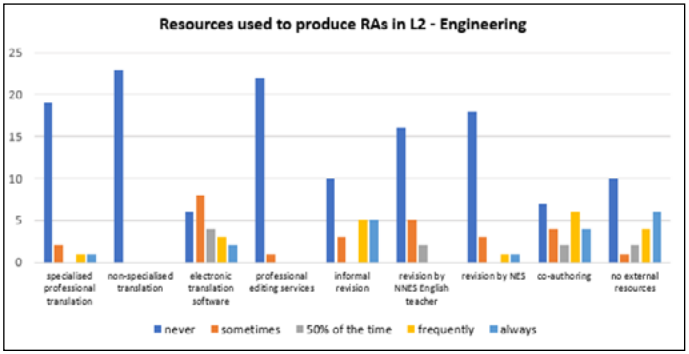
The collected data inform us that the respondents from applied social sciences use external resources more frequently than the engineers. Although most reported 'never' using several of the resources, it is clear that they employ professional services – professional translation, revision, and editing – more often than the other group.

Figure 32 — Resources used by participants when producing RAs in English – Applied Social Sciences



Source: Survey data

Figure 33 — Resources used by participants when producing RAs in English — Engineering



Source: Survey data

Among the applied social scientists, there is a sharp contrast between the number of respondents who hire professionals to deal with some of the language aspects of their articles and the majority who never use them. Specialised translating services are 'never' or 'sometimes' used by 11 out of 18 participants, while they are 'always' or 'very often' used by 5 of them. Professional revising and editing services are 'never' or 'sometimes' used by 13 participants, while they are 'frequently' or 'always' used by 5 of them. The fact that such professional services are usually expensive added to budgetary constraints, are possible reasons for the low number of respondents that hire them. An issue that remains to be addressed is why only very few researchers have access to such services, and how budget is allotted to this end. Also, it will be informative to learn whether the acceptance rate of RAs that undergo these services is higher than that of those which do not. Co-authoring is also a common practice. The majority of participants (11) have reported writing in collaboration and mutually revising their texts in half of more of their production.

In comparison, the participants from the engineering field reported rarely using professional services. Only 2 revealed they use specialised professional translation and revision by NES 'frequently' or 'always', while the majority reported 'never' using any of them.

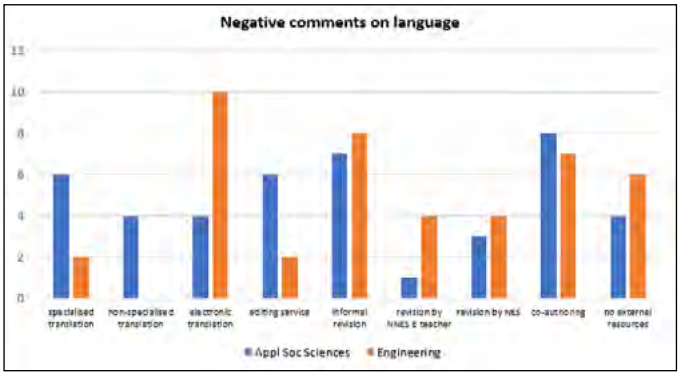
While both groups make use of electronic translation tools, informal revision, and co-authoring to produce RAs, the engineers in our survey seem to rely more on lower cost solutions than the applied social scientists.

Survey Question:

Q13: Houve indicação de que a linguagem (inglês) precisava ser melhorada quando você utilizou (os recursos listados)?
Was there any indication that the language (English) needed improvement when you used (the resources listed)?

The survey responses indicate that editing and translation solutions most frequently adopted by researchers are not always sufficient to solve the problems they might have when writing in English.

Figure 34 — Negative feedback received on language and resources used



Source: Survey data

Participants reported that negative comments on language is most frequent when electronic/ internet translation tools, co-authoring with mutual revision, and informal revision are part of the writing process of RAs. The correspondence between the negative feedback on the use of L2 and the most common solutions indicates that the quality of the texts translated and edited through those resources often fail to meet reviewers' and editors' expectations.

Even though electronic/ internet translation tools may be easy--access and low cost, they seem to require judgement from authors especially concerning the awareness of strengths and weaknesses of the tools – in order to be useful and helpful resources. Among the participants who used those translation tools, the group of engineers received the most negative feedback. Informal revision and co-authoring received similar levels of negative feedback in both groups. The effectiveness of mutual revision by co-authors depends on their language and rhetorical abilities, which might vary widely. In this survey, about half

(15 out of 31) of the respondents who use this resource reported receiving negative feedback on language. In the case of the participants in this survey, there seems to be an indication that their language proficiency is still not quite level with the publishers' requirements.

Informal revision also receives negative language feedback quite often. The quality of the revision will depend on factors such as the level of language proficiency of the writer and the reviewer, the familiarity of the latter with the topic of the article/ field of study, their knowledge of academic writing, whether they read the text for meaning or to find mistakes, and available time. In our survey, about three-fifths (15 out of 25) of the respondents reported receiving negative language feedback after having their articles revised informally.

Although professional services of translation, revision and editing are expensive and, on average, seem to deliver better results than low--cost solutions, they are still not flawless. Among the participants from the applied social sciences, about half (6 out of 11) of those who used specialised translation services reported receiving negative language feedback, as did about two-thirds (6 out of 9) of those who used professional editing services, and most of those who used general translation services (4 out of 5).

Because of the small number of participants who use these services, the proportions may not be representative of a larger population. However, these data illustrate that quality assurance is an issue when hiring such professionals.

Revision by NES and NNES is another topic for discussion. Even though publishers use *native speakers* as a reference, the claim that being an NES is neither a standard of language nor of quality (Lillis & Curry, 2015)this article analyses the language ideologies enacted in referees' and editors' comments on articles submitted for publication in English-medium 'international' journals. It considers how orientations to 'English', 'language' and 'language work' are enacted in practices of reviewer uptake and the consequences of such practices for knowledge

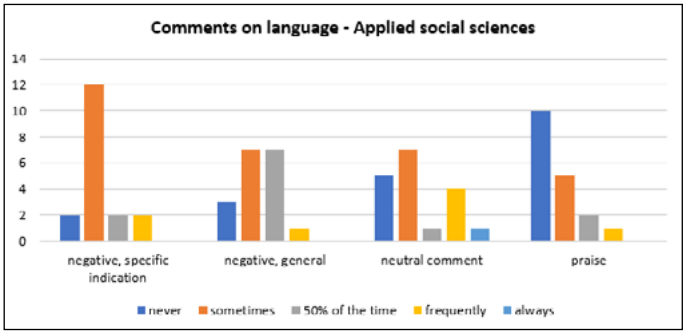
production, evaluation and circulation. In exploring evaluation practices, the article problematizes three foundational categories in applied linguistics: (1 is illustrated by our survey results. Over two-thirds (7 out of 10) of respondents reported receiving negative language feedback after having an NES revise their articles, while the proportion for revision by NNES was marginally lower, with 5 out of 12 respondents. It seems that factors other than the NES/ NNES dichotomy may be decisive in the quality of the provided revision. Among the factors, English language proficiency, level of education, familiarity with the topic/ field of study, and knowledge of academic writing norms might be considered.

Survey Question:

Q14. Que tipo de comentário você já recebeu sobre a linguagem (inglês) dos artigos escritos?
What type of comment have you received about the language (English) of the articles you have written?

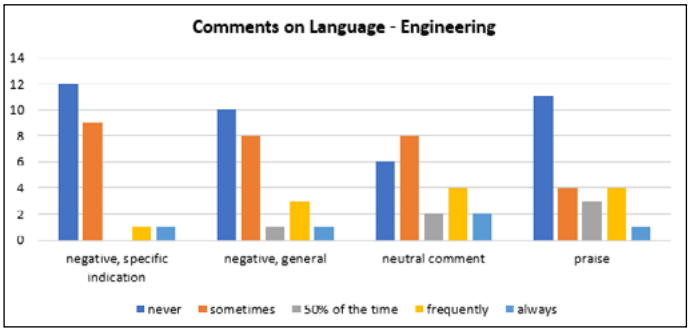
In general, feedback on language was more common among applied social scientists than engineers. Most of the former reported receiving negative feedback both with indications of specific problems to be corrected (16 out of 18) and in general (15 out of 18); while among the latter, negative feedback with or without specific indication was received by roughly half of the respondents (11 and 13 out of 23, respectively).

Figure 35 — Feedback on language received from editors/reviewers – Applied social sciences



Source: Survey data

Figure 36 — Feedback on language received from editors/reviewers — Engineering



Source: Survey data

It is possible to hypothesise that disciplinary differences — in this case, the importance attributed to language — could partly explain the results. In the applied social sciences, it seems plausible to assume that meaning may be heavily dependent on how resourceful writers are in articulating ideas and making claims, while in engineering, language might not require as much subtlety and sophistication.

Although negative feedback on language is reported to be common, positive feedback is rare, with about half (21 out of 41) of all participants reporting never having been praised for their language use. Since publishers explicitly state that articles should be written in good English, recommend that manuscripts be revised by NES, and advise authors to hire associated translation and language editing services, it may be reasonable to presume that an excellent command of English is expected, which might make the occurrence of praise a rare event.

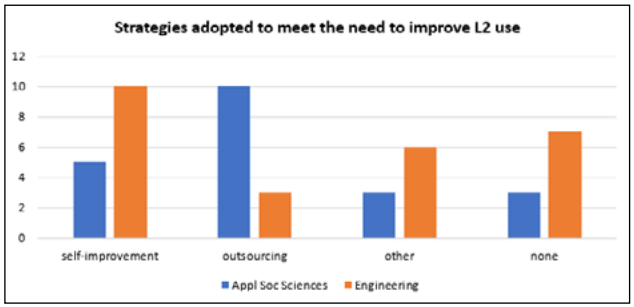
Considering the negative feedback received, even though our participants manage to have their RAs published, there is clearly a struggle with the use of L2.

Survey Question:

Q15: Que estratégia(s) você adotou com base na indicação de necessidade de melhorar o uso do inglês? Explique brevemente as estratégias adotadas.
What strategy(ies) have you adopted based on the indication that it was necessary to improve your language (English) use? Briefly explain the strategies adopted.

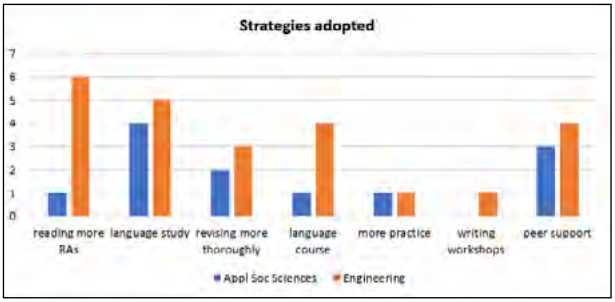
As their response to negative feedback on language, participants have mainly adopted two types of strategies (Figure 37): self-improvement (15) and outsourcing (13). The specific strategies differ considerably between the two fields, however (Figure 38).

Figure 37 — Strategies adopted by participants who received feedback indicating the need to improve language level



Source: Survey data

Figure 38 — Adopted strategies, explained by participants



Source: Survey data

In the applied social sciences, there was a tendency to outsource translation and editing services in order to address the language issue, while among engineers, self-improvement was the most popular solution.

Participants from the engineering field who sought self-improvement reported reading more RAs in English (6), studying the language on their own (5), attending English language courses (4), and revising their own work more thoroughly (3) (Figure 38). Among social scientists, the most popular self-improvement moves were language study (4) and revising (2).

Participants' perception that their ability to write RAs will benefit from general English language study and courses may not be completely accurate, however. In general, courses tend to focus on skills other than writing[24], especially because the demand is higher for immediate spoken communication, as a survey conducted by the British Council[25] confirms. Although attending an English course is likely to improve students' speaking skills and self-confidence in language use, how much it will contribute to their academic writing needs is still questionable. Nine participants also reported studying grammar and vocabulary on their own as self-improvement. Sentence-level accuracy may be promoted with this strategy, but it is unlikely to have a significant impact on their skills to articulate ideas in a written text. The other main source of instruction – reading RAs in English – has been discussed above.

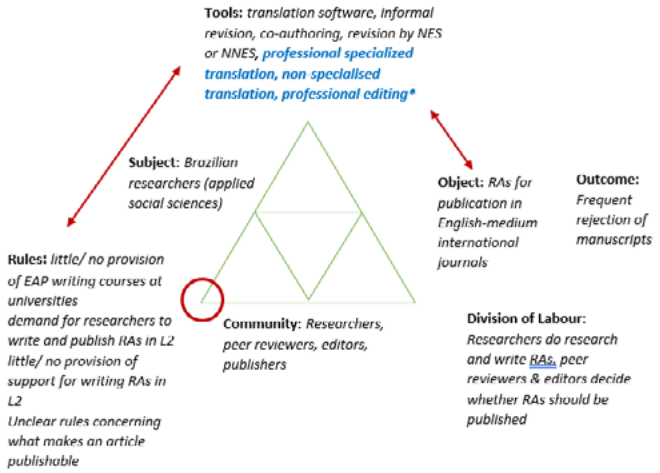
Reasons for some participants' decision to outsource editing, revision and/ or translation might be speculated. One possible explanation is that outsourcing provides an immediate solution, as opposed to self-improvement, which is a long-term process. Since the production of RAs cannot wait until authors acquire better writing skills or language proficiency, hiring professional services solves the issue quickly. Another possibility is that outsourcing exempts the authors from the

24 An internet search of the main private language courses (large associations, chains and franchises in Brazil) revealed only two language institutes which offered one-semester courses focusing on writing, neither of them for academic purposes. Both require potential students to have an advanced level of language as a prerequisite.

25 https://www.britishcouncil.org.br/sites/default/files/demandas_de_aprendizagempesquisacompleta.pdf

responsibility of displaying good command of English. Some participants may believe that studying is not worth the effort, or that the level required is too high to be achieved.

Figure 39 — Activity 7 – Writing for publication



* mostly for applied social sciences

Source: This author

In *Activity 7* illustrated above, there is a primary contradiction within the rules, as there is little or no support for researchers to rtigo the demand to produce their RAs. The rules do not provide any tools to support researchers in the writing process, leading them to either pay for professional services themselves or use free tools that are inadequate for the demands of the task. The tools are not regulated by the rules, so there are no tools to fulfil the demands determined by the rules. The secondary contradiction between the rules and the tools is made evident as a consequence. Additionally, as researchers receive negative comments on the use of language after submitting their RAs, the secondary contradiction between the current tools and the object is also made clear. The tools currently in use do not mediate the activity adequately concerning the use of language.

As researchers indicate their perceived difficulty in writing sections of the RA, it is also clear that language issue is not their only concern. They are aware that to write a good article, they need to articulate arguments rhetorically, and by indicating their difficulty in doing so, they recognise that they lack the tools to accomplish it.

In addition, the fact that it is not clear what makes an article publishable – apart from the generic recommendations displayed on publishers' websites[26] – authors/ researchers struggle to know how to write a manuscript which will be accepted. The existing tools are unhelpful to mediate an activity for which part of the rules is unstated. While submitted manuscripts are often rejected, authors have difficulty understanding the true reasons for the rejection and what they might have done to obtain a different result.

A quaternary contradiction emerges as *Activity 6* (subject-producing activity) does not produce the subject required for *Activity 7*. If *Activity 6* were successful, researchers would not struggle to write RAs, and they would not need so many additional tools to mediate their writing. Some of the current tools of *Activity 7* might become unnecessary, such as professional editing or translation services, while others, such as informal revision and translation software, might have a secondary role. Most of all, the difficulties in building their arguments might be lessened if researchers had better tools – namely consistent EAP writing instruction and L2 instruction programmes — to become competent and confident writers of academic genres in *Activity 6*.

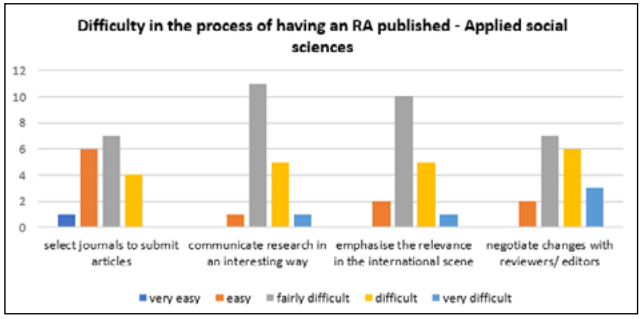
26 https://www.springernature.com/gp/authors/campaigns/writing-a-manuscript
https://us.sagepub.com/en-us/nam/how-to-get-published?utm_source=google&utm_medium=cpc&utm_campaign=A2A0610&gclid=Cj0KCQjwkruVBhCHARIsACVIiOzjnI-YHHX9_Iv69g0V_I5Oir5pnsOH6xTF6YA8fvU7e94xCNA72y2saAlUoEALw_wcB

4.3.5. Publication process

Survey Question:

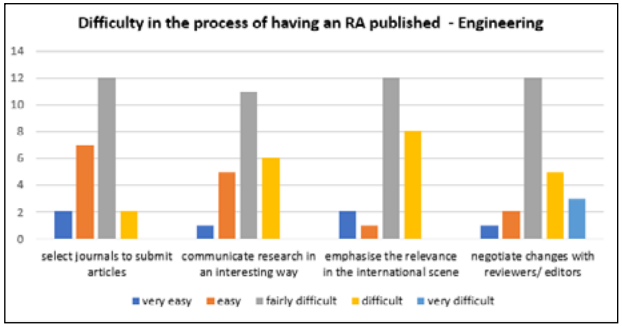
Q 16: Que grau de dificuldade você atribuiria a cada uma das etapas do processo de escrever e publicar artigos em um periódico internacional?
How difficult do you consider each of the following steps of the process of writing and publishing articles in an international journal?

Figure 40 — Degree of difficulty in the different steps of writing and having a research article published – Applied Social Sciences



Source: Survey data

Figure 41 — Degree of difficulty in the different steps of writing and having a research article published — Engineering



Source: Survey data

For all steps of the process, 'fairly difficult' was the most frequent response from both fields of study. Additionally, the very small number of "very easy" assessments seem to indicate that even though participants are quite experienced, producing an RA and succeeding in having it published is only accomplished with substantial effort from the researchers' part.

Considering that the participants in this study are experienced researchers, it might be reasonable to expect that they would know which journals would be interested in their research topics and approaches. Not all participants think it is easy to choose the most appropriate journal for publication, however. Although this was the only stage rated as 'very easy' or 'easy' by a considerable number of respondents (7 from applied social sciences and 9 from engineering), it was rated as 'fairly difficult' or 'difficult' by a larger number (11 and 13, respectively).

In the writing process of an article, the rhetorical move of communicating the research content in an interesting way seems to demand more of their skills. This was considered 'easy' or 'very easy' by only 7 of the participants (1 and 6, respectively), while about half of them (11 and 11) reported it as 'fairly difficult'. A significant number said it was 'difficult' or 'very difficult' (6 and 6). Another rhetorical move, that of emphasising the relevance of the research in the international scene, was considered even more difficult, as only 2 participants from engineering rated this as 'very easy' and 3 (2 from applied social sciences and 1 from engineering) as 'easy', while 14 (6 and 8, respectively) rated it as 'difficult' or 'very difficult'. Whether these researchers' work is perceived to be of local importance, therefore being less relevant globally, or the difficulty lies in highlighting its value properly, may also be explored in the interviews.

After an article is submitted, reviewers and editors often request that authors make changes. The extent and nature of these changes may vary (Lillis & Curry, 2010), as well as how authors negotiate them.

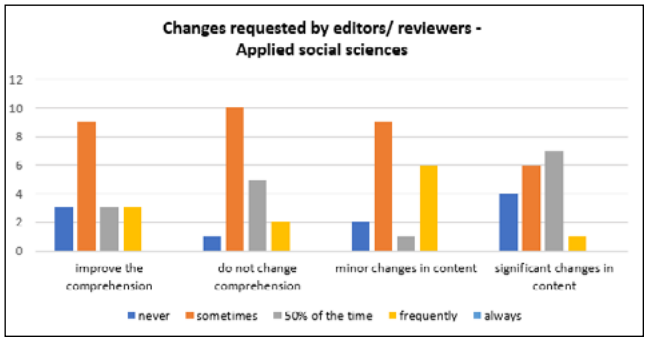
In the process of having an article published, the negotiation of changes was considered the most difficult step. Seventeen (17) of the

participants (9 from applied social sciences and 8 from engineering) rated it as 'difficult' or 'very difficult', while only 5 (2 and 3, respectively) rated it as 'easy' or 'very easy'. Participants' responses to requested changes with which they do not agree are shown further below, in Question 19.

Survey Question:

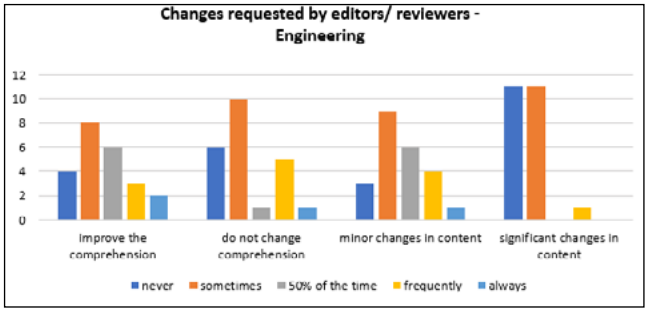
Q 17: Com que frequência você recebe os seguintes tipos de alterações propostas pelo(s) editor(es)/ avaliador(es)?
How often do you receive requests for the following types of changes from editor(s)/ reviewer(s)?

Figure 42 — Types of changes requested – Applied Social Sciences



Source: Survey data

Figure 43 — Types of changes requested — Engineering



Source: Survey data

In both fields of study, all four types of changes were reported to have been requested regularly. In the applied social sciences, the most frequent type was the minor content change, reported by 6 respondents, followed by significant change in content, reported as happening 50% of the time by 7 respondents. Important changes in content may distort the original meaning of the RA (Lillis & Curry,2010), and should be regarded cautiously by authors.

The most frequent requests reported by engineers were of changes that improve comprehension and minor content changes (11 each), received from 50% to 100% of the time. While comprehension in RAs written by engineers seems to need improvement in editors' and reviewers' opinions, the same occurs less often with applied social scientists.

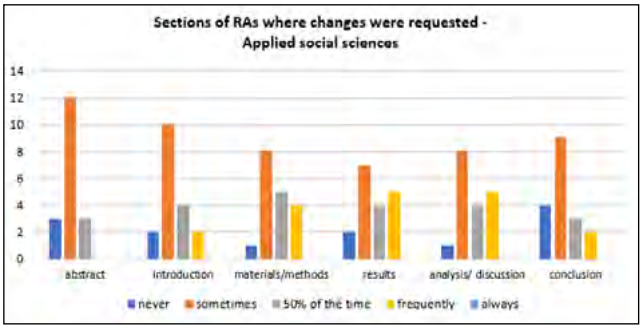
Requests for minor content changes appear to be common in both fields, but there is a clear difference in the frequency significant changes are asked. While applied social scientists are confronted with deciding whether to comply or not quite often, this is an occasional event in the engineering field. Half of the engineers reported never having received such a request, and the other half reported only 'sometimes' being asked to make such alterations.

Changes which do not influence content comprehension in researchers' opinion, were quite frequent with 7 respondents from each field being asked 'always', 'very often' or '50% of the time'. Ten respondents from each field reported 'sometimes' receiving requests for this type of change.

Survey Question

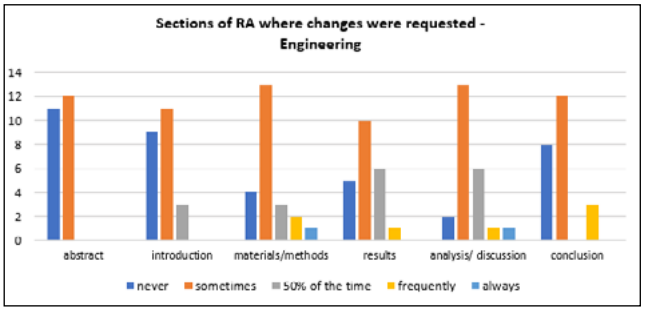
Q 18: Em que seções do seu artigo as alterações foram propostas?
In which section of your article(s) have changes been requested?

Figure 44 — Sections of the RAs where changes were requested – Applied Social Sciences



Source: Survey data

Figure 45 — Sections of the RA where changes were requested — Engineering



Source: Survey data

Overall, the responses to this survey question appear to be related to the reported difficulties in writing the sections of an RA (Question 11, figures 30 and 31). The sections considered the most difficult coincide with those in which participants receive requests for changes most often. Whether the perception of difficulties is a backwash effect of the fact that authors are frequently asked to make changes, or the difficulties and insecurities in expressing and organising their arguments well result in requests for changes, cannot be determined from the available data.

Consistently with the data from Question 11 (figures 30 and 31), the analysis/ discussion section of an article is where participants have received requests for changes most often. Seventeen (17) respondents (9 from applied social sciences and 8 from engineering) reported receiving such requests 'always', 'very often' or '50% of the time', while 21 (8 and 13, respectively) reported receiving them 'sometimes', and only 3 (1 and 2, respectively) reported 'never' receiving them. The second most frequent requests for changes were in the results section, with 16 (9 and 7, respectively) respondents receiving requests 'always', 'very often' or '50% of the time'.

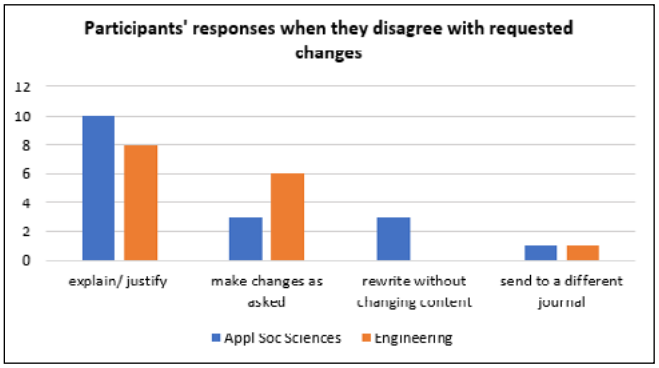
In the applied social sciences, changes were also asked 50% of the time in the materials and methods (9) section, followed by the introduction (6), conclusion (5), and abstract (3). In the engineering field, the requests for changes were less frequent, with materials and methods (6) followed by conclusion (3) and introduction (3). In both fields, the abstract, perceived as the easiest section to write, was where changes were requested the least, with 14 (11 and 3, respectively) respondents reporting 'never' receiving them. However, there was a large number – 24 overall, 12 in each field – reporting that they were 'sometimes' asked to modify the text, a sign that, although authors feel quite confident about producing abstracts, they still need to write it carefully and revise it thoroughly.

Survey Question:

Q 19: Que atitude você toma quando discorda das alterações propostas pelo(s) editor(es)/ avaliador(es)? Por quê?
How do you respond when you disagree with the changes requested by editor(s)/ reviewers? Why?

As expected, there was a lower response rate when participants were asked to elaborate an answer to an open question. Unfortunately, about one-third of the engineers (8 out of 23) left the answer to this question blank, a fact which affects the interpretation in the comparison between the two fields. The answers obtained were divided into four groups, as shown in figure 46.

Figure 46 — Participants' responses when they disagree with the requested changes



Source: Survey data

Most authors (21) stated that they tried to keep their point of view in their articles when they did not agree with the changes requested. Two main strategies were adopted in this attempt: the most common response (18) was to try to persuade editors/ reviewers of the authors' point of view through argumentation in a separate document, such as a letter or an e-mail. The other response (3, from applied social sciences) was to rewrite the parts in which requests for changes had been made in order to enhance comprehension, still keeping the original ideas. Although the effectiveness of these strategies was not reported, the fact that many experienced authors take this course of action might hint at a relative success. A smaller number (2) preferred to submit the article to a different journal – with unknown results — so that they did not have to make the changes.

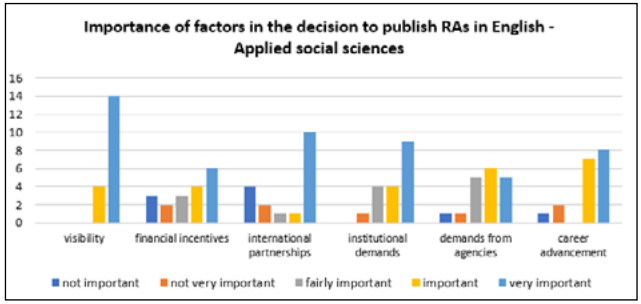
The resp—nses obtained indicate that the participants from the applied social sciences tended to resist the changes in the content of their articles more. In addition to explaining their reasons to keep the content, some of them rewrite their text to improve the comprehension of their ideas to persuade editors/ reviewers to accept their arguments.

A significant number of authors (9 out of 32) reported making the requested changes without arguing their case to avoid a conflict which could endanger their prospects of having their RA published. The number of engineers willing to accept making such changes was larger than in the applied social sciences. Whether disciplinary practices might be at play is a topic for further inquiry. These researchers explained that they comply with the requested changes in order to have their RAs published, as they believe that not doing so will probably result in the rejection of their manuscript. They perceive that there is an uneven power relation between authors and editors/ peer reviewers, as the latter have a strong influence on the authors' careers, which depends heavily on whether their RAs are accepted or not for publication in well-ranked journals.

Survey Question:

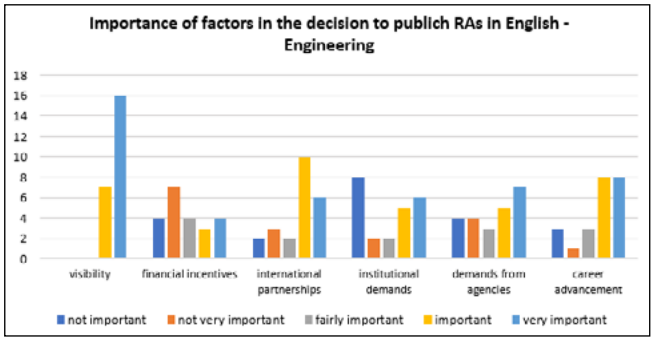
Q 20: Qual a importância de cada um dos fatores abaixo na decisão de produzir e publicar trabalhos em inglês?
How important is each of the factors below in your decision to write and publish papers in English?

Figure 47 — The importance of various factors in the decision to publish RAs in English – Applied Social Sciences



Source: Survey data

Figure 48 — The importance of various factors in the decision to publish RAs in English – Engineering



Source: Survey data

Levels of importance attributed to different factors varied considerably among participants. Although the need to be visible in today's academic scene has been criticised (Zuin & Bianchetti, 2015), the visibility brought by publishing one's work in an international journal was the factor most participants rated highly, with 30 considering it 'very important', 11 rating it as 'important', and no lower assessment being given.

There was less congruence about factors such as incentives and institutional demands (Lillis & Curry, 2010; Lee & Lee, 2013), especially when the fields are compared. Institutions seem to approach the issue of publication in English following different lines when encouraging their researchers to engage in the activity.

In the applied social sciences, the weight and presence of the teaching/research institutions seem greater than in engineering, through demands for publication, financial incentives, career prospects, and international partnerships. The responses indicate that these institutions demand that researchers engage in the activity of publication in English and that the pressure is felt quite sharply. The perception that career advancement is closely tied to publications is also a strong indication that institutional policies probably condition one to the other (Lillis & Curry,

2010; Perez-Llantada, 2012). Even though about a third (6 out of 18) of the respondents did not consider international partnerships as important, there is a clear contrast with a larger group (11 out of 18) who are engaged in international partnerships and consider the publication activity as an essential part of it. Financial incentives are offered for publication, although participants report different views on it: while receiving monetary rewards for successful publication seems to encourage some (10) of them, others (5) do not consider it as a key factor in deciding to write and publish RAs in English. Demands from agencies – mainly CAPES and CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) – seem to be secondary in the respondents' concerns, although the institutional pressure that they feel reflects those demands.

In the engineering field, career advancement was again a significant factor in the decision to write RAs in English, considered 'very important' and 'important' by 8 respondents each. However, unlike reported by the applied social sciences group, institutions do not seem to emphasise the importance of publication through financial incentives or demand regular engagement in the activity. The second most important factor indicated by engineers was international partnerships, regarded as 'important'" by 10 participants and 'very important' by 6. As reported by Curry & Lillis (2014), international cooperation, especially with researchers from English-speaking countries, facilitates publication in English, both by widening the scope of the research and mitigating the language issue in the process of writing the RA. This group of respondents demonstrate less concern for the demands from agencies than the applied social sciences. While in the other field, 'not important' and 'not very important' were exceptions to the general assessment, the engineers are more evenly distributed in their opinion, with a slightly higher response in the 'important' and 'very important' rates. Institutional demands were considered unimportant by 8 respondents, the highest number in both groups, and "important' or 'very important' by 11 (5 from applied social sciences and 6 from engineering), which seems to be paradoxical.

Itrtigt seem that the applied social sciences researchers feel the pressure for publication from the institutions more severely than the engineers. This result may be partly explained by their employment situation. Some of the applied social scientists who participated in this research are professors at a private university, where their contracts demand a certain regularity of research publication in well-ranked journals. Failure to rtigo the terms might have consequences, such as a warning, a demotion, or even the termination of the contract. While most of these researchers may be confident in their ability to keep publishing, the possibility of having submissions rejected always exists, and the institutional pressure is relentless.

On the other hand, many of the engineers are publicly employed. While they consider that publication is an important part of their careers, they can afford not to be particularly troubled by institutional pressure because their jobs are not at risk. In addition, other reasons for publishing may be more important to them, such as international partnerships.

4.3.6. Attitudes related to having to write and publish in English

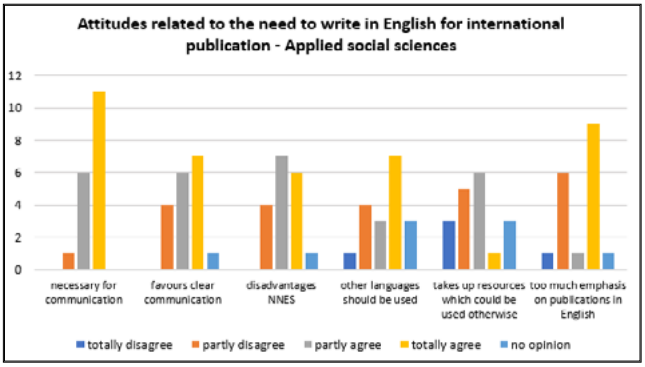
Survey Question:

Q 21: Qual sua atitude com relação à necessidade de escrever em inglês para a publicação internacional?
What is your attitude regarding the need to write in English for international publication?

Different positions prompted from the literature (Canagarajah, 2002; Ferguson *et al*., 2011; La Madeleine, 2007; Lee & Lee, 2013; Lillis & Curry, 2010, 2015; Pérez-Llantada, 2012; Pérez-Llantada *et al*., 2011; Salager-Meyer, 2008) were offered for participants to express their opinion towards the need to write in English for international

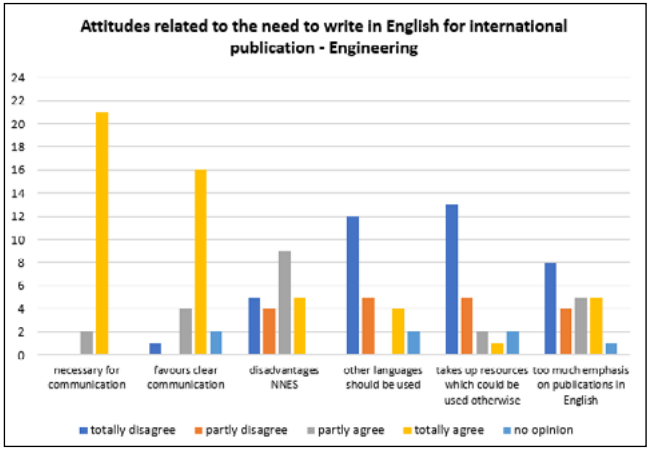
publication. Overall, they tended to respond in favour of using English as the language of scientific communication. This might express the simple acceptance of the current practices or the belief that the hegemony of English is beneficial to science.

Figure 49 — Participants' attitudes regarding the need to use English for international publication – Applied Social Sciences



Source: Survey data

Figure 50 — Participants' attitudes regarding the need to use English for international publication – Engineering



Source: Survey data

While most participants (32 overall — 11 from applied social sciences, and 21 from engineering) agree that English is necessary for researchers from different countries to communicate (Perez-Llantada, 2012), opinions are divided as to whether a different language might be used for international publication. In the engineering field, half of the responses (12 out of 23) were completely against this idea, about one-fifth disagreed partly (5 out of 23), and 4 were fully in its favour. By contrast, in the applied social sciences, there was strong agreement by about one-third (7 out of 18) and partial agreement by 3 respondents. Only one respondent disagreed totally, and 4 disagreed partly. It is possible that researchers in the applied social sciences already use other foreign languages professionally, or there may be a resistance to using English. One of the obstacles to this possibility may be that as learning one additional language in order to write RAs already puts a considerable strain on authors, it could be far worse if they had to learn others as well.

The view that the use of English favours clear and objective communication was popular, with 18 participants who totally agree (7 from applied social sciences and 11 from engineering) and 10 (4 and 6, respectively) who somewhat agree. The fact that Portuguese and English have different rhetorical traditions (Bennet, 2014; J. Santos & Silva, 2016) may partly explain the perception that texts in Portuguese seem less objective to respondents. How much participants are able to shift from the way texts are written in Portuguese to the way they are expected to be written in English is another topic for exploration.

Participants also showed awareness regarding the competitive disadvantage (Salager-Meyer, 2008)I first refer to the center-periphery dichotomy in terms of scientific output, placing emphasis upon the relation that exists between science and technology development, on the one hand, and social and economic development, on the other. I then analyze the main problems faced by most peripheral journals and the role nation states play in scientific activities in developing countries. I then address issues such as the world power structures, the social organization of developing countries, growing North/South disparities

and the question of collaborative research. The discursive (i.e., language related that NNESs have to face when writing in English, with 12 total agreements (7 and 5, respectively) and 15 partial agreements (6 and 9, respectively). The fact that NNESs need to learn a foreign language, associated to the fact that English proficiency is a key factor in the publication rate of articles (Man *et al*., 2004; Vasconcelos *et al*., 2008, 2009), can explain some of this disadvantage. Interestingly, among the engineers, one-fifth (5) of the participants think that using L2 does not constitute a disadvantage for NNESs, while none of the applied social scientists shared the same opinion. Three of these engineers had evaluated their ability to write RAs in L2 with top grades, which is consistent with their views on the topic.

In the engineering field, most participants (13 out of 23) disagree that resources used to produce RAs in L2 could be used differently (La Madeleine, 2007), while in the applied social sciences, opinions were mostly divided between 'partly agree' (6) and 'partly disagree' (5). This discrepancy may be connected to the fact that the group from applied social sciences reported using more professional translation and editing services than the engineers, who tended to resort to low-cost solutions. However, it is likely that they might not have taken into consideration the time and investment in learning the foreign language prior to the activity of producing RAs.

The suggestion that institutions overemphasise international publication also had a variety of responses. In the applied social sciences, most (9) agreed, which is consistent with the institutional demands and pressure indicated in question 20 above. Six respondents, however, did not perceive that there is too much emphasis on international publication, despite the existing demands and pressures. In the engineering group, responses were even more varied, ranging from complete disagreement (8) to complete agreement (5), with significant partial disagreement (4) and partial agreement (5) as well. This result is also consistent with the heterogeneous perceptions of the demands and pressures indicated in question 20.

Overall, these survey results indicate that researchers are aware that the activity of publication of RAs in English is far from simple and straightforward. Each researcher has their own motives to engage in the activity, and possibly have different goals. While institutional policies and pressure complicate the original activity of science communication, it also seems that most of the participants in the survey still prioritise the communication of their research results over other factors involved. The divergent opinions illustrate that many of them are not completely satisfied with the current form of the activity. However, whether the existing contradictions will prompt a transformation into a new form will depend on the agency these researchers have within the community to change the rules.

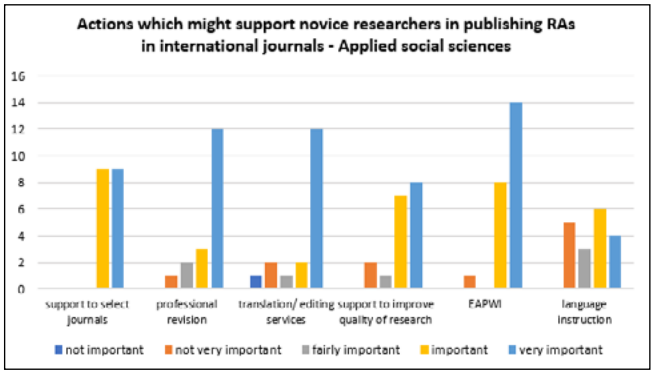
4.3.7. Desirable institutional support

Survey Question:

Q 22: Na sua opinião, que medidas ajudariam um pesquisador iniciante a conseguir começar a publicar seu trabalho internacionalmente?
In your opinion, what actions would support a novice researcher in beginning to have their work published internationally?

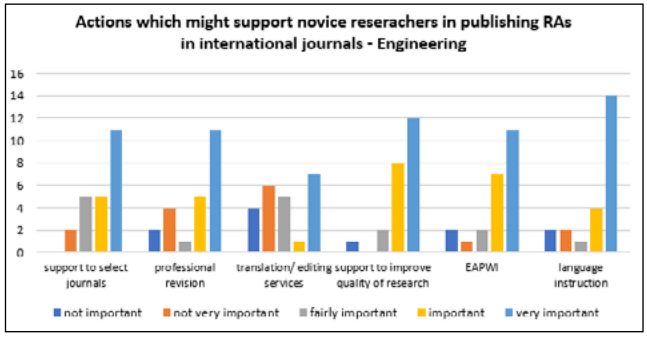
The suggested actions were prompted from reported reasons for article rejection by journals (Albuquerque, 2009; Falaster *et al*., 2016; Man *et al*., 2004; Wyness *et al*., 2009), such as mismatches between RAs and the scope of the journal, faulty research methodology, low English proficiency, and problems in the textual organisation of the article. All suggested actions were considered important to support novice researchers succeed in having their work published in international journals, even though the degrees of importance attributed to different actions varied among the fields.

Figure 51 — Support for novice writers to publish RAs in English – Applied Social Sciences



Source: Survey data

Figure 52 — Support for novice writers to publish RAs in English — Engineering



Source: Survey data

In the applied social sciences, the action considered critical was EAP writing instruction, with 14 'very important' and 8 'important' ratings. These respondents point to the necessity of EAP writing instruction in order to acquire the required skills to successfully write and have an RA published. While they suggest that writing skills are crucial, they also indicate that professional translation, editing and revision should be

supported by the institution. By contrast, engineers tend to emphasise language instruction as the most important factor for novices' success. The second most needed action was support to improve the quality of research. While applied social scientists seem to be concerned with the actual production of RAs, engineers seem to be more focused on the self-improvement of the novice, who is expected to grow into a researcher producing high-quality work and communicating it through RAs written in high-level English. The next most important action, EAP writing instruction, and the lower importance given to professional translation and editing services seem aligned with this logic.

The material conditions for producing research in these fields are rather different: engineers usually need expensive equipment and laboratories, while applied social scientists often work with people's behaviour (e.g. how people occupy a building; how people react to products; how they use money,). The fields also differ considerably in the approach to research results and writing of RAs. In applied social sciences, the interpretation of results and how this is expressed in the text is of absolute importance, whereas in engineering, there is usually an appreciation for objectivity and concrete reality. Participants' answers reflect these tendencies when assessing how important each of these actions might be for novices.

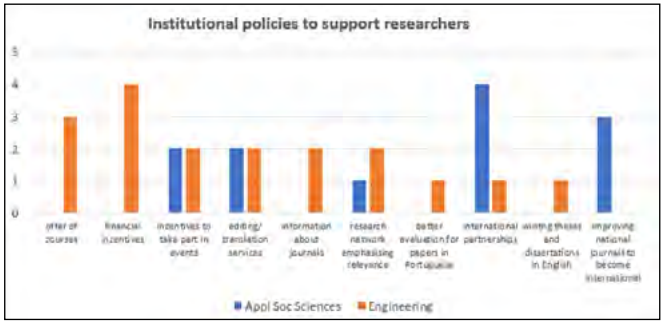
In both fields, respondents recognise that selecting an appropriate journal to submit one's RA is not an easy task, especially for novices. The large number of journals, each one with a different emphasis on topics, impose a challenge even for experienced researchers. The importance of the journal – often attributed through indexation and impact factor – makes the number of submissions rise exponentially, further reducing the chances of unknown authors being published (Cunha *et al*., 2014). The survey responses suggest that, in order to have RAs accepted by journals, knowledge of these complexities is perceived as crucial, but also as not readily available to novices, the survey responses suggest.

Survey Question:

Q 23: Na sua opinião, que outras políticas institucionais poderiam ser adotadas para dar suporte aos pesquisadores para que eles possam publicar mais em periódicos internacionais?
In your opinion, what other institutional policies might be adopted to support researchers in order to enable them to publish more in international journals?

Once more, the response level to this open question was lower than for multiple-choice ones. Twelve (12) participants abstained – 8 from engineering and 4 from applied social sciences — reducing our sample to two-thirds of the original number. Suggested actions varied, with a small number of coincidences.

Figure 53 — Institutional policies to support researchers' publication activity



Source: Survey data

The engineering field suggested more financial incentives, more language and writing courses, more information about journals to facilitate submissions, better evaluation for RAs in L1, and writing theses and dissertations in L2.

The applied social sciences suggested mainly increasing the number of international partnerships and improving the quality of Brazilian journals to transform them into indexed international journals.

The coincidences were in the incentives to take part in international events such as conferences, support to hire professional editing and translation services, and building networks of collaborating researchers to emphasise the relevance of their work. Although participants have published articles in international journals, their responses imply that they still face difficulties in this activity. These perceived difficulties should also be further explored.

Graduate students need to become research article writers, which is especially true for doctorate programme students. Their graduation is often conditioned to the publication of at least one RA, preferably in English and in a well-ranked journal. This is a requirement in most fields, including applied social sciences and engineering[27] [28] [29]. Many graduate programmes have also made it possible to write dissertations and theses in the format of a compilation of published research articles[30], accentuating the need for graduate students to know how to write articles in English.

As represented in *Activity 8* (Figure 54) according to the answers to the survey, participants believe that novices could be much more competent and confident writers of RAs if the mediation tools – EAP writing and L2 language instruction – were in place as institutional policies. We can speculate that if novices became good writers, they might not need other tools such as professional translation or editing services.

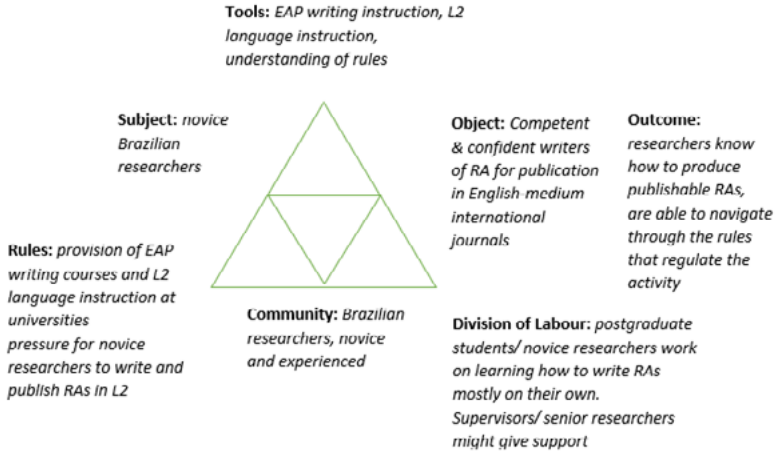
27 https://ic.unicamp.br/wp-content/uploads/2019/11/Requisitos-de-Publica%C3%A7%C3%A3o-Doutorado.pdf

28 https://www.poli.usp.br/pos-graduacao/normas-gerais/982-requisitos-para-doutorado.html

29 https://eaesp.fgv.br/sites/eaesp.fgv.br/files/u68/normas_cmcd_apg_2018.pdf

30 http://leginf.usp.br/?resolucao=resolucao-copgr-no-7613-de-21-de-fevereiro-de-2019
http://leginf.usp.br/?resolucao=resolucao-copgr-no-7868-de-25-de-novembro-de-2019

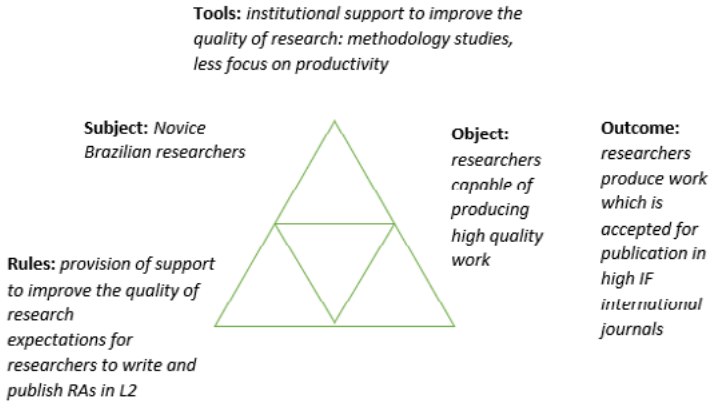
Figure 54 — Activity 8 – Subject-producing activity: writers of RAs in English (from Q 22)



Source: This author

Another subject-producing activity — *Activity 9* (Figure 55) — is indicated as important by most participants. Although there is little additional information from the survey data, the quality of the research produced by novices is a concern. The literature indicates that more work on methodology (Falaster *et al*, 2016), in addition to a change of focus from productivity to more depth in research (Alcadipani, 2017) could be some of the tools to support this improvement. In order to produce the ideal novice researchers, these activities would ideally occur simultaneously, possibly during their postgraduate programme.

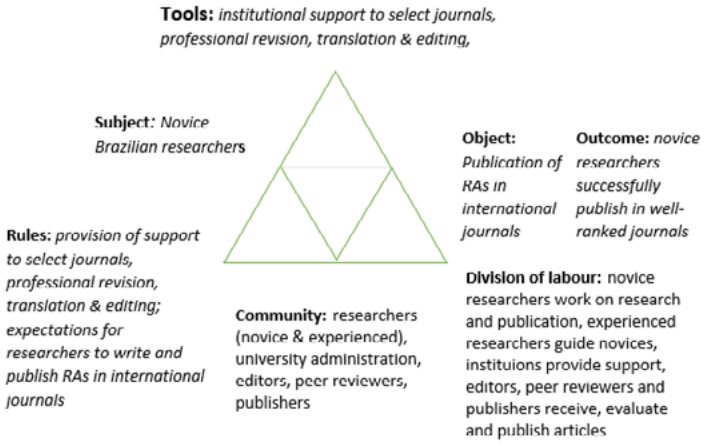
Figure 55 — Activity 9 – Subject-producing activity: researchers (from Q 22)



Source: This author

Once *Activities 8* and *9* (Figures 54, 55) were successful, novice researchers would be prepared to produce high-quality RAs on their research work, as illustrated in *Activity 10* (Figure 56).

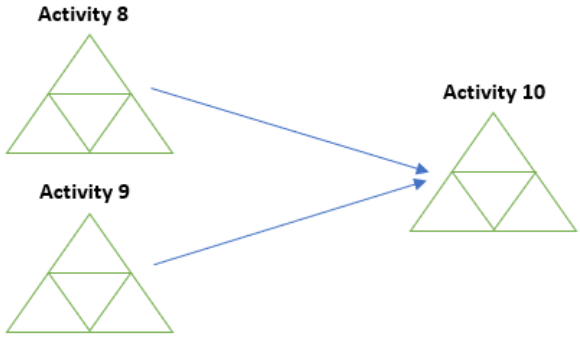
Figure 56 — Activity 10 – Novices writing for publication in English (Q 22)



Source: This author

Additional support to select the best journals to submit their manuscript and professional editing and translation services might also enhance the chances of publication in competitive journals. However, these would not have a central role, since the most important work would have been done by the researcher. The activity system connecting *Activities 8, 9,* and *10* is illustrated below.

Figure 57 — Activity System 2 – Novices writing for publication



Source: This author

These may seem to be activities free of contradictions, as they are an idealised construct. However, we must be aware that the practice of human activity inevitably produces contradictions (Engeström 2015). While the participants seem to understand these as the most important actions to support novices, in practice, other needs may arise, and new conflicts are likely to surface.

4.4. INTERVIEW DATA ANALYSIS

4.4.1. General Information

4.4.1.1. Codebook

The codebook was developed by grouping the interviewees' contributions into broad *Themes*. Within each theme, the different topics approached were named *Codes*. The grouping in codes is the result of this researcher's interpretation of the content of the interviews.

Table 3 — Codebook

Theme	Code
Instruction	Learning EAP
	Learning L2
	Becoming a supervisor
Difficulties	L2 knowledge
	EAP knowledge
	Lack of supervisor training
	Gaps in basic education
	Financial
	Collaboration
	Plagiarism
Institutions	Community
	Demands
	Support
	Structural problems
Other	Research content
	Perceived prejudice
	Politics

Source: This researcher

The main themes *Instruction, Difficulties* and *Institutions* are developed in this analysis. As there were fewer contributions for the *Other* theme and the content discussed by the interviewees were less connected with the focus of this research, this theme was not included.

4.4.1.2. Interviewees' roles:

The five applied social scientists (AS) and three engineers I interviewed perform various roles in their academic lives. All interviewees are researchers who have published articles in English in international journals in their fields, and ages range between 35 and 60. Six of them are full-time professors (E1, E2, AS1, AS3, AS4, AS5), three of whom (AS1, AS3, E1) also perform administrative roles in their respective institutions, such as undergraduate programme coordinator or head of department. The other three act as peer reviewers for national and international journals in their fields; one of them also serves as an editor for a national journal and the other for a national and an international journal. In addition to their teaching, administrative and research responsibilities, six of them also supervise postgraduate students, guiding their research work and their written production in Portuguese as well as in English. AS2 is a researcher, part-time professor and a literacy broker, while E3 is a full-time researcher. Four interviewees work for public universities, and four for private universities.

Figure 58 — Interviewees' main roles

Source: This researcher

The semi-structured interviews lasted from 1hour 30 minutes to 3 hours, and were audio or video recorded. The transcripts were thematically coded (Adu, 2019; Saldana, 2013) in four groups, according to the topics discussed by participants: difficulties, instruction, institutions and other. Themes are mostly interconnected, and some may overlap, with the underlying complexity of the activity making itself visibly present.

4.4.2. Applied social sciences:

All five interviewees are researchers whose international publication activity has a central role in their careers. From their interviews, it is clear that they have gained confidence as researchers, authors and supervisors through their experiences. They represent a part of the community that believes that the internationalisation of research and higher education is inevitable and necessary. However, they also view

this movement critically, as they are fully aware that it is far from unproblematic. These researchers have contributed to this study by sharing their history, struggles, beliefs, and attitudes as participants of a very complex and intricate community.

AS1, AS2 and AS3 work at a private institution which demands its full-time faculty to produce research and participate in international publication as a part of their work contracts. AS1 leads and organises research in the institution. He also researches and publishes internationally, which is essential to understand the activity. AS2 is a part-time professor, researcher, and an instructor of academic literacy in L1 in the institution. She also publishes and participates in international conferences. AS3 is a professor, researcher, and part of the coordination team in the institution. She is a very active scholar, writing books, academic articles for journals and newspapers and magazines aimed at the general public. She has recently co-authored an article which was published in one of the highest-ranking international journals in the field, earning recognition from the community.

AS4 and AS5 work at federal universities in different states of Brazil. AS4 is a full-time professor and researcher, an editor of a Qualis A2 Brazilian journal, and a peer reviewer for several national and international journals. AS5 is a full-time professor and researcher, and a peer reviewer for several national and a few international journals. Both publish articles in national and international journals and are involved in international activities, including conferences, collaborative research projects, and exchanging postgraduate students.

4.4.2.1. Difficulties and Instruction

One of the main themes detected in the analysis of the interviews were the difficulties found by participants in the activity of research writing for publication. In the charts below, the cases represent the number of participants who talked about each category, and the incidences are

the number of times each category was mentioned during the interviews. The number of words is the word count for everything that all interviewees said in each category.

Table 4a — Theme: Instruction (Applied Social Sciences)

Category	Cases A. S. Sciences (total=5)	Incidences A. S. Sciences	Number of words	% of words within the theme
A. Learning EAP	5	17	2861	53.22
B. Learning L2	2	7	1073	19.96
C. Becoming a supervisor	2	4	355	6.60

Source: This author

Table 4b — Theme: difficulties (Applied Social Sciences)

Category	Cases Applied Social Sciences (total=5)	Incidences A. S. Sciences	Number of words	% of words within the theme
A. EAP knowledge	3	7	530	18.84
B. L2 knowledge	5	15	1163	41.35
C. Lack of supervisor training	1	1	74	2.63
D. Gap in basic education	3	5	630	22.40
E. Financial	2	3	229	8.14

Source: This author

As interviewees mentioned difficulties, it was clear that the theme of instruction – or lack thereof – was closely connected, especially in the categories concerning L2, EAP and supervisor training.

In the following sections, the most relevant categories within the themes of difficulties and instruction are analysed.

A) EAP writing instruction and difficulties related to EAP knowledge

A.1.) EAP writing instruction:

Among applied social scientists (AS), EAP writing instruction appears as a very significant issue, being mentioned by all interviewees and with a high incidence. Most of them inform us that they learned EAP as graduate/ postgraduate students, through various means: workshops, using published articles as models, receiving tips from more experienced researchers, trial and error and courses abroad.

In these participants' views, the process of learning EAP was far from easy and comfortable, as the inadequacy of their writing in English for submission to journals was clear to them, especially in the beginning. Participants AS3 and AS4 particularly report that learning to write academic genres in English required great effort because instruction and feedback were not available.

While their experiences vary, none of the AS participants had EAP instruction through courses which included practice and feedback as students at their universities in Brazil. AS1 and AS2 reportedly learned independently by trial and error. AS3 worked as a response to her supervisor's challenge to produce academic texts in English, even though she did not receive much guidance. While both AS4 and AS5 studied in English-speaking countries for their post-doctoral/ doctoral programmes respectively, the provision of support was different, as were the results. AS4 did not benefit from EAP writing instruction in the English-speaking environment, and still does not feel very confident about her writing, whereas AS5 did, and clearly recognises the value of instruction.

"And I had a hard time, I ended up learning through reading, watching other people write, observing how other people wrote, from the "no"s that I received [from journals], we learned. (…) You only learn how to write well by writing, if you don't start writing, you won't learn how to write well, and it is a challenge. So, you [need] something that makes you write constantly, test yourself, have someone who corrects and gives feedback on your writing, today we don't have [that]." (AS3 excerpt 1)[31]

"E eu apanhei bastante, acabei aprendendo muitas vezes na leitura, vendo muitas vezes outras pessoas escrevendo, observando como outras pessoas escreviam, nos "nãos" que eu tomei a gente foi aprendendo. (...) Você só aprende a escrever bem escrevendo, se você não começar a escrever você não vai aprender a escrever bem, e é um desafio. Então assim, algo que te induza a ficar continuamente escrevendo, se testando, tendo alguém que corrija a sua escrita e dê uma devolutiva, hoje a gente não tem" (AS3 – excerto 1)

"An Australian professor (...) I learned a lot from her, she revised the texts (written) by the foreigners. Sometimes, my tutoring session with her was longer than with my supervisor because she worked on the details. She used to say something that was memorable, she used to say that the text had to be "crisp", like potato chips, it had to be like that, otherwise it would be mushy, stale, without that… Anyway, that made an impression on me, so sometimes I read the text and say: "this is good: articulation, links, construction". (AS5 — excerpt 2)

"Uma professora australiana (...) eu aprendi muito com ela, ela que fazia a revisão dos textos dos estrangeiros. Às vezes a minha tutoria com ela era maior do que com a minha orientadora, porque ela ia no detalhe. Ela dizia uma coisa que marcou muito para mim, ela dizia que o texto tem que ser "crisp", é como uma batata frita, ele tem que estar lá, porque senão ele fica mole, mofado e não tem aquela... Enfim isso me marcou muito, então às vezes eu olho o texto e digo "isso aqui está bem: articulação, ligação, construção". (AS5 — excerto 2)

Participants AS2, AS3 and AS4 explicitly indicate that the provision of EAP writing instruction is crucial, especially as the current pedagogical interventions — consisting mostly of workshops and very short courses – do not really fulfil the researchers' needs. Longer writing programmes with more practice and feedback are considered an important for researchers to truly learn how to write academic genres in English.

Although none of the participants uses the term EAP, their awareness that writing academic texts in English is not simply a question of English language proficiency or translation from L1 is clear. Participants refer to the particular features of academic texts as "peculiar style", "organisation", "articulation", "structuring", "the way of explaining" and "conveying meaning clearly".

31 Original interviews in Portuguese, excerpts translated to English by the author of the research.

"I took a workshop [once]. In that case, I didn't think it was very useful, I think it was very short, about two or three hours with some guidelines, and we exchanged and commented. We barely had the time to comment one another's, you know. We didn't have time to do any hands-on work which could be evaluated by the instructor, who was a very good teacher, but she wasn't a scientific writing instructor, it was someone who publishes a lot abroad, I think in Europe, but I didn't feel it was in this case …" (AS2 — excerpt 3)

"Eu fiz um workshop. Nesse caso eu achei que não adiantou muito, acho que foi muito curto, umas duas três horas com algumas orientações, e a gente trocou, e comentamos. Mal deu tempo de um comentar o do outro sabe? Não deu tempo de fazer de fato um trabalho mão-na-massa ali que fosse avaliado por quem estava fazendo a instrução, que era uma professora super boa, mas não era uma professora de redação científica, é uma pessoa que publica muito de fora, acho que europeia, mas não senti que teve nesse caso... " (AS2 — excerto 3)

"(...) but there is a great need to have such a discipline. At [institution] we still don't have this discipline. There is an internal discussion on how to put it together, if there would be an instructor, whether this instructor exists and how to find this professional in the market, but it is a deficiency that we have in Brazil. When I say Brazil, I'm also including partner universities, I've had the opportunity to take disciplines at [institution A], at [institution B] and at [institution C], which are partner universities. So, when talking to colleagues from [institutions] I realised that we had the same difficulty, at all three institutions we knew the universities were making an effort to bring this knowledge in through lectures, but there isn't, for example, a discipline, it is something you develop in practice, you have to do hands-on work." (AS3- excerpt 4)

"*(...) mas há uma necessidade muito grande de uma disciplina para isso. Na [instituição] a gente ainda não tem essa disciplina. Há uma discussão interna de como fazer essa disciplina, se teria um professor, se existe esse professor, como é que a gente busca esse profissional no mercado, mas é uma deficiência que a gente tem no Brasil. Brasil quando eu falo também são as universidades parceiras né, e eu tive a oportunidade de fazer disciplinas na [instituição], no [instituição B] e na [instituição C], que são universidades parceiras. Então eu percebia conversando com os meus colegas de [instituições] que a dificuldade era a mesma, e nas três instituições a gente percebia que existiam um esforço por parte das instituições para trazer esse conhecimento através de palestras, através de seminários, mas não existe, por exemplo, uma disciplina, e é algo que você desenvolve na prática, você tem que colocar a mão na massa." (AS3 — excerto 4)*

A.2.) EAP knowledge

Participants recognise that Brazilian researchers' weaker ability to write according to international conventions in English in academic contexts is a common occurrence. AS1 comments that it is a problem of novices as well as experienced researchers at his institution, and AS4 reports that her colleagues have difficulty publishing their articles in international journals because of their lack of ability to communicate their research results effectively in English, even though the research is important and

relevant. She also comments that Brazilians, including herself, often write in long sentences that lack objectivity. She shows her awareness that in English, communication is expected to be straightforward.

The features which are common in writing in Portuguese– lack of objectivity, long sentences – are reported in the literature (Santos & Silva, 2016) as transferring to writing in English by Portuguese speakers. However, the conventions of academic writing in English require that texts be written objectively and concisely, differently from what is often produced by Portuguese language speakers.

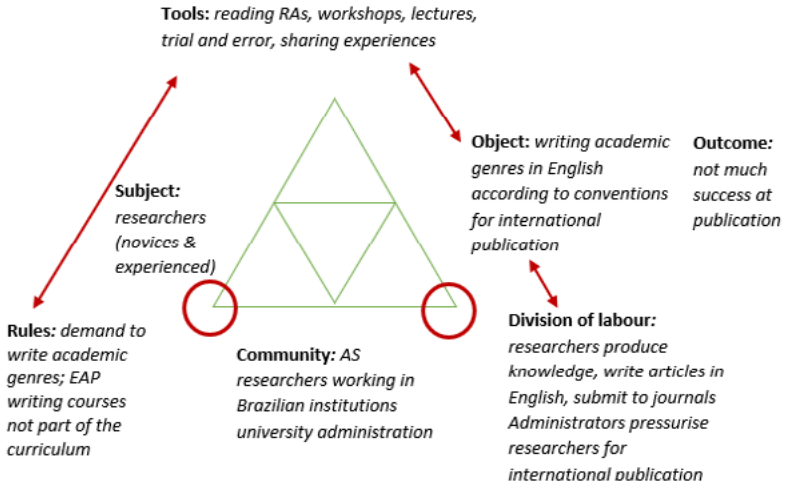
> "Look, going back a little, I think it is interesting to comment that, I think there is a difficulty with the language, but it is not with English. There are difficulties among doctorate and master's students, and among professors with the text, with the logics of the text, with writing, with the organisation of ideas." (AS1 — excerpt 5)
>
> *"Olha, eu só, voltando um pouquinho, acho que é interessante comentar, eu acho que há dificuldade com a linguagem, mas não é com o inglês. Existem dificuldades entre doutorandos, mestrandos e entre professores com o texto, com a lógica do texto, com a escrita, com o encadeamento de ideias." (AS1 — excerto 5)*

> "But most of the times Brazilians have problems. They are not very basic problems, but sometimes the problem is making their intention clearer. It is not exactly mistakes in English, I think it is a little of our Latin character." (AS5 — excerpt 6)
>
> *"Mas na maioria das vezes os brasileiros têm problemas. Não são problemas tão básicos, mas são problemas às vezes de deixar mais claro o que ele pretende. Não é bem o erro do inglês, eu digo que é um pouco da nossa latinidade." (AS5 — excerto 6)*

Activity 6a (Figure 59) illustrates the secondary contradictions indicated by the interviewees, between the tools and the object, the rules and the tools, and the object and division of labour. Writing academic genres in English for publication is difficult, and the available tools are not suitable to mediate the activity. Since the rules do not provide adequate support for EAP writing instruction, EAP knowledge is difficult to acquire, which often interferes with the success in international publication of researchers' work. Since the division of labour overburdens researchers, it does not favour the achievement of the goal of writing for publication. A primary contradiction can also be seen within the rules,

as there is a demand for publication which is not matched by corresponding support. Another primary contradiction can be observed within the division of labour, as there is an obvious imbalance between the work each group is supposed to carry out.

Figure 59 — Activity 6a: Current form of the activity: writing academic genres in English for publication



Source: This author

All participants are committed to writing for publication in English, motivated by various factors, including the recognition of their worth as researchers by their disciplinary community and institutions, the evaluation of the graduate programme at their universities, their career evaluations, their competitiveness, and their personal motivation. Their publication activity is greatly valued in their environment, and even though there is little support, these researchers are determined to overcome the obstacles and achieve their goals.

Even though the institutional demand to produce and publish academic texts in English – especially RAs in highly-ranked journals — is not verbally expressed in the interviews, it is explicit in the career

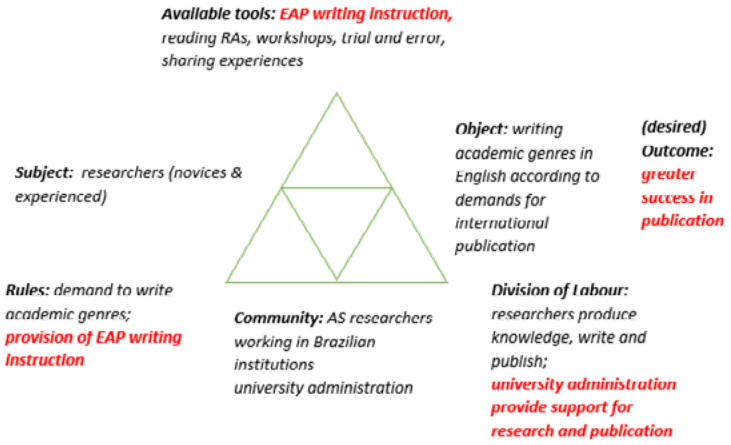
evaluation criteria at universities[32], as well as in the graduate programme evaluation criteria by CAPES (2017, 2021).

Within the rules, illustrated in *Activity 6b* (Figure 60), there is a primary contradiction between the demand to publish in English and the lack of provision of instruction: institutions and government agencies seem to take it for granted that researchers will produce their work in English and have it published without support. However, as AS1 and AS4 indicate, difficulty writing academic texts in English is not a problem exclusive to novices, as some authors claim (Hyland, 2016, 2019; Habibie, 2019), but experienced researchers also still struggle with it.

A different form of this activity is envisioned by participants, in which EAP writing instruction is institutionally structured and offered regularly. In their view, this action would facilitate the activity, making the production of academic genres in English for publication a more easily achievable goal. Undoubtedly, additional support such as professional language and literacy brokerage, and assistance to select the most adequate journals to submit manuscripts would certainly facilitate publication further, but our interviewees consider EAP writing instruction to be the most critical issue at this point.

32 https://www.cpa.usp.br/wp-content/uploads/sites/794/2022/06/1-Formulario_Avaliacao_Unidade_21-12_2021-1-2.pdf

Figure 60 — Activity 6b: New form of the activity: writing academic genres in English for publication



Source: This researcher

Participants AS2 and AS3 recognise that "hands-on" (*mão na massa)* work and "feedback" (*devolutiva)*[33] are essential in learning how to write, and surely there is plenty to be gained from sharing experiences, reading published articles and learning in practice. However, the provision of EAP writing instruction is perceived as a major need by novice and experienced researchers alike. The current sporadic provision of workshops and lectures is seen as inadequate to support novices' learning of EAP writing by AS2, AS3 and AS4. As a consequence of this lack of solid instruction in the beginning of their careers, experienced researchers display varying degrees of knowledge and confidence.

33 Expression from the original portuguese interview translated by this author. All other translations of the same origin in this section were translated by the author and will be followed by the original term in portuguese, in parethesis.

B) L2 instruction and Difficulties related to L2 knowledge

B.1.) Learning L2

The experiences in learning L2 reported by two AS participants (Table 4a) are quite different in nature. Even though both mention that a good command of L2 is important in their academic lives, it is clear that AS3 feels more confident using and learning L2 than AS4. For the latter scholar, the process of learning L2 has been quite difficult, and she still feels insecure even after spending more than a year in an English-speaking country for her post-doctoral studies.

Even though AS3 does not mention much of the process of learning L2 as a student, she admits that her command was not as good as she would have liked when she wrote her doctoral dissertation. She has the awareness that she was able to use only "shallow" (*raso)* English, with limited lexical range. She reports having improved her L2 proficiency as a side process to her dissertation writing, by reading and trying new words. Her main concern in learning L2 seems to be acquiring vocabulary incrementally, followed by understanding grammar. She believes that learning and practice happen concomitantly, rather than the former preceding the latter.

> "Actually, your vocabulary increases a lot. Then what happens is that the reading of the papers which are often part of your theoretical reference, which are going to build your work, makes you discover words which you don't use in your daily life. In our daily lives, our day-to-day English is extremely shallow. It is not academic English; it is extremely shallow. So, what happened is that when I was putting together my dissertation, as I had to read a lot of things in English and write the dissertation in English, I realised that I repeated words a lot. When you start to repeat [words], you look up synonyms in a dictionary, so it improves your English. It is not a question of "look, I'm putting everything on hold to study English, so that I can put my dissertation together". It is something that happens along, not naturally, but together, one thing completes the other. So, for you to write you read more, then you start writing, you realise that your English is shallow, you are repeating many words, you use a dictionary. It is not only the paper that brings you new words, you look up synonyms in a dictionary, which improves it gradually. So, it is something that happens together. You don't stop everything to study English so that you can then write in English, but you need to use a dictionary when you are writing, use Google and try to understand the grammar a little better in order to writer better." (AS3 — excerpt 7)

Na verdade, assim, o seu vocabulário aumenta bastante. Então o que acontece é que a própria leitura dos papers que vão fazer parte muitas vezes do teu referencial teórico, que vão compor o teu trabalho, faz com que você descubra palavras que você não usa no seu cotidiano. O nosso cotidiano, o nosso inglês de cotidiano ele acaba sendo um inglês extremamente raso. Ele não é um inglês acadêmico, ele é um inglês extremamente raso. Então o que aconteceu é que na construção da minha tese, como eu precisei ler muita coisa em inglês e fazer a tese em inglês, eu percebia que eu repetia muito termo. Então quando você começa a repetir, você vai no dicionário buscar um sinônimo, então isso acaba sim melhorando o teu inglês. Não é: "olha, vou parar tudo para estudar inglês, para construir a minha tese". Acaba sendo algo que vai acontecendo também; não naturalmente, mas de forma conjunta, uma coisa vai complementando outra. Então assim, para você escrever, você vai lendo mais, aí você começa a escrever, você percebe que você está com o inglês raso, você está repetindo muitos termos, você vai atrás de um dicionário. Não é só o paper que te traz palavras novas, você vai atrás de um dicionário para buscar sinônimos, isso vai melhorando cada vez mais. Então assim, é algo que vem em conjunto, você não para tudo para estudar inglês, para então poder escrever em inglês, mas você precisa no momento que você está escrevendo recorrer a um dicionário, ao Google e tentar entender um pouquinho melhor a própria gramática para poder escrever melhor. (AS3 — excerto 7)

We can interpret AS4's recurring remarks on her difficulties with L2 as a sign that it has been a major issue in her career. Despite her status as a peer reviewer for international journals, publishing articles in English, and being the reference at her university for international events and exchange, she still does not feel very confident in her command of L2. She reports that her earlier efforts to learn L2 through language courses were unsuccessful because there was little contact with the "real" (*de verdade)* language. In her opinion, she hasn't had enough experience in an English-speaking environment in order to "flip the switch" , i.e. to communicate in L2 without having to mentally translate from L1. Even spending 15 months at a British university does not seem to have been enough to build her confidence. She adds that pressure for performance triggers her anxiety and interferes further with her ability to communicate in L2.

"I've had some, because besides studying English later, as I said before, that brings great challenges because I always have to translate in my head and I can't make it automatic, I hope one day I get there, let's see if I can manage (laughs) I have hopes (laughs) when stayed in [British university], I had almost - I stayed a short time, one year and three months – I realised that if I'd stayed one more year there I would flip the switch, because besides studying, a lot of reading, there was the immersion."(AS4 — excerpt 8)

"Eu já tive mesmo sabe porque além de tá estudando uma formação do inglês como eu te disse né tardiamente, então isso me gera desafios grandes assim porque essa coisa tenho sempre que ficar traduzindo na minha cabeça eu não consigo automatizar ainda né, espero um dia fazer isso vamos ver se eu vou conseguir (risos) eu tenho esperança sabe (risos) quando eu fiquei em [universidade britânica], eu tava quase assim — é que eu fiquei pouco, fiquei um ano e três meses sabe e... eu percebi que se eu ficasse mais um ano ali sabe eu ia mudar a chave mesmo sabe,é... porque além de tá estudando, muito de tá lendo né tinha coisa da imersão.".(AS4 — excerto 8)

B.2) L2 knowledge

English knowledge is another recurrent theme in the interviews with Applied Social Scientists. It is seen as a common weakness in Brazilian scholars, constituting an additional obstacle for publication and international exchange.

AS1 assesses that – like himself — most researchers in his work environment probably have a reasonable command of L2 for communication, but not good enough to write a research article for an international journal. He admits that, to publish articles, he and his colleagues routinely have them edited by professionals. In AS3's view, the language barrier puts Brazilians at a disadvantage, and constitutes the first hurdle to publication.

Other participants report that their difficulties with L2 influence not only written production, but communication in general, in addition to presentations in conferences and discussions in international contexts. AS2 and AS4 are self-conscious of the perceived inadequacy of their L2 proficiency level, especially when they have to interact with native speakers of English.

In AS4's opinion, the level of English knowledge required of candidates to be admitted in graduate programmes is too low to cope with the demands of research work and writing for publication. Additionally, she argues that there should be L2 instruction offered at the university, and encouragement from university administration – with corresponding support — for researchers to study and acquire the language.

According to AS5, the fact that many Brazilian and other Latin American academics have a poor command of English makes it difficult to fully take advantage of international academic exchange programmes. In the programme he mentioned, reading and speaking in English were required in order to participate, but not all participants satisfied the requirements. The guidelines established English as the medium of communication, but many of the participants had low proficiency level and resorted to Spanish, which most of the others managed to understand. The switch resulted in the unfair exclusion of those who did not speak or understand Spanish, since it was not the language supposed to be used for the interaction. AS5 observes that Brazilians who had not had the opportunity to study abroad could not communicate well in English, which also points at the existence of shortcomings in our L2 instruction through the school system.

As most international programmes establish English as the medium of communication, a good command of the language works in favour of mutual comprehension and productive exchange, whereas a breakdown in communication detracts from the benefit of the experience.

"There are difficulties, barriers for you to succeed in publishing, for you to get it out there. (…) you have a lot of barriers. One of them is often the language, it is not easy to produce work in English and be understood in a language that is not your own native one. So, first you need to overcome the language barrier." (AS3 — excerpt 9)

"Existe dificuldade, barreiras para você conseguir publicar, para você conseguir muitas vezes colocar isso para fora. (...) você tem muitas barreiras. Uma das barreiras muitas vezes é a língua, não é fácil você fazer um trabalho em inglês e você conseguir ser entendido em uma língua que não é a tua língua natal. Então assim, você precisa primeiro vencer a barreira da língua." (AS3 — excerto 9)

"I think there are several levels, you know, I think the first level is to equip [people] with the language, I think it needs to be stimulated, demanded. The graduate programmes demand [some] proficiency, but it is so minimal, so basic that it had to be something deeper, I think students should start with a higher level. " (AS4 — excerpt 10)

"Eu acho que são vários níveis, sabe, eu acho que desde o primeiro nível que é instrumentalizar mesmo na língua, acho que é estimular, cobrar né. Os programas de pós-graduação, eles exigem uma proficiência, mas é uma proficiência tão mínima, tão básica assim eu acho que tinha que ser uma coisa mais...profundo assim, eu acho que o aluno tinha que entrar já com um nível." (AS4 – excerto 10)

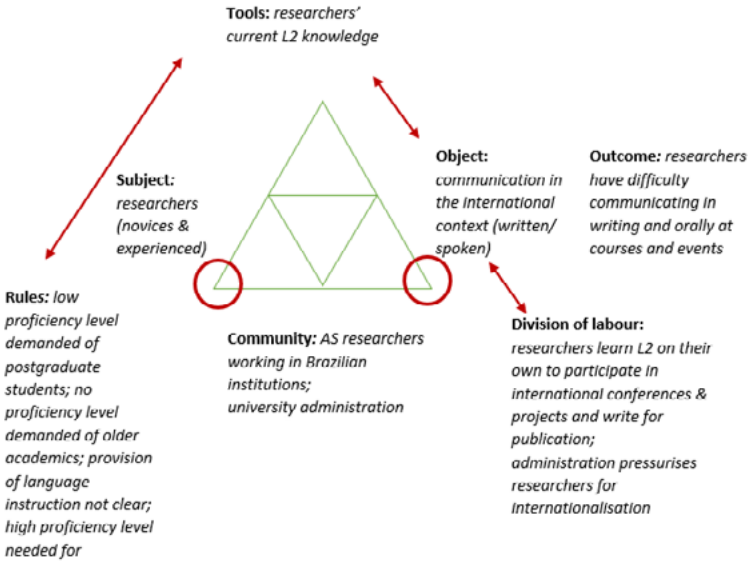
> Everything begins with speaking. I had an experience two years ago, I took part in the programme [name of the programme], which was fantastic. There were three European universities (…) From Brazil there were us from [university A] and [university B] and everything was in English; all the material. When we had meetings, we resorted to Spanish, because there were Spanish, Italian and Dutch people. I sympathised with the Dutch because they didn't understand Spanish. Everyone understood Spanish somehow, and there was great difficulty for Brazilians, especially, Uruguayans and some Colombians to speak English. It was very difficult. Ecuador especially, Venezuela[ns] and Ecuador[ians] had good English. Those from Brazil who hadn't studied abroad had very poor English compared to those who had studied abroad. So, when we talk about internationalisation, I don't think it is only a Brazilian problem, it is a Latin American problem. (AS5 — excerpt 11)
>
> *Tudo começa com falar. Eu tive uma experiência há dois anos, eu participei do programa [nome do programa], que foi fantástico. Eram três universidade europeias (...) Do Brasil éramos nós da [universidade A] e da [universidade B] e tudo em inglês, todo o material em inglês. Quando chegava às reuniões, virava tudo em espanhol porque era os espanhóis, italianos e holandeses. Eu ficava com pena dos holandeses porque eles voavam em espanhol. Todo mundo entendia de alguma maneira o espanhol e uma dificuldade muito grande para os brasileiros, principalmente brasileiro, uruguaio e também algumas pessoas da Colombia em falar em inglês. Era muito difícil. Equador principalmente, Venezuela, Equador tinha um inglês bom. Do Brasil mesmo, quem não tinha estudado fora tinha um inglês muito ruim comparado com quem tinha estudado fora, então quando a gente fala na internacionalização acho que não é só um problema do Brasil, é um problema também da América Latina. (AS5 – excerto 11)*

The knowledge of L2 is fundamental for researchers to be able to communicate in international contexts, take part in conferences, courses, and other events, and for publish their academic work. Participants recognise that the foreign language is a barrier, but are willing to overcome it, even though they acknowledge the fact that it takes a lot of effort. On the other hand — although she does not mention the issue — raising the bar of L2 requirement to match the demands for publication may unfairly prevent potentially good future researchers from entering the postgraduate programme.

At AS4's university, older and more experienced scholars do not have much knowledge of L2 – probably because at the beginning of their careers three or four decades ago, the academic world was less globalised and the requirements for academic work depended less on the knowledge of English. Brazilian universities at that time did not have high demands for international publication, which also meant the need for English language proficiency – especially for written production — was not so evident.

The main contradictions which can be observed in this activity (Activity 7a, Figure 61) are primary and are within the rules. Even though the level of L2 proficiency demanded for international interaction and publication is known to be high (Lillis & Curry, 2010), graduate programmes require a low level of L2 for admission. As a result, it is uncertain whether post graduate students will be able to participate in the activity as they advance in their research work. In practice, AS4's example shows us that the current English language proficiency requirements for admission are clearly insufficient. Moreover, as the requirements have changed, older professors of whom L2 proficiency was not previously demanded – many of whom do not have much knowledge of L2 — are more recently being pressurised to participate in the internationalisation of higher education by producing RAs in English and interacting in conferences, events and exchange programmes (Canagarajah, 2002). This change of rules has not been accompanied by the corresponding support, however, either in the form of language instruction or translation services.

Figure 61 — Activity 7a: Current form of activity: communication in English in the international context



Source: This researcher

Another primary contradiction can be observed in the division of labour. The researcher is burdened with producing not only the results but also the tools for the activity. It is their responsibility to learn an additional language independently, work on their research, find international partners, develop projects, participate in international conferences, and produce articles and have them published. The administration's role seems to be only to pressure researchers and keep a record of the results, without offering material support to increase researchers' chances of succeeding.

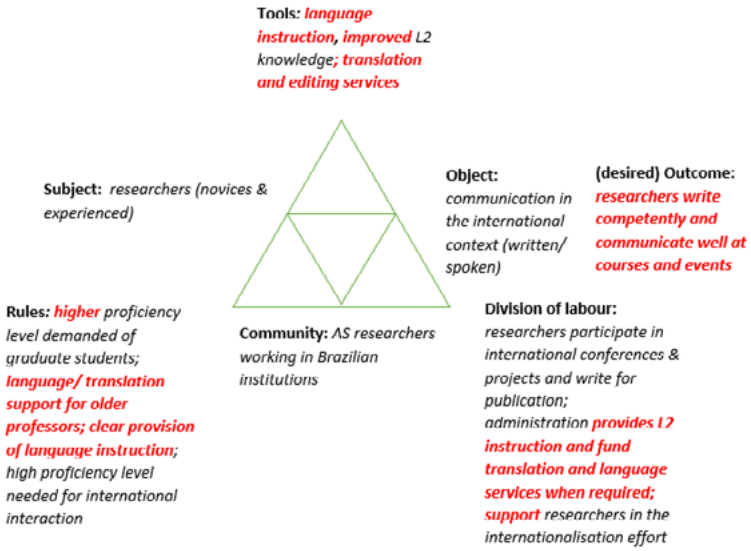
A secondary contradiction is configured between the rules and the tools. The mediation tool for this activity – researchers' current L2 knowledge – is not consistently supported by the existing rules, as the provision of L2 courses is not clearly established, and the requirement for admission to graduate/postgraduate programmes does not match the level of requirement for participation in the activity. As the rules also establish that professors' and students' publications are fundamental in the evaluation of graduate programmes by CAPES, the contradiction generated by the lack of provision of tools is further emphasised. In order to perform well, researchers need to have a good command of L2, which currently depends on their own effort and resources.

Another secondary contradiction can be observed between the tools and the object, as the existing tools are not adequate to mediate the activity. The uneven command of L2 does not guarantee that subjects will be able to communicate in international contexts, presentations, discussions or submitted manuscripts.

Moreover, as a consequence of the imbalance in the division of labour, another secondary contradiction is observed, as the division of labour does not favour the achievement of the desired results. There is far too much for the researcher to do, while the university administration does little to contribute, especially in terms of providing support.

Activity 7b (Figure 62) illustrates a possible new form of the activity, in which the main contradictions of the current form would be mitigated. The rules would require a higher level of L2 proficiency from graduate students, as well as provide language support for faculty who lack it and L2 instruction in higher education. The tools would therefore be more adequate for the activity, and researchers – novice and experienced – would be able to communicate confidently in international contexts such as conferences and cooperative research projects, as well as write research papers for international publication.

Figure 62 — Activity 7b: New form of the activity: communication in English in the international context



Source: This researcher

C) Becoming a supervisor and Difficulties related to lack of supervisor training

AS5 described in detail how he became a supervisor. Having acquired two master's and a PhD degree in different countries,

he recognises that he learned most from the British professors who supervised his PhD studies. He values the supervision he received, and by adopting a similar style supervising his own students, endeavours to do his best for them.

Participant AS5 illustrates what seems to be the current practice: when they become faculty, novice supervisors draw on their own experiences as a reference to supervise students. Assuming that most supervisors work this way, helpful guidance received as a graduate/ postgraduate student can be a positive influence on a novice supervisor's work. However, as the types of experiences differ and support for supervisor training is not recognised as a need, the guidance they can offer in turn may also vary widely.

AS5 shows his concern that there should be a better way of monitoring the quality of the work produced by graduate students, which also reflects the work of supervisors. He suggests that the quality of theses and dissertations varies greatly, partly because supervisors seldom have references for supervision other than their own experiences, and partly because there is scarcely any assessment of those documents outside the university circles. In his opinion, setting parameters for the quality of graduate/ postgraduate research output through external evaluation would also help define a baseline for supervisors' work.

AS4's view is similar to AS5's: in order to guide students, supervisors have to rely on their own experiences. At her university, she reports that since most older professors only studied in Brazil, they only know how to navigate and supervise in the Brazilian academia. She observes that the universities are currently in a transition period, in which academics with different experiences are working in a changing environment. She thinks that younger professors, who have studied abroad and are already used to publishing in English in international journals are better equipped to supervise graduate students to participate in the activity. Older professors might not have enough knowledge of L2 or the necessary experience to guide students to write for international publication,

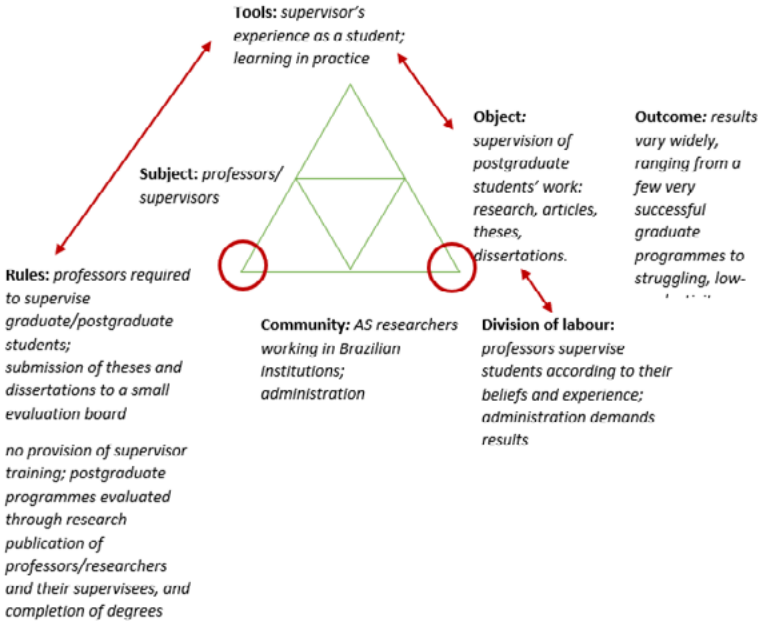
although they are capable of producing and guiding students to do good research, in her opinion.

> I took a teaching course to become a teacher, I only took the course after a long time [teaching]. As a supervisor, in my case I learned from my supervisors. I learned a lot from them, especially the English [professors], in addition to building the research (…),the way I was guided very important. (AS5 – excerpt 12)
>
> *Eu fiz uma vez um curso de docência para ser professor primeiro, só fiz um curso, depois de muito tempo. Agora o orientador, no meu caso eu aprendi muito com os meus orientadores. Eu aprendi muito com eles, principalmente os ingleses, tanto a questão da construção da pesquisa (...) muito importante, como eu fui orientado (AS5 – excerto 12)*

> I think there are these two movements, I see an older group adapting to these new demands, with a lot of difficulty, because, at least at my university, the majority[of supervisors] didn't have the experience of a post-doctorate or PhD abroad; they were educated basically in Brazil, and then it is more difficult because they don't know the language, they don't have any experience, and then, how do they sit down with a student and give them guidance? (AS4 – excerpt 13)
>
> *Eu acho que tem esses dois movimentos assim eu vejo uma turma mais antiga se adaptando a essas novas exigências e com bastante dificuldade tá até porque a maioria é, pelo menos na minha universidade, não teve essa experiência de fazer um pós doc fora ou doutorado, teve uma formação basicamente aqui no Brasil, daí a dificuldade maior é porque é zero a língua né, não tem experiência nenhuma, e aí como que senta com aluno para orientar? (AS4 – excerpt 13)*

In *Activity 8a* (Figure 63), a primary contradiction can be observed in the rules, as they establish that supervisors are expected to perform their role, but a training scheme to support them is not in place. There seems to be an assumption that their experience receiving guidance as supervisees would suffice. In fact, novice supervisors do not usually have other experience to rely on, and while positive experiences – such as AS5's – can be highly beneficial, not all graduate students are guided by excellent supervisors. In this scenario, diverse types of experiences may be used as reference and reproduced. Our interviewees inform us that, since supervisors' guidance can vary widely in approach, quality and level of detail, experience alone should not be relied upon as supervisor training.

Figure 63 — Activity 8a: Current form of the activity: supervision of novices



Source: This researcher

Further primary contradictions can be seen within the rules, as there are more demands unmatched with corresponding support. A part of the evaluation of graduate programmes takes into consideration supervisees' academic production. Since supervisors' guidance can greatly influence students' production, this evaluation also assesses the faculty's ability to boost graduate students' output. Consequently, there is pressure on the supervisors to make sure their supervisees produce research and publish articles. However, if supervisors are unprepared to instruct students how to navigate in the activity, their productivity may not reach the level required to achieve a good evaluation.

Another primary contradiction can be observed within the division of labour. Professors supervise students according to their own beliefs and backgrounds and are expected to produce results to satisfy the

evaluation parameters set by universities and CAPES. University administration does little to contribute in terms of facilitating supervisors' work, generating another imbalance and unfair amount of pressure on professors.

Secondary contradictions arise as a consequence of lack of provision of support. The existing tools do not match the demands set by the rules, and their adequacy for mediating the activity is not ensured. The irregular outcomes of the current form of the activity indicate that the assumption that supervisors' previous experience is enough as a tool must be challenged.

In addition, the imbalance in the division of labour makes the object less viable, since novice supervisors, who are likely to have had little experience, are required to successfully guide students through research and writing of theses, dissertations and articles for international publication. AS4 indicates that the issue does not concern only novice supervisors. Older professors may have vast experience in the national context, but they do not know how the international community works. There is a contradiction in the fact that students whose supervisors cannot provide much guidance are demanded to participate in international academic activity.

Activity 8b (Figure 64) represents a possible new form of the activity, in which the current contradictions are mitigated by the provision of support within the division of labour, rules and better tools to mediate the activity of supervision of novices. The ability to supervise novices in their research is not taken for granted in institutions worldwide[34], and various countries such as the United Kingdom, Australia and Sweden provide training for research/doctoral supervision in order to ensure the success of their programmes (Kiley, 2011; James & Baldwin, 1999). AS5, who had the opportunity to be supervised by British professors in his doctoral programme, recognises that their work has influenced his own style of guidance positively. Brazilian faculty and their postgraduate

34 https://www.ucl.ac.uk/teaching-learning/professional-development/research-supervision--ucl/research-supervision-training
https://www.gs.tum.de/en/gs/supervisors/good-supervision/supervisor-training/
https://staff.ki.se/doctoral-supervisor-training

students would certainly benefit if such training were implemented in our higher education institutions. In addition, as Martinez and Graf (2016) claim, training of supervisors as literacy brokers are very likely to enhance graduate students' writing and publication activities.

Figure 64 — Activity 8b: New form of the activity: supervision of novices

Source: This researcher

D) Difficulties associated to gaps in basic education

One of the topics within the theme of difficulties in carrying out research work and publication was that students are often admitted to universities without having been prepared to study hard, think critically, analyse information, connect concepts logically and convey their ideas

in writing. From their experiences as professors and supervisors, some of the AS participants express their apprehension as many students who are willing to engage in research work are ill-equipped to do so.

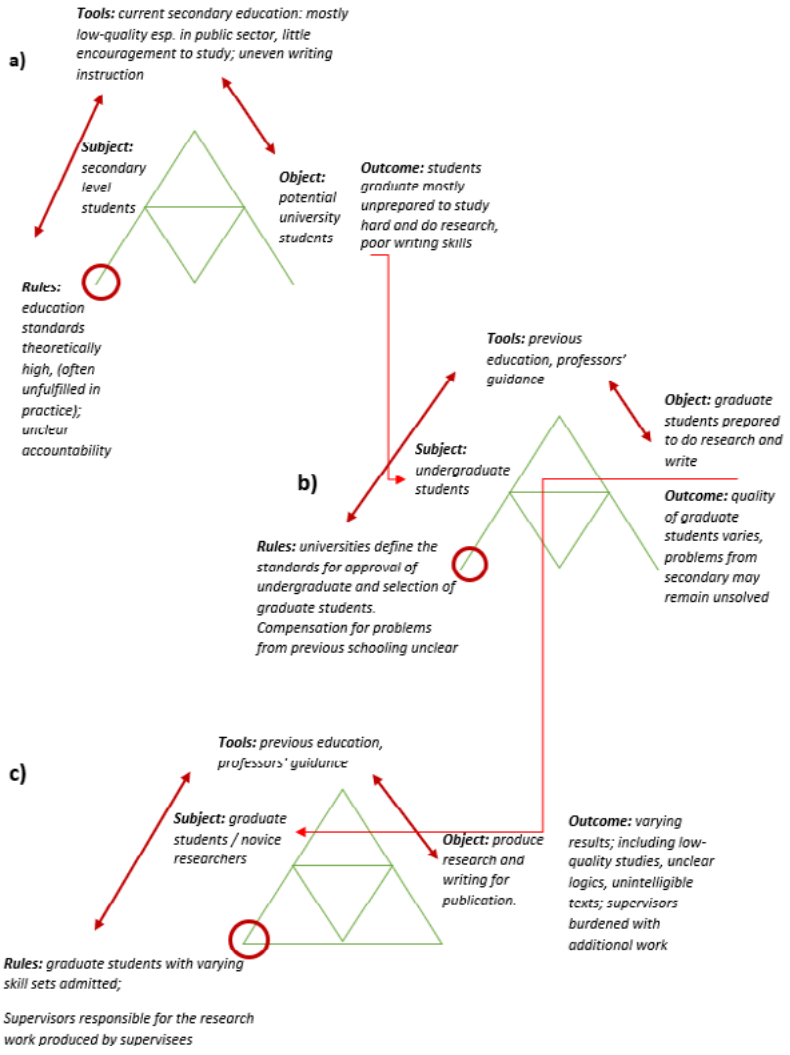
AS2 mentions that graduate students commonly fail to make logical connections of ideas, which often surface as confusing and unclear writing, a concern also expressed by Albuquerque (2009). While working on the texts with students, she often encounters confusing writing, which typically originates from confusing thinking. AS4 also observes that many graduate students at her university write very poorly in Portuguese, demanding a lot of time and effort from the supervisors to bring both the research work and the produced texts up to an acceptable standard.

AS1 considers that the current teaching practices at school fail to promote curiosity, perseverance, and hard work, which are necessary for scientific research, therefore failing to prepare potential scientists for this career.

These AS participants mention different problematic aspects in current Brazilian education which bring direct consequences to their practice as faculty and research supervisors. When combined, these weaknesses can undermine much of the effort to produce research and publish results, worsening further an already challenging situation.

As illustrated in *Activity System 2a* (Figure 65) we can consider three activities: *a)* the subject-forming activity of secondary education, whose object is to educate young people and form potential university students; *b)* the subject-forming activity of undergraduate courses at university, whose object is to form professionals as well as potential graduate students; c) the main activity of novices/ graduate students doing research work and producing texts for publication. The tertiary contradictions between the subject-forming activities are indicated with angled arrows. In order to have apt subjects in the main activity *c)*, collaboration of outcomes from both activities *a)* and *b)* would be desirable.

Figure 65 — Activity System 2a: Subject-forming and research work



Source: This author

According to our participants, activity *a)* presents the initial problem, with the primary contradictions: although the rules issued by the ministry of education (MEC -BNCC[35]) describe the secondary

35 http://basenacionalcomum.mec.gov.br/

curriculum as high quality, its fulfilment in practice is usually incomplete, especially in the public education sector. In addition, there are few mechanisms to hold public administration, schools, or staff accountable for the results, or to ensure that the established standards are met. Secondary contradictions can be observed, as tools conflict with the rules and the object, not matching the set standards, nor being able to produce the subjects that would thrive in higher education. Basic schooling in Brazil produces uneven results, usually with students from the public education system at a disadvantage if compared to those from the private system (Feijó & França, 2021).

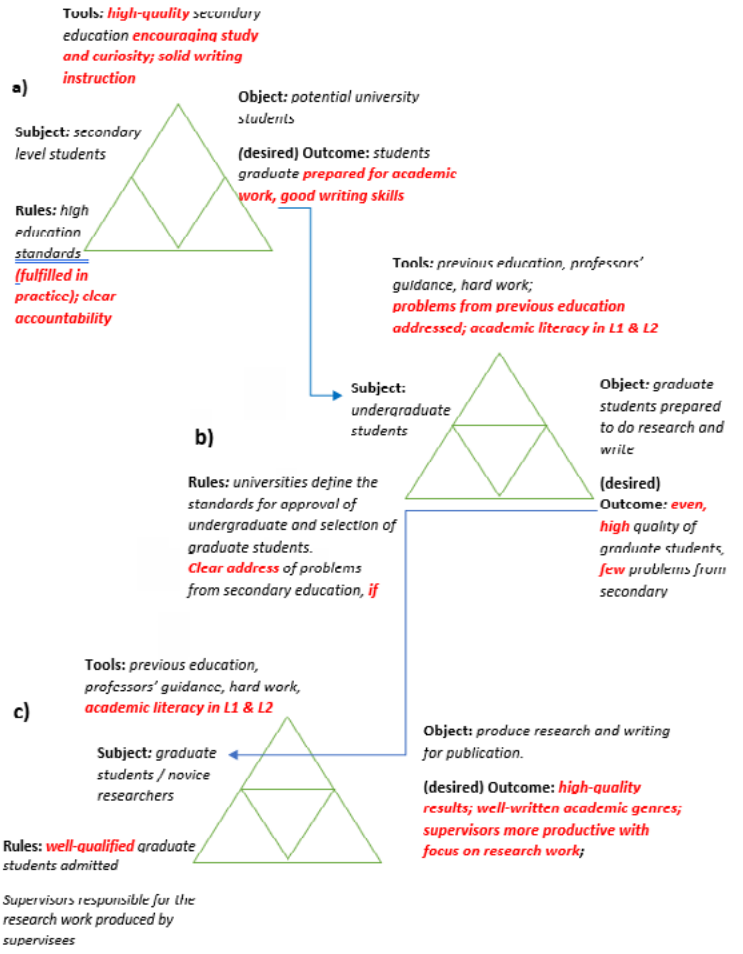
In subject-forming activity *b)*, undergraduate students who may be unprepared for the work demanded from them are admitted to university. While the demands are set by the institutions, there are few – if any – mechanisms to mitigate problems from previous schooling. The development of writing, for example, is not a strong component of most curricula at the undergraduate level neither in L1 or L2 (Sousa & Fuza, 2021); therefore, students' poor writing abilities may be overlooked throughout the course.

In activity *b)*, a primary contradiction can be observed as the rules at university do not cater for the previous deficiencies of undergraduate students who are admitted. Secondary contradictions arise as a consequence: the tools available for undergraduates to work through their course are not suitable for them to meet the academic demands, nor are they adequate to form students who could progress to graduate level. The contradictions in activity *c)* are generated from the inadequacy of the subjects from *b)* and the rules which do not consider that such a problem might exist.

The *Activity system 2b* (Figure 66) illustrates how the subject-forming activities *a)* and *b)* might contribute to the main activity *c)* if there were fewer contradictions. It is clear that in order to increase research output and enhance its quality, Brazil needs to improve the overall standard of education, as AS1 argues. In the activity theory framework, an improved subject-forming activity *a)*, in which students graduating from

the secondary level would have good writing skills and be well-prepared for their academic work, would strengthen activity *b)*, so that the subjects of activity *c)* would be better prepared and qualified for their research work.

Figure 66 — Activity System 2b: New form of the activity: subject-forming and research work



Source: This author

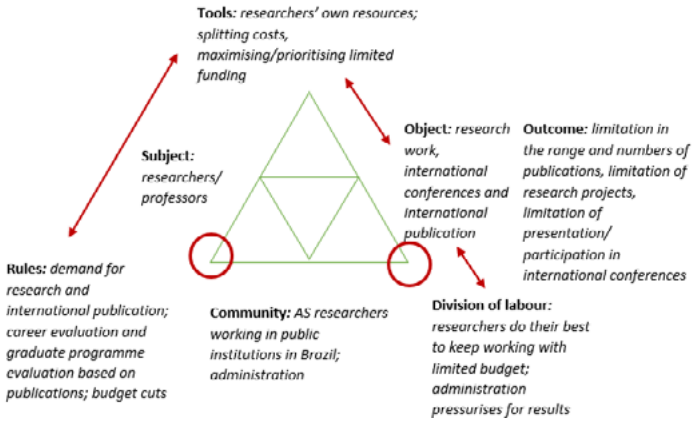
E) Financial Difficulties

Two AS interviewees comment that provision of resources for research, publication, and participation in international events such as conferences needs to be revised, especially in public universities. AS4 reports that she had an article accepted by a high-ranked journal in her field, but the institution did not have the budget to pay for its publication, which put her in a difficult situation. As public funding has been dwindling for several years, some researchers have started paying publication fees themselves, splitting the amount among co-authors. Budget cuts have reached all areas of academic work, resulting in interruption of research projects, limitation of participation in conferences and reduction in international publication.

> Since 2015, unfortunately, it has been a downward curve which has really compromised a lot, today it is a bottleneck, we have to split [the cost], each one pays for a part of it out of their own pockets even, to publish, because there is no money. I think it is a difficult time in this sense, but it hasn't always been like this. I've been through other times and I know that the university is concerned about this, my university pays attention to it. They know it is necessary to invest, but the scenario is difficult, and there is so much to do that a lot of things are left undone. (AS4 excerpt 14)
>
> *De 2015 para cá foi uma, infelizmente, foi uma curva né... descendente que realmente comprometeu muito, e hoje é um gargalo assim né, a gente tem que fazer rateio sabe, cada um paga uma parte e acaba tirando do bolso mesmo para fazer as publicações, porque não tem verba. Acho que é um momento difícil nesse sentido, mas não foi sempre assim. Eu já vivi outros tempos e eu sei que a universidade se preocupa com isso, a minha universidade é muito atenta a isso. Sabe que tem que investir, mas é que são cenários né tão difíceis né tem que fazer tanta coisa que acaba, que muitas...muitas questões acabam ficando é... por fazer. (AS4 excerto 14)*

The current form of the activity illustrated in *Activity 9a* (Figure67) presents a number of contradictions within the rules, within the division of labour, and between rules and tools, tools and object, and object and division of labour. The most evident contradiction is within the rules: there is clear incompatibility between the reduction in the provision of funds and the demands for publication and research productivity. Budget cuts have a direct effect on ongoing research projects, whose disruption also means the noncompletion of the work necessary prior to conference presentations and publication.

Figure 67 — Activity 9a: Current form of activity: research, publication and participation in international conferences



Source: This researcher

The tools that make the activity possible are not restricted to funding, but are largely dependent on it. Research is an expensive activity (Salager-Meyer, 2008)I first refer to the center-periphery dichotomy in terms of scientific output, placing emphasis upon the relation that exists between science and technology development, on the one hand, and social and economic development, on the other. I then analyze the main problems faced by most peripheral journals and the role nation states play in scientific activities in developing countries. I then address issues such as the world power structures, the social organization of developing countries, growing North/South disparities and the question of collaborative research. The discursive (i.e., language related: in order to conduct research projects, researchers usually need, among other things, qualified staff, workspace, equipment, supplies, and access to recent publications, most of which is limited when there are financial difficulties. Research is prioritised when possible, which leaves publication uncovered. In this case, researchers who have managed to complete research work have used their own resources to pay for publication costs, splitting among co-authors. It is unlikely, however, that this

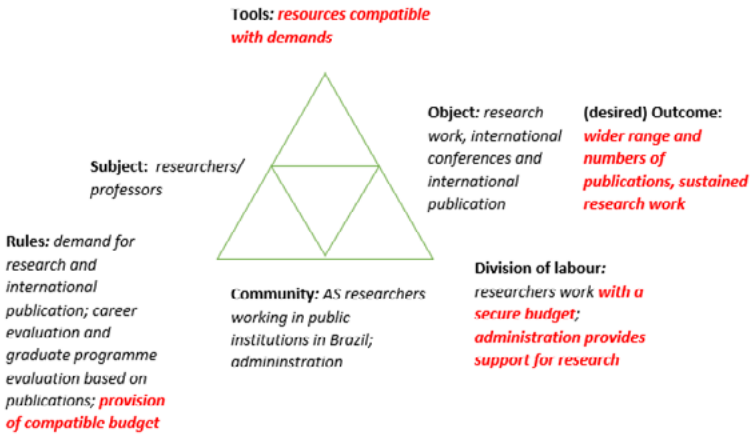
situation will be sustainable in the long term. Although publication costs might occasionally be shouldered by authors, their resources are also limited by their earnings.

The withdrawal of public financial support has made many research projects difficult to be completed and, consequently, fewer publications are being generated. These repercussions conflict directly with the existing evaluation parameters for researchers' careers and graduate programmes.

Despite the university's concern with investing in research projects and publication activity, as mentioned by AS4, a reduction is inevitable due to the limited budget. The fact that the demands for academic productivity have not changed to adjust to the decrease in funding puts a severe strain on these researchers, who struggle to maintain their research and publication activity. These contradictions can be observed in the division of labour and the incompatibility between the object and division of labour.

Activity 9b (Figure 68) illustrates the same activity, with possibly fewer contradictions. If the demands for publication and evaluation of programmes are maintained (although still problematic), the corresponding provision of funding is an indispensable condition. In public higher education, research is mostly publicly funded, which means that the government determines the priority of research among other needs. For the researchers to accomplish what is demanded of them, the corresponding tools must also be in place.

Figure 68 — Activity 9b: New form of activity: communication in English in the international context



Source: This researcher

4.4.2.2. Institutions

Table 5 — Theme: Institutions (Applied Social Sciences)

Category	Cases A. S. Sciences (total=5)	Incidences A. S. Sciences	Number of words	% of words within the theme
F. Community	4	19	2905	43,63
G. Demands	5	14	1795	26,96
H. Support	4	17	1773	26,63
I. Structural Problems	1	2	184	2,76

Source: This researcher

Throughout their interviews, the AS participants described many aspects of their work communities' behaviour. It shows a deep comprehension of how priorities have changed and how the institutions' new demands have affected the faculty's research and publication

activity. Overall, the communities behave according to the culture within the institutions, but they also adjust to changing rules. Demands, support, rewards, and power relations interact with researchers and their own goals, producing a range of outcomes.

CAPES – the government agency which assesses and awards grades to postgraduate programmes – determines the value of different types of academic activity. All higher education institutions, public and private, are subject to CAPES's evaluation in order to keep their postgraduate programme working and their prestige. The evaluation system pressurises institutions, which in turn pressurise the faculty towards obtaining a good grade. Currently, high grades are obtained especially by publishing internationally in high-ranking journals (Mattedi & Spiess, 2017).

Public universities have excellent researchers who produce quality research and publish their work in international journals (Clarivate Analytics, 2018), despite the difficulties inherent to large, bureaucratic, inflexible structures which suffer frequent budget cuts. Nevertheless, our interviewees report that a part of the faculty adopts an attitude of resistance against it, albeit their career evaluation system involving research projects and publication[36]. Public universities have difficulty persuading unwilling faculty to increase their research output, since there is not much flexibility to offer rewards or threaten them with penalties for noncompliance. In Brazil, once a professor is hired through a public process (*concurso público*) and completes their probationary period, there are few mechanisms that allow the university to endanger their position.

By contrast, in the interest of improving their evaluations and enhancing their prestige – therefore raising the value of their courses in the market — some private universities seem focused on matching the pressure for the increase in international publication by adjusting their academic environment to favour positive results. Private universities aiming at obtaining high grades have swiftly changed their internal policy

36 http://www.leginf.usp.br/?resolucao=consolidada-resolucao-no-5927-de-08-de-julho-de-2011

of rewards, reshaped their priorities for hiring faculty, and provided support that was identified as necessary.

F) Community

AS1 informs us that his field started and developed mainly in the Unites States, which is the main centre of knowledge production. Therefore, the international discussions and publications have always revolved around the communities in the U.S., even though the participation of European countries has grown steadily. The participation of Brazilian researchers in the international scene is fairly recent, having become more common in the last 10 to 15 years.

He reports that, in his institution, international publications have increased from one third to half of the total in the past few years. The faculty are actively engaged in research and publication in top international journals as part of their regular academic activity. However, he also emphasises that research without local relevance, aiming exclusively at being accepted for international publication is discouraged, as one of the institution's main directives is to contribute to the country's social and economic development. He acknowledges that it is more challenging to conduct studies with both local and international relevance, but the community accepts that as a given in their work.

AS1's research team monitors other important universities and their work in the field. They have observed that private institutions have adapted more easily to the changes in demands, adopting aggressive hiring strategies to achieve a high level of international publications. AS1 criticises the low productivity of some public universities' faculty, where he thinks there are many researchers who are barely interested in actually producing knowledge through research. He also recognises that some public universities still manage to produce important work, even though international publication is low in proportion. Given the rigid structure and existing rules at public universities, he recognises that adapting to new rules is not an easy feat, as the academic community tends to be resistant to change.

AS4 agrees that there are difficulties with the change of culture at public universities, especially among older professors, who did not have to be concerned about international publication for most of their careers. She views the current phase as a transition period but emphasises the value of the contribution of older faculty to the development of research work, even if they participate little in international publication. She adds that most of the new faculty seem to understand what is being demanded of them and are comfortable with research and publication as an important part of their regular academic activity.

> I have worked quite closely with one of the three public universities [in São Paulo], and the movement towards transformation they are trying to do is very interesting; however, there is a lot of difficulty. You can see that even if the top is trying to make changes in the middle of the pyramid, the people hold and defend [their positions]. It is very complicated. I think that [institution A] is a peculiar animal, it has history, it is in Brazil, in the middle of this problematic culture. It has developed its own features from the start. First, its mission, it has always been a strong feature of [institution A] (…) is to contribute to the development of Brazil. That is, it breathes this, some people discuss it all the time, everything is directly or indirectly connected to this mission. Even those who are not aware of this mission end up aligning. So, it is a very rtigo feature. (AS1 excerpt 15)
>
> *Eu tenho trabalhado com bastante proximidade com uma das três universidades públicas, e o movimento de transformação que eles estão tentando fazer é muito interessante, contudo, com muita dificuldade. Você vê que mesmo o topo tentando fazer mudanças no meio da pirâmide, o pessoal segura, defende. É bem complicado. Eu acho que a (instituição A) é um animal meio peculiar, ela tem uma história, está no Brasil, está no meio da cultura toda que tem esses problemas. De origem ela foi desenvolvendo algumas características próprias. Primeiro que a missão dela, sempre foi muito forte sobre a (instituição A) (...) é contribuir para o desenvolvimento do Brasil. Isso é, respira isso, tem gente discutindo isso o tempo todo, tudo a gente cruza de forma direta ou indireta com essa missão. Mesmo quem não sabe a missão de alguma forma se orienta para isso. Então isso é muito forte. (AS1, excerto 15*)

We monitor the main [schools], we have information about their publication. We have a slightly higher level [than they do]. One of the schools which has evolved a lot in the recent years, and we know well why and how [it has done it] is [institution B], which is a business school in Rio de Janeiro. [The new dean] brought in researchers who had potential for international publication to create an elite group. It is a guideline (…), it is a much smaller school, in a far more competitive environment; Rio de Janeiro has a lot of good public business schools, so it was a strategic decision. He achieved it, their level of publication – a small, expensive, well-paid, elite group – is extremely high. (…) So, it is an interesting case. I think [institution C] also has several fronts; it has also been treading a successful path. It created a faculty management policy, attracted good researchers, it has a managerial style Ih is different from ours, much more instrumental and controlling than ours. We don't control the faculty much, each one does what they want a bit, with advantages and disadvantages. [Institution C] works more like a business and has been obtaining very interesting results. There are researchers there who have achieved very high levels of publication in international journals, and also have publications of local relevance. Another one which I think is close is [institution D], but it is a public institution, the faculty's job is not under threat. So, it is much more difficult to manage the group; this has advantages, too, obviously. I think this brings some peculiar challenges. The publication of [intuition D] is not very internationalised, comparatively. They have a large volume, they publish a lot, they are important, they have centres of excellence, but I think that their publication is not very internationalised. (AS1, excerpt 16)

A gente monitora as principais, a gente tem as informações de publicações deles. A gente tem um patamar um pouquinho maior. Uma escola que evolui muito nos últimos anos e que a gente conhece bem o porquê evoluiu e como, foi a (instituição B), que é uma escola de administração (...) no Rio de Janeiro. (O novo diretor) fez um movimento de trazer pesquisadores com potencial de publicação internacional, para criar um grupo de elite mesmo. É uma diretriz (...), é uma escola muito menor, em um ambiente muito mais competitivo, o Rio de Janeiro tem muitas faculdades boas de administração e todas públicas, então foi uma diretriz estratégica. Ele conseguiu, o patamar dele, um grupo pequeno, mas um grupo caro, bem pago, de elite. O patamar de publicação dele é altíssimo. (...) Então é um caso interessante. Acho que o (instituição C) também tem várias frentes, tem trilhado um caminho também bem-sucedido. Ele criou política de gestão de professores, atraiu bons pesquisadores, tem uma forma de gerir muito diferente da nossa, muito mais instrumental, controladora que a nossa. A gente não controla muito os professores, cada um faz um pouco o que quer, tem vantagens e desvantagens. O (instituição C) parece mais uma empresa, e tem conseguido resultados muito interessantes. Tem pesquisadores lá que conseguiram altos níveis de publicação em periódicos internacionais, e tem também publicações de relevância local. Outra que eu acho que tem proximidade é a (instituição D), mas a (instituição D) já é um organismo público, os professores têm garantia de emprego. Então é muito mais difícil de gerenciar o grupo, isso tem vantagens também obviamente. Acho que coloca alguns desafios peculiares. E a publicação da (instituição D) é pouco internacionalizada comparativamente. Eles têm um volume grande, publicam bastante, eles são importantes, tem centros de excelência, mas eu acho que a publicação é pouco internacionalizada. (AS1, excerto 16)

AS3 observes that, currently, journal articles seem to be more widely read by the academic community than books. Apart from the academic articles, she also acknowledges the value of publishing in

vehicles for a wider audience, such as specialised newspapers and magazines because the institution's image is enhanced among a larger public, even though that may be less important for the CAPES assessment. She also recognises the community's effort to inform the public about the development of their research so that the population might benefit from the knowledge.

AS3 reports that while she was a postgraduate student, the institution promoted a shift of focus from quantity to quality in research and publication, so that in addition to the faculty, the new masters and PhDs are already immersed in the culture of working to produce high-quality studies. Earning points in the CAPES evaluation, according to AS3, is a consequence of good work, not a goal in itself.

AS5 explains that research is commonly presented at events such as conferences, published in academic journals, and organised in theses and dissertations. However, the results rarely reach the wider public. He believes that research results should be better disseminated, especially when projects are publicly financed. By making the research more public, more people will benefit from the outcomes of the work. He recognises that in his subfield, this communication still needs to be greatly improved.

From the descriptions of AS participants, it is possible to observe that communities behave differently, especially those working at private or public universities.

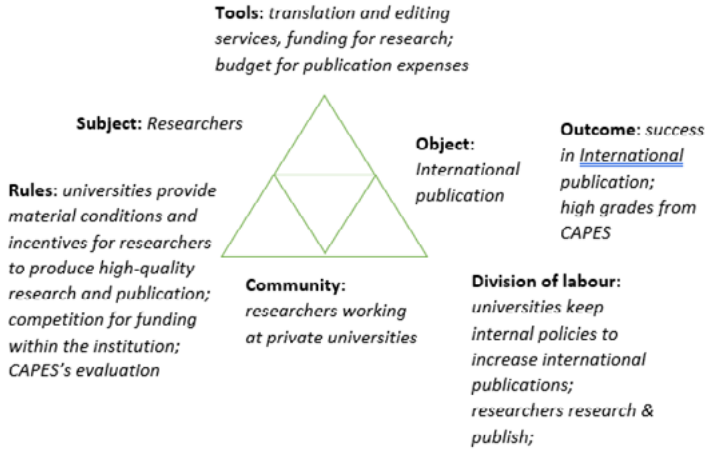
Private universities have aligned their policies to have faculty engaged in international publication, hired faculty who already did quality research, and invested in their postgraduate programmes to enhance quality. The community's culture seems mostly shaped to focus on the institutions' objectives.

On the other hand, public universities may be trying to comply with CAPES's requirements, but they are met with resistance from

within. While a part of the community works towards high-quality research and international publication, with very good results, part of it goes in a different direction. Although faculty members might resist the pressure for international publication, it does not necessarily mean that they do not work on relevant research. According to AS1, the researchers working at the public university (institution D) have a high output, but comparatively low volume of international publications, possibly by choice.

Even though the contradictions may not be very evident, the activity (*Activity 10a,* Figure 69) is far from unproblematic. The university funds the research and pays for professional services of language and editing; however, there is no provision of tools which promote the autonomy of researchers for them to produce their own manuscripts. It is undeniable that by outsourcing part of the writing process, the faculty may have more time to work on their other academic duties – researching, supervising, teaching — but the dependency on hired services for a central part of one's career may not be a positive aspect of this form of the activity. Also, the loss of control over one's own text might be an issue to some authors, even though this specific topic has not been discussed with the interviewees. Another aspect to be considered is that if funding for such professional services is withdrawn for some reason, researchers may not be able to continue publishing in international journals, which could endanger their career.

Figure 69 — Activity 10a: Current form of the activity: researchers working at private universities for international publication



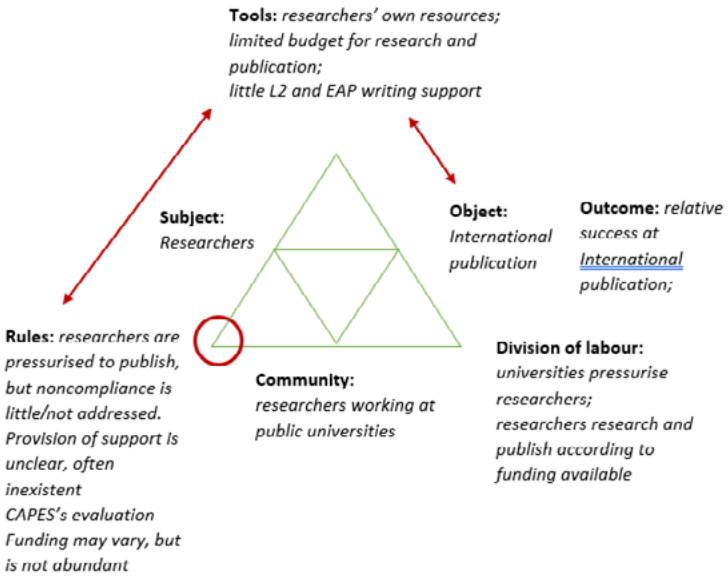
Source: This author

Funding for publication is currently generous – but not unlimited – and its distribution depends on the approval of research proposals called periodically. As AS1 mentioned, those who have already proved that they are competitive in international publication tend to be at an advantage. Consequently, some researchers' proposals may not be financed, which means that they are less likely to produce articles for international publication. The pressure grows on them for better research proposals which will result in publication, with possible negative repercussions to their careers if they fail. The expectations and pressure on these researchers are ever growing. A question remains whether this form of the activity is sustainable in the long run, without major changes.

In *Activity 10b* (Figure 70), there are primary contradictions within the rules, which demand for publication but cannot punish those who do not comply, other than denying career advancement. If a researcher is not concerned about being promoted, not participating in international research publication does not threaten their job. There are regular performance evaluations and small promotions, but demotions and

dismissals are very rare. Another contradiction — the lack of support and provision of tools to mediate the activity – is again evident. In addition, funding, which greatly influences the production of research, is variable and tends to suffer reductions, but there are no corresponding adjustments in the demand, which remains high.

Figure 70 — Activity 10b: Current form of the activity: researchers working at public universities towards international publication

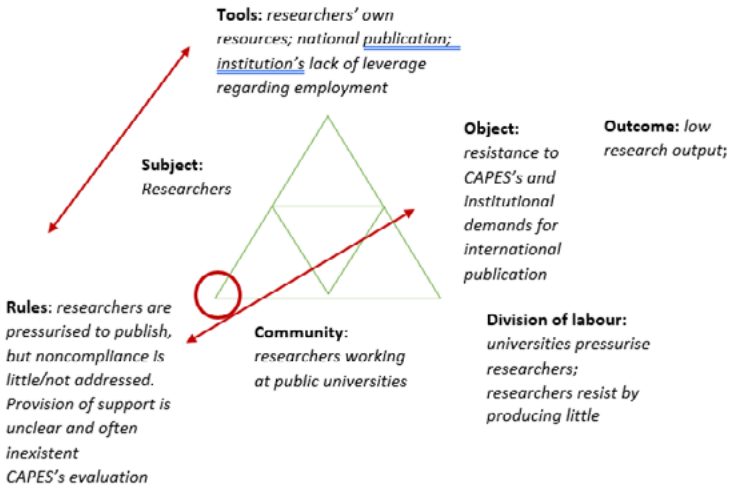


Source: This researcher

There are secondary contradictions between the rules and the tools: the rules which require publication do not regulate the provision of tools which make it possible; and also between the tools and the object, as the tools are not adequate to mediate the activity.

In *Activity 10c* (figure 71),The primary contradictions within the rules may give confidence for some researchers to defy the institutional demand for international publication. Since the rules provide neither support for research publication nor severe punishment for its absence, the effect of the institutional pressure on faculty seems to weaken.

Figure 71 — Activity 10c: Current form of the activity: researchers working at public universities, resisting against pressure for international publication



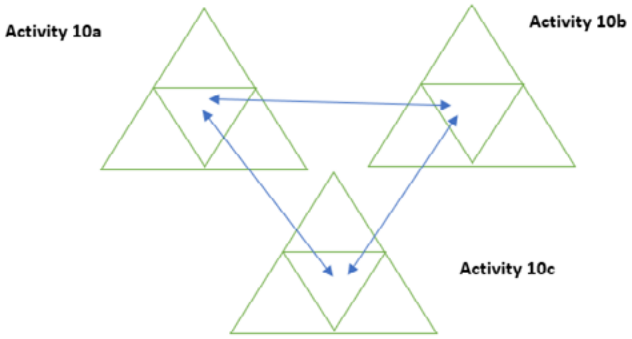
Source: This author

Consequently, the rules provide tools – lack of institutional leverage to punish with job loss, justification for not producing research and publication due to shortage of funding –for faculty who intend to resist, while at the same time demanding results from them and still not providing the tools to mediate the activity of publication, which evidences a secondary contradiction. In this activity, researchers seek to resist institutional pressures, which shows a secondary contradiction between the rules and the object.

As *Activity System 3* (Figure72) demonstrates, the three current forms of the activity 10a, 10b and 10c above display tertiary contradictions between them, represented by blue arrows. Activities 10a and 10b both illustrate the activity of researchers who work towards achieving international publication of their research articles. However, the rules and tools differ greatly, which completely changes the conditions for the activity and its outcomes. Although CAPES's demands and evaluation system are the same for all researchers, the institutions' internal

rules and modus operandi are very different. As the interviewees report, private institutions hire researchers who already publish internationally, under a contract which stipulate international publications as mandatory. In return, they are provided with funding for their research, support for translation and editing, and prizes if their publication is accepted in high-ranked journals and for their productivity.

Figure 72 — Activity system 3: Current forms of the activity: Researchers and publication



Source: This researcher

By contrast, researchers at public universities often have limited budget for research and publication expenses and have little or no literacy and language brokerage support. Although many public universities have a very competitive hiring process, gathering potentially excellent researchers, the working conditions are far from ideal. Still, many researchers persevere and successfully have their research articles published internationally, despite the unfavourable conditions.

The coexisting forms *10a* and *10b* of the activity present clear contradictions in the different environments provided by the institutions through their policies and provision of tools. Although private institutions pressurise researchers more strongly for publication, they also provide the corresponding support. At public universities, the demands established by the evaluation system are barely counterbalanced with

any support, which means that researchers will have to rely mostly on their own resources. As a result, higher productivity seems easier at private universities, where researchers can focus more on their research work than on issues such as budgetary constraints and revision of texts.

The private institution where AS1, AS2 and AS3 work demands that full-time professors/ researchers teach about 8 hours a week, between the undergraduate and postgraduate courses, and taking up more teaching hours is optional and negotiable. AS1 and AS3 inform us that the administrative roles they have are far more time-consuming than teaching, but this work is optional and compensated with additional payment. AS4 and AS5 did not particularly discuss how much teaching and administrative roles currently affect their research and publication activity. However, it is known that those can interfere with productivity but are unavoidable, especially at public universities.

Between the forms *10b* and *10c* of the activity, both at public universities, the subjects, the rules, and the community are basically the same. Yet, the objects are very different. The majority of researchers produce their research work and publications despite the unfavourable conditions (*10b*), while others resist the pressures of the system by refusing to comply with those demands (*10c*).

Although none of the interviewees expressed disagreement with the evaluation system, some of them mentioned that there is resistance by a minority in the community. Some of the reasons mentioned were the unfairness of the evaluation if the scholars' research does not hold the interest of international audiences, the focus of the system on productivity rather than quality, and teaching being undervalued. In addition, there are issues of academic and political independence, fundamental to most scholars.

Between forms of the activity *10a* and *10c*, there is a strong contrast. Faculty at the public and the private institutions have completely different attitudes and behaviour, especially because of the power

relation between the institutions and their faculty. In private institutions, the faculty's position is constantly under threat if publication goals are not met, while at public universities, their jobs are not at stake. Therefore, the activity of resisting is not a possibility in private institutions, unless one is willing to be dismissed.

G) Demands

AS1 describes how the institutional demands where he works have changed. He reports that when CAPES started requiring publications in the 1990s, especially in terms of quantity, scholars started trying to publish any article they managed to write, regardless of quality. At the same time, international accreditation agencies which regularly assess the institution also started requiring publications. Publication or research work consequently became an institutional priority, and the faculty felt a growing pressure to adjust.

In order to be internationally relevant by obtaining and keeping important accreditation, the institution has modified its internal policies to comply with agencies' requirements. The hiring process for faculty has been specifically modified to select researchers who are aligned with the new objectives. Faculty's contracts determine that they need to publish research articles regularly, with a stipulation for publications that complies with CAPES's and accreditation agencies' specifications. In addition, actions to encourage and support research and publication have been taken.

AS2 and AS3, employed at the same private institution, concede that international publication can express a measure of quality of research, but in their opinion, the importance given to publication seems exaggerated. They report that good quality of teaching is visible and demanded of them: every course taught is evaluated by students through questionnaires, and Assurance of Learning processes are applied to measure students' learning. If weaknesses are identified, the professors are required to address the issues, and progress is monitored in the

following semesters. These mechanisms are required by the international accreditation agencies, and good grades in teaching is an essential item for certification. Nevertheless, teaching receives little recognition compared to publication, which is only visible when it is successful. Even though the faculty's teaching is regularly assessed, publication is a more significant factor for career advancement and retaining their jobs at the institution.

AS3 observes that the pressure is real, but it is felt less strongly if the professor/ researcher has their personal goals aligned with institutional directives. The motivated researcher finds an environment which encourages them to work on their studies and produce articles for publication. Funding is accessible and institutional support can be relied upon in the process. When publication in a high-ranking journal is achieved, recognition and rewards can be expected. However, faculty members who are not focused on producing research and publication can feel very uncomfortable and are likely to leave the institution.

AS4 reports that her public university stipulates that, in addition to yielding international publication, research should bring benefits to the community. Also, the quality of the undergraduate and graduate programmes is to be kept high and student dropout rate minimal. Some demands may be conflicting and challenging, but most faculty seem to do their best to meet them. Nevertheless, public universities cannot force compliance, as faculty's jobs cannot be threatened.

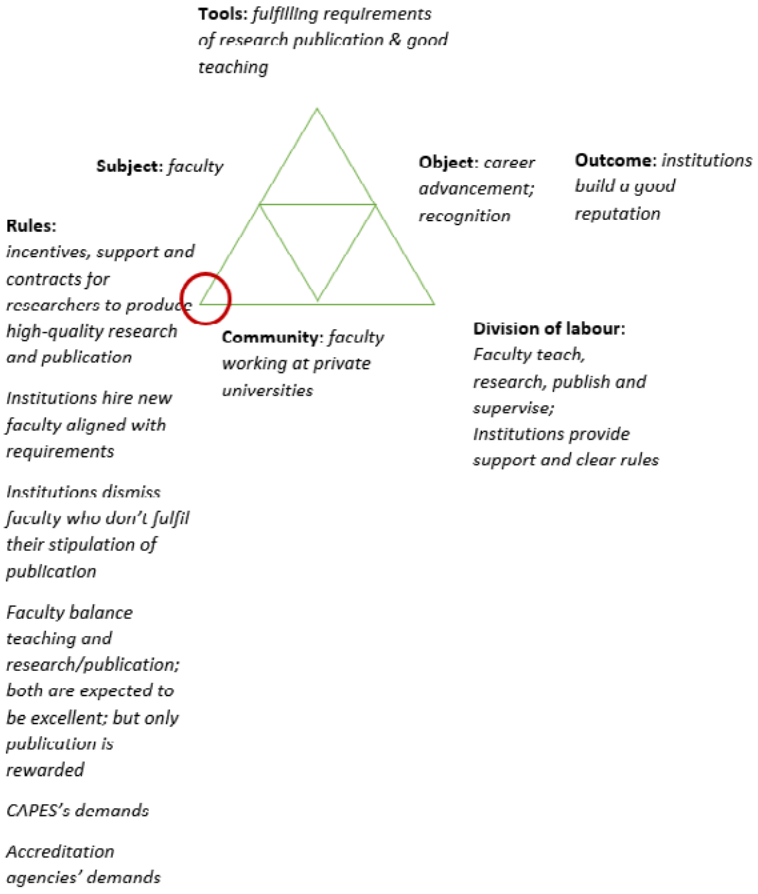
> It is very competitive to publish in those higher impact journals. So researchers end up guiding themselves, being assessed by the institution, running the risk of losing their jobs because of it. (…) I think we need to have some evaluation parameter for quality. One of them could be publication. One aspect of it is that it helps to improve the quality of scientific production. But maybe its weight is exaggerated. (AS2 excerpt 17)
>
> *É uma disputa para publicar naqueles periódicos que são... que tem maior impacto. Então os pesquisadores acabam se guiando, sendo avaliados pela instituição, correndo o risco de perder o emprego por conta disso. (...) Eu acho que a gente tem que ter algum parâmetro de avaliação, de qualidade. Um deles pode ser esse de publicação. Tem um lado que ajuda bastante a melhorar a qualidade da produção científica. Mas talvez esteja sendo exagerado, assim, o peso disso.* (AS2 *excerto 17)*

> So, the point is that you are working hard on researching, being a good teacher in the classroom, producing material, teaching well, grading tests. You have the responsibility as a teacher and as a researcher. And you have to juggle those. Sometimes you look back and say, "my God, I have to teach, I have to prepare material, I have to grade tests, but I also have to publish, I have to revise this article." (AS3 excerpt 18)
>
> *Então o ponto é você está se desdobrando para pesquisar, para ser um bom professor em sala de aula, para montar material, para dar uma aula de qualidade, corrigir prova. Então você tem uma responsabilidade como professor em sala de aula e como pesquisador. Então você está equilibrando pratinhos. (...). Então as vezes você olha para trás e fala: "meu Deus, eu tenho que dar aula, eu tenho que preparar material, eu tenho que corrigir prova, mas eu também tenho uma publicação, eu tenho que rever esse artigo". (AS3 excerto 18)*

> CAPES demands production, but at the same time you can't have student dropout, you have to pay attention to the quality of education. At the same time, you have to have social impact, you can't only write articles in English, you also have to work with the community, take your knowledge to the community. (AS4 excerpt 19)
>
> *A CAPES (...) cobra a gente em termos de produção, mas ao mesmo tempo você não pode ter evasão de alunos né, você tem que tá atento também a essa qualidade, essa formação. Ao mesmo tempo você tem que ter impacto social, você não pode ficar só escrevendo artigo em inglês, você tem que também trabalhar com a comunidade, levar o seu conhecimento para a comunidade. (AS4 excerto 19)*

The contradictions recognised within the rules of this activity (*Activity 11,* Figure 73) are not extreme. At private institutions, the most obvious one seems to be that good quality of teaching is demanded, but it is not as valued and rewarded as publication in top journals. Teaching responsibilities are almost taken for granted, and the institution monitors its quality by evaluating teaching performance through regular surveys among students. The accreditation agencies also require Assurance of Learning (AoL) processes to implement constant improvements in learning. Excellence in teaching is important and expected, but there are no explicit rewards for it.

Figure 73 — Activity 11: Current form of the activity: career advancement of faculty working at private universities



Source: This researcher

Fortunately, the distortions associated with cash rewards for publication have not surfaced as part of the activity, despite the practice of rewarding researchers for successful publications in the highest-ranking journals. The fact that there is a strong culture of ethics within the institutions as a whole, and a research department that organises and oversees all projects, certainly contribute to avoid such distortions.

At public universities, there are more contradictions (*Activity 12,* Figure 74), although apparently not very critical, in this case. The faculty is supposed to keep the quality of education high and dropout rates low. Although the former depends mostly on faculty's efforts, the latter may be caused by different factors not directly connected to their teaching. Career evaluations generally consider the number of teaching hours, and whether faculty are involved in postgraduate courses and research projects, in addition to publication. There are not many measurements of quality of teaching, so it is difficult to verify whether improvement is needed in any area. As a consequence, quality of teaching does not have a strong influence on one's career as an academic.

Figure 74 — Activity 12: Current form of the activity: career advancement of faculty working at public universities

Source: This researcher

The secondary contradiction between the rules and the tools surfaces due to the little provision of tools and general lack of support for the faculty to achieve their goals. The faculty seem to be required to divide their efforts in two distinct types of research work: research which will result in international publication and projects to benefit the local community. Differently from what AS1 had explained previously, instead of trying to achieve both goals with the same research, the adopted strategy seems to be the separation of projects. Given the limitation of funding and lack of overall support, the imbalance between demands and support seems only to grow.

Public universities can only use career evaluation to encourage faculty to be productive and keep high standards. Thus, although most of the faculty show interest in advancing by working on research, publication, and good quality, it is still possible to resist by not complying to the demands.

H) Support

Our interviewees confirm that the support provided to encourage research and publication by some private institutions is extensive. The institution where AS1 and AS3 work has a department dedicated to incentivising the research activity and supporting the community in the achievement of the institutional goals. They inform us that their institution supports research in all ways: materials – software, literature, access to databases, equipment in general; personnel – research assistants for survey and processing data; funding for attending international conferences – airplane tickets, accommodation, fees, expenses; and publication – professional translation and editing services, article processing charges (APC). Apart from these actions, faculty are encouraged to undertake supervision of master's and doctorate students through additions to their salaries and are awarded bonuses for successful co-authored international publication with their supervisees. Publication in highly ranked journals are worth very high prizes, not to mention the prestige within the community. Doctorate students are also encouraged to participate in the

international community. Those who have papers accepted for important conferences have expenses – conference fees, air tickets, accommodation, other expenses – fully paid by the institution.

In order to intensify internationalization, the institution also encourages faculty to seek post-doctoral programmes abroad, especially in renowned institutions in their field. Professors' contracts can be negotiated so that they may study abroad while still receiving their salary, provided they agree to remain as part of the faculty after they obtain their degree. Such actions enhance international networking and cooperation, while also further qualifying the institution's faculty.

As mentioned by interviewees AS2 and AS3, the main missing pieces seem to be L2 and EAP writing instruction, which could make researchers less dependent on professional translation and editing services currently funded by the institution.

> There is financial support for professors to go to conferences, have articles translated or use services for submission in English, to improve the [text in] English, to hire researchers. So, there is a whole system, they are concrete actions to support those who want to do it, people use it intensively. We also finance individual and collective research [projects], so a line of research for two researchers interested in a topic, they can request (xxx) reais a year to do the research and hire researchers, to buy books, trips. There are several scholarships of (xxx) reais. This is for individuals, so, there is this assortment of actions which are expensive, a heavy investment. Apart from that there is an incentive to use FAPESP, CNPq [financing] and there is support to do that, there are people who specialize in helping to prepare the project. So there is no lack of tools. Of course, everything is under the leadership of the school. (AS1, excerpt 20)
>
> *Tem ajuda de custo para os professores irem a congressos, traduzirem artigos ou usarem o serviço de submissão em inglês, para melhorar o inglês, para contratar pesquisadores. Então tem todo um sistema, são medidas bem concretas para apoiar quem quer fazer isso, o pessoal usa intensivamente. A gente tem também financiamentos para pesquisas individuais ou coletivas, então uma linha de pesquisa para dois pesquisadores interessados no tema, eles podem pedir (xxx) reais por ano para eles fazerem uma pesquisa e contratarem pesquisadores, para comprar livros, viagens. Tem várias bolsas de (xxx) reais. Tem isso para indivíduos, enfim, é um arsenal de coisas que custa caro, um investimento forte. E fora isso tem todo o incentive para a usar a FAPESP, CNPq, e tem apoio para fazer isso, pessoal especializado para ajudar a preparar o projeto. Então não falta ferramenta. Tudo está dentro, lógico, da ação da liderança da escola. (AS1, excerto 20)*

What I think is really lacking concerning scientific writing and publication in schools and universities that demand publication, there should be a support structure for it. And there isn't. Like these writing centers. (...) Most professors from (institution) have taken a one-day or half-a-day course, scientific writing workshops. They take workshops here and there, but there isn't a support structure for that. (AS2, excerpt 21)

O que eu acho que falta muito na questão da redação científica e até na publicação que as faculdades e universidades cobrando publicação, deveriam ter uma estrutura montada para isso. E não tem. Como esses Writing Centers. (...). A maioria dos professores da (instituição) fez algum curso de um dia, meio dia, workshops de redação científica. Participa de um workshop aqui, outro ali, mas não tem uma estrutura voltada para isso. (AS2, excerto 21)

They strongly encourage professors in the beginning of their careers to do a post-doctorate abroad, with the possibility of keeping the employment with the institution. (…) The (institution) encourages the professor to publish internationally, so it has been preparing for it; a career plan has been developed considering the issue of publication. (AS3, excerpt 22)

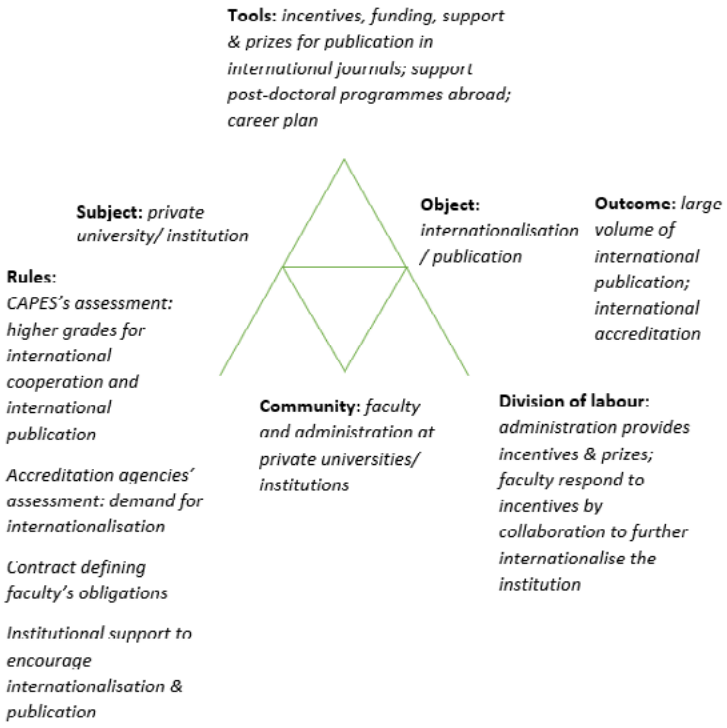
Então eles incentivam bastante os professores que estão no início de carreira de fazer um pós-doutorado fora, com possibilidade de sair ainda com um vínculo com a instituição. (...) A (instituição) incentiva muito o professor na publicação internacional, então ela tem se preparado para isso, tem-se desenhado um plano de carreira e todo um programa pensando nessa questão da publicação (AS3, excerto 22)

I think (what is really missing) is the funding for publication. I was hired by the university in 2009, and since then, until 2014, there used to be several calls and funding. We used to attend many conferences; but after 2015, it has been a downward spiral which has really jeopardized (…) because there is no funding. (AS4, excerpt 23)

Eu acho que (o que faz mais falta) é a verba para publicar. Entrei na universidade em 2009 e de lá para cá, até 2014, tínhamos vários editais e verba. A gente participava de muitos congressos; mas de 2015 para cá foi uma curva descendente que realmente comprometeu muito (...) porque não tem verba. (AS4, excerto 23)

In this form of the activity (*Activity 13,* Figure 75), the institution is dedicated to achieving success by providing all support it considers necessary. Therefore, the most evident contradictions are eliminated to ensure the desired outcome. The rules of the activity are clear to all, and only those who are willing to participate engage in it.

Figure 75 — Activity 13: Current form of the activity: Private universities aiming at enhancing internationalisation

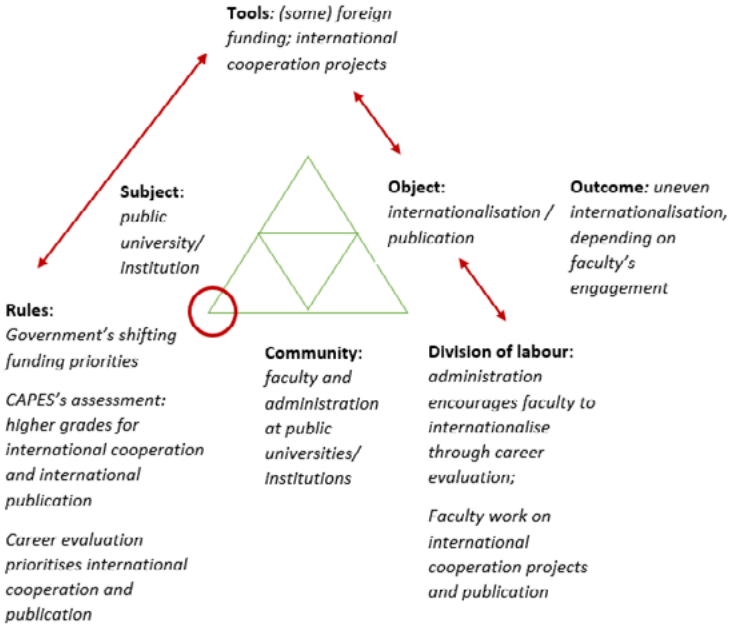


Source: This researcher

In contrast, AS4 reports that funding in the public university has been dwindling over the years. She recounts that for about 5 years after she became a professor at the university, research projects, publication and international conferences were broadly supported and financed. However, since then, it has become increasingly more difficult to continue with research work and even publication, due to the lack of resources. The projects which are currently being carried out are due to international cooperation and foreign funding. However, such projects depend heavily on individual researchers' initiatives, networking, and engagement. Also, the participation of graduate students is limited to those whose L2 proficiency is good enough to communicate well, especially in writing.

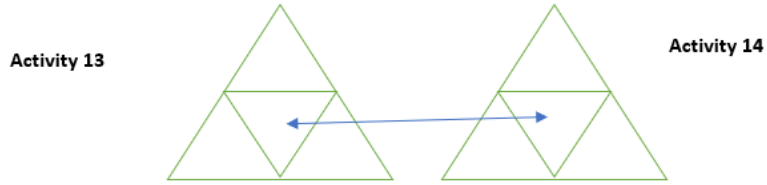
In this form of the activity (*Activity 14*, Figure 76), the primary contradiction within the rules – demands without the corresponding provision of support – is strong. Consequently, there is a secondary contradiction between the rules and the tools since the rules do not provide the tools to mediate the activity. The existing tools – individual professors seeking to develop international cooperation projects – are not adequate for the goal of achieving internationalisation, which generates a secondary contradiction between the tools and object. Further, the division of labour reveals an imbalance, as the institutional goals are transferred to individual professors and become their responsibility, generating another secondary contradiction between the object and division of labour.

Figure 76 — Activity 14: Current form of the activity: public universities aiming at enhancing internationalisation



Source: This researcher

Figure 77 — Activity system 4 – universities aiming at enhancing internationalisation



Source: This researcher

In private institutions, it is clear that there are heavy investments directed to fulfilling the internationalisation goals established by CAPES and accreditation agencies. Their priorities are to be internationally recognised, as well as to receive the highest national rating.

Public universities have counted on faculty's networking to develop international cooperation projects. Since public financial resources have been reduced and ongoing projects interrupted as a consequence, foreign funding for joint projects have been essential for research activity.

Activity system 4 (Figure77) illustrates the tertiary contradiction: the different concurrent forms of the activity, as the institutions strive for international relevance. While the public university reduces its activity because of budget cuts, the private institutions continue investing in internationalisation of their faculty, programmes, and research.

Private institutions have the advantage of managing their own internal policies and resources effectively to accomplish the set objectives. Public universities, however, depend on political decisions from state governments, the ministry of education and/or the presidency. The allotment of budget is complex and bureaucratic, and the rules are often counterproductive. In addition, public universities are supposed to be an investment that produces benefits to the society; therefore, the development of research should not be focused only on international

publication but be dedicated to improving citizens' lives. Projects which build the connection between the academy and the population are part of the function of public universities. However, this principle seems to have been ignored by agencies when determining priorities, which intensifies the conflicts among goals, the burden of the faculty, and competition for funding.

I)Structural problems

The structural problems among AS participants were mentioned only by AS4, regarding the public university. She mentioned that there is instability within public universities because they are subject to governments' shifting priorities. As politicians from different parties and with various interests are elected, previous administrations' plans are abandoned. As a consequence, universities cannot rely on the stability of funding for research, even if projects have been approved and are ongoing.

AS4 also mentions that the ethnic quota system for admissions in the graduate programmes needs adjustments, since the candidates' academic competence has become secondary for a percentage of the openings (from 20% to 50%, depending on the university). She reports that some students who lack the basic knowledge required to do research work are admitted, while others who could potentially do good quality research are left out.

> This is very difficult, because you have students with different levels, social, cultural, at least here we do, and the university has quotas for postgraduate programmes too, and we had a recruiting process recently and selected 20 candidates, four of them through quotas. They have to fulfil a minimum grade requisite, which is low, so their admission is practically automatic. I think there are some bottlenecks, I think language (L2) should come from school. (AS4, excerpt 24)
>
> *Isso é completamente difícil isso, porque você tem alunos em níveis muito diferentes, sociais né, culturais, aqui pelo menos a gente tem, e agora a universidade federal tem as cotas para pós-graduação também, então nós fizemos um processo seletivo agora e selecionamos 20 candidatos, quatro deles por cotas. E aí eles tem que atender a um requisito mínimo de média que é baixo, então é quase automático ter entrado. Acho que tem alguns gargalos que é a entrada nos programas eu acho que tinha que, essa questão da língua tinha que ter desde a base. (AS4, excerto 24)*

The structural problems reported show a number of contradictions within the rules of the research activity. Although CAPES determines that internationalisation and international publication are priorities, budget cuts make the achievement of these goals very difficult. The government's actions are conflicting since they set higher goals for the universities through CAPES while simultaneously sabotaging their achievement by removing the necessary funding for high quality research and international publication.

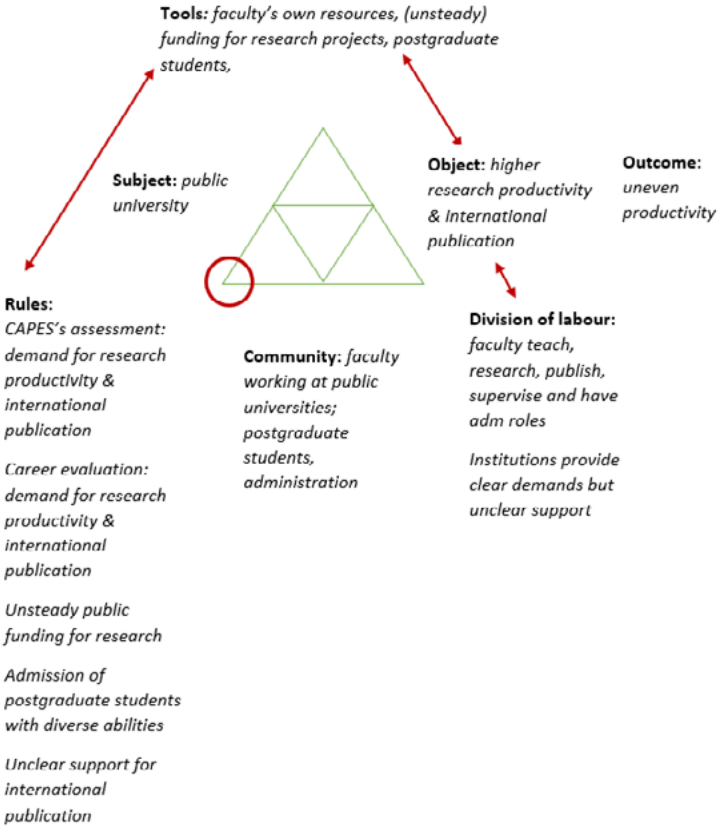
The quota system, introduced to compensate for social injustice, also takes its toll in terms of productivity. If graduate programmes have to maximise research output on limited funding, they need all students and faculty to contribute effectively. If a number of postgraduate students are unable to contribute because their academic abilities still need to be developed, this can also affect the evaluation negatively. CAPES's assessment does not consider these factors – all imposed by governments' actions — which detract from research productivity.

The system of compensation through quotas is an initiative that provIdes access to opportunities in our unfair society. It is undeniably a necessary step in improving the lives of many through education and it deserves dedicated research for us to better understand and enhance it. It seems important to observe that students who did not have the opportunity of good schooling before entering higher education need time to work on their academic development. Therefore, it seems unfair to demand that they produce research and international publication before they are ready for it, and it is also unfair of agencies to penalise postgraduate programmes for welcoming and supporting these students throughout their learning process in detriment of publication demands.

Activity 15 (Figure 78) illustrates the main contradictions. The primary contradictions within the rules are evident, as some of them – CAPES's assessment, Career evaluation — demand higher productivity and publication, while others – unsteady funding, admission of postgraduate students with diverse abilities — make the achievement of that goal more

difficult. A secondary contradiction between the rules and the tools is evident, since the former do not regulate the provision of adequate tools for the activity. Therefore, there is a secondary contradiction between the tools and the object because the available tools are not compatible with the object of the activity: less tools do not contribute to meet higher demands. Another secondary contradiction appears between the object and the division of labour, as the imbalance in the division of labour does not favour the achievement of the goal. Much is demanded of the faculty, while the institution does little to contribute to the success of the activity.

Figure 78 — Activity 15: Current form of the activity: Public universities aiming at enhancing research productivity



Source: This researcher

4.4.3. Engineering

The interviewees from the engineering field are researchers who regularly publish in English in international journals. One of them also serves as a peer reviewer for both national and international journals and as an editor of a national and an international journal in his field. Another one is the graduate programme and research coordinator at his university, which confirms the importance of publication in their careers. Differently from the applied social scientists, they seem more focused on solving existing problems to accomplish their goals than discussing the difficulties and expecting institutional policies which might provide support for other researchers in their field.

Their general modus operandi seems to be to do their best to rid their activities of the pressing conflicts which may hinder the achievement of the object and desired outcomes.

The data extracted from the interviews under the themes of Difficulties and Instruction is summarised below:

Table 6a — Theme: difficulties (Engineering)

Category	Cases Engineering (total=3)	Incidences Engineering	Number of words	% of words within the theme
A. EAP knowledge	1	1	49	1.48
B. L2 knowledge	1	7	469	14.18
C. Lack of supervisor training	3	6	579	17.51
D. Gap in basic education	2	6	420	12.70
E. Collaboration	1	4	620	18.75
F. Plagiarism	3	4	749	22.65
G. Financial	3	6	420	12.70

Source: This researcher

Table 6b — Theme: instruction (Engineering)

Category	Cases Engineering (total=3)	Incidences Engineering	Number of words	% of words within the theme
A. Learning EAP	2	7	999	33.04
B. Learning L2	3	8	1376	45.51
C. Becoming a supervisor	1	2	564	18.65

Source: This researcher

4.4.3.1. Difficulties and Instruction

A) EAP writing instruction and difficulties related to EAP knowledge

A.1.) EAP writing instruction

Interviewees from the engineering field described their experiences learning both EAP and L2 more frequently than the difficulties brought by the lack of this knowledge. They learned EAP writing by consulting a writing manual, reading published articles, trial and error, and working on a PhD degree abroad.

Reading, according to these participants, plays a key role in learning EAP writing. They imply a strong belief that the reading of technical texts converts into the ability of writing the same type of text. The specific technical vocabulary (E2 – excerpt 26) is a common reference, and the structure of the article, the structure of explanations and descriptions to be used are expected to be learned through reading (E1 – excerpt 25). It is also plausible that, in this field, published articles are considered as models to be emulated, in the way the information is organised, as well as in the use of the language.

Differently from the AS interviewees, the participants from the engineering field do not emphasise the need for EAP writing instruction. Although none of them has taken any specific EAP writing courses, they

seem to have developed their abilities by working by themselves, and display confidence in their skills after having done so.

For this group of participants, L2 and EAP are supposed to be acquired without much expectation of support from the universities. They seem to assume that they should know L2 and EAP by learning independently, in order to participate in the activity of research writing and publication. Their pragmatism appears quite clearly in the way they show that these obstacles can be overcome by describing how they accomplished it and explaining how they believe novices should work.

> Especially because technical English has constructions which are, perhaps those who enjoy words which make the text more pragmatic, there are ways to write. Someone who has only read literature, [like] Shakespeare, won't be able to write a scientific article because the language is completely different. When you start reading an experimental procedure about things that you do as a routine, and you understand how that is being explained, when you have to write that in English you have a structure for explaining. It is not a copy paste, but you are creating a way of saying it which may lead to it. Those who publish in English are those who read a lot in English. Those who read few technical articles will find it more difficult, they won't manage because they don't understand the logic of the structure. (E1 – excerpt 25)
>
> *Particularmente porque o inglês técnico tem algumas construções que são, talvez quem curte palavras que tornam o texto mais pragmático, tem formas de se escrever. Alguém que só tenha lido literatura, Shakespeare, não vai conseguir escrever um artigo científico porque é uma linguagem completamente distinta. Na hora que você começa a ler um procedimento experimental de coisas que você faz no dia-a-dia, e você começa a entender como aquilo está sendo colocado, na hora de escrever aquilo em inglês você vai ter uma estrutura de como você colocou. Não é um copy paste, mas você está criando uma maneira de falar que pode levar àquilo. Publica em inglês quem lê muito em inglês. Quem lê pouco artigo técnico tem mais dificuldade, não consegue porque não entende a lógica da estrutura. (E1 – excerto 25)*

> In order to do that, they have to read, because if they know how to read, they will start reading articles in the field, they will become familiarised with the technical terminology used, they will understand what that word means, and that the vocabulary is related to his theme, so they get used to the jargon, and then I think it starts to get easier, so the person has to know English, but they have to be used to reading and start getting used to writing; if they know how to write in basic English, if they have a good grasp of grammar, it will be much easier when they start writing in technical English, because what we can see is that I have students who have good knowledge of English, who know how to read and write well, but when they have to write in English, there are mistakes coming from Portuguese, especially in word order. People tend to write translating, thinking in Portuguese, and I often have to say "no, here this word goes there", because there is this transferring from one language to the other, but it can be solved, or it can be mitigated with reading, reading in English, the more they read, the more familiarised they become and it will be easier to write. That is the same for English and Portuguese too, we know that those who read more write more easily. (E2 – excerpt 26)

> *Pra isso, ele tem que ler porque se ele sabe ler, ele vai começar a ler os artigos da área, vai começar a se familiarizar com a técnica terminologia utilizada, vai entender o que que aquela palavra significa e aquela palavra tá muito relacionada ao tema dele, então ele começa a se habituar àquele jargão, e aí eu acho que começa a ficar mais fácil, então a pessoa tem que saber o inglês, mas ela tem que tá habituada a ler e tem que começar saber a se habituar a escrever, se ela sabe escrever o inglês básico, se ela tem boa noção de gramática, vai ficar muito mais fácil quando ela começar a escrever em inglês técnico, porque o que que também já nota assim, eu tenho alunos que têm bom inglês, que sabem ler e escrever bem, mas na hora de escrever em inglês acaba sempre aparecendo algum vício do português, principalmente na ordem de palavras. A pessoa tende a escrever traduzindo pensando em português aí volta e meia eu devolvo: "não, aqui tá trocado essa palavra fica aqui", porque tem o vício da linguagem, mas isso se resolve ou ajuda-se a amenizar com a leitura, com a leitura do inglês, quanto mais a pessoa ler, mais familiarizada vai ficar e mais fácil vai ser de escrever. Isso vale para inglês e vale para o português também, a gente sabe que quem mais lê consegue escrever com mais facilidade (E2 – excerto 26)*

In Figure 79, the primary contradiction of *Activity 6c* is basically the same as in *Activity 6a* from Applied Social Sciences: the rules of the activity establish the demands but do not provide support. There seems to be an assumption that novices are expected to acquire EAP knowledge autonomously, or with support from their supervisors, as our interviewees inform us. Therefore, the secondary contradiction between the rules and the tools generated by the lack of provision of formally established tools seems somewhat less pronounced than in the other field. The secondary contradiction between the tools and the object also seems to be less strong than among the AS community. Our E participants regard the lack of EAP instruction as a practical problem already solved. The fact that the available tools are not ideal apparently does not concern them very much. Instead, they focus on the achievement of results.

Figure 79 — Activity 6c: Current form of the activity: writing academic genres in English for publication

Source: This researcher

As a consequence, differently from the AS participants, these researchers do not consider the contradictions critical to the point of requiring a new form of the activity.

B) L2 instruction and Difficulties related to L2 knowledge

B.1.) Learning L2

The three engineers interviewed in this study work at different institutions and had additional language instruction, either at language schools or private lessons. They are unanimous in the opinion that the English language instruction provided by the regular school system is not good enough to meet the demands of reading and writing in the academic context.

Language instruction for these participants was an investment of the learner and/or their families, as regular schools taught L2 at lower levels, and universities did not always have a clear provision of instruction to enable students to deal with the academic demands in L2. The engineering course required considerable reading of academic and technical materials in L2, for which a good command was necessary. While L2 knowledge seems to be taken for granted by universities, instrumental English courses focusing on students' reading skills are sometimes offered by universities and may help students cope with the required reading, indicating the institutional recognition that not all students are competent users of L2 for academic purposes.

Although English language instruction is sometimes offered to students 37, it is not a requirement of undergraduate or postgraduate curricula. There is also the issue of the high drop-out rates in these programs (Paiva & Alves, 2020; Terra & Santos, 2018), which indicates that the acquisition of an additional language is only achieved by a small group. Students enrol voluntarily according to their own judgement, rather than a required baseline level of proficiency. Once more, it is up to the student to achieve the level of L2 which will allow them to succeed academically. In addition, these courses offered by universities are generally aimed at basic and intermediate levels – working as a remedial resource for students who did not have the opportunity to learn L2 enough to cope with the demands of their undergraduate courses. The fact that these courses are far below the level of proficiency necessary for international publication illustrates the wide gap existing between the provision of support and the actual demands of the activity of research publication.

E2 clarifies that, even though the private instruction he had in Brazil enabled him to pass the required English proficiency examinations to study abroad, he only really acquired it while living and studying in the

37 https://internationaloffice.usp.br/index.php/cursos/aucani-idiomas/leusp/
https://clinguas.fflch.usp.br/
http://www.portal.ileel.ufu.br/celin
https://www.andifes.org.br/?page_id=82328

UK. E1 and E3 also report that, apart from taking courses, international travel had an important role in their L2 acquisition. In their view, experience at an English-speaking environment positively affects their ability and confidence as L2 users. If, as it seems to be their belief, L2 acquisition can only be achieved through international experience, it seems that the availability of resources may be a key element in the equation.

The interviewees did not inform whether or how much their private language instruction tackled writing. E1 reveals that there were many mistakes in his first submission for publication and he struggled to deal with them, even if his L2 proficiency level was quite high. Taking into consideration that English Language courses rarely teach writing (Carvalho, 2021), we may assume that our participants are unlikely to have had much practice in this skill. Although reading skills seem to suffice at undergraduate level, if students decide to advance to a master's degree, proficient writing in L2 is expected – which very few have been prepared for.

It is clear that these participants are aware that EAP in engineering – "technical English" as they designate it – is different from literature such as novels or classics. There is awareness of the differences in the use of L2, as E1 (excerpt 25) explains that reading Shakespeare will not help with technical English.

> Then, when I decided during my master's, when I started my master's programme, I started studying instrumental English, which helped us translate and understand texts better; I think I took 2 semesters [of the course] then when I decided to do my doctorate abroad, then there was no other way. I started paying for private lessons, I hired a friend of mine from the undergraduate course, who knew English well, and I think I studied one year with him, then I took a preparatory course for TOEFL and IELTS which were the two English exams I had to take to be able to go abroad. I also hired a private teacher to take these two exams. But I really learned English there, when I was doing my doctorate, I can say that I learned English, to speak and to understand what people say. (E2 – excerpt 27)

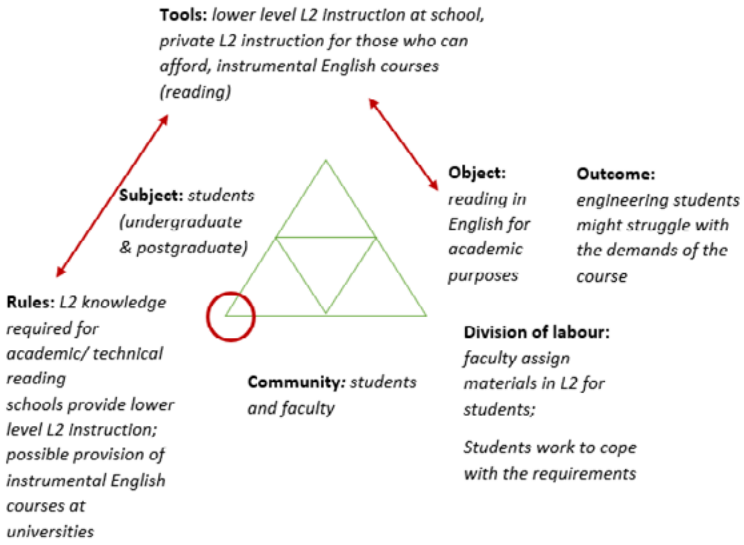
E aí quando eu decidi no mestrado, quando eu comecei a fazer mestrado, aí eu já comecei a fazer inglês instrumental que nos ajudava a traduzir e entender melhor o texto, eu fiz acho que 2 semestres e depois quando eu decidi a fazer o doutorado no exterior, aí não teve jeito, aí eu comecei a pagar professor particular, pagava um amigo meu da graduação que ele tinha bom em inglês e fiz alguns, acho que um ano de inglês com ele, e depois fiz o preparatório para o TOEFL e para o IELTS que são os dois testes de inglês que eu fiz pra poder ir, aí eu também paguei professor particular para fazer esses dois testes. Mas de fato aprender mesmo foi lá, quando eu estava lá fazendo o doutorado é que de fato eu posso dizer que foi lá que eu aprendi inglês, a falar, a entender o que fala (E2 — excerto 27)

Well, I started studying English when I was at high school, I studied a little at (language school X), then I got to the level to take the Michigan certificate; but I'd say that I learned the most because I read practically everything in English, during the undergraduate course, the (university) used to be like this, (I think) it has changed: we had to deal with everything by ourselves. If the literature was not in Portuguese, it was your problem, (…) reading too, I became interested in literature in English, so that was it, basically learning how to speak was also because of international travel, I took several international trips during this time, so, we have to learn or we can't [even] do the minimum, so this is how I learned it. (E3 – excerpt 28)

Bom, eu comecei aprendendo inglês na época de colégio, eu fiz um pouco da (escola de língua X), é...eu acabei, eu acabei chegando lá no nível de certificação que eles faziam lá com Michigan e tal né, mas eu diria que... os maiores, os maiores aprendizados foram porque eu lia praticamente tudo em inglês, isso a faculdade inteira né, as leituras, que isso é uma coisa, é uma coisa que a (universidade) tinha e não tem mais né, que é...é... você tinha de se virar aí, aí a literatura se não estava em português, era problema seu, (...) leitura também né, porque eu comecei a me interessar por literatura em inglês, então não teve muito jeito, é... basicamente essa parte de aprender a falar foi um pouco também com viagem internacional, né, que eu fiz várias viagens internacionais nesses períodos todos, então, aí a gente tem que aprender senão não consegue fazer o mínimo, né, então... o meu aprendizado em particular foi... foi desse jeito, né. (E3 — excerto 28)

Concerning L2 instruction, the interviewees from engineering do not express the need for more consistent support from the universities, nor do they indicate their awareness of the existing conflicts. Rather, as *Activity 16* (Figure 80) illustrates, they undertake their role as problem-solvers, and work independently on the tools which will enable them to achieve their goal. However, it can be seen that since the provision of L2 instruction is not clear in the rules, economic power will heavily influence the outcome of the activity: when students or their families cannot afford private instruction, the success in the activity is likely to be compromised, since there are limited alternatives available.

Figure 80 — Activity 16: Current form of the activity: Engineering students using English at university



Source: This researcher

Although the conditions are quite similar to those of AS researchers, these participants from engineering tend not to consider the mismatch between the rules and the tools as a particular problem. They focus on problem-solving in order to succeed in their endeavour, rather than discussing the lack of institutional support. They work on their own learning until they achieve their goals. In the experience of these participants, applying their own effort is an expected step in learning how to participate in the activity. They seem to approach learning how to participate in research publication as if it were an engineering problem to be solved. They do not mention any particular course, tutoring or guidance received which facilitated their writing production, except for the writing manual indicated to E1 by his supervisor. They do not express any expectations that universities should provide EAP writing courses, nor do they describe it as a source of conflict.

Even though the interviewees from the engineering field do not voice the contradiction between the rules and available tools — that the demands generated by the rules are not matched with tools to mediate the activity — the contradiction is evident. They recognise that insufficient knowledge of L2 is problematic, and since institutional support is scarce, each of them found their own solution.

C) Becoming a supervisor and Difficulties related to lack of supervisor training

C.1.) Becoming a supervisor

Among the engineers, E2 narrates in detail the transition from being a newly hired professor to becoming a supervisor of a large number of undergraduate and postgraduate students. When E2 describes the process through which he became a supervisor (excerpt 19), he is more focused on how his publication activity was built up with and through his supervisees, rather than the process of his learning how to guide them. Becoming a professor at a research-intensive university entails supervising graduate students, and it is assumed that having a PhD degree qualifies one as a supervisor. E2 displays confidence in his supervision, regardless of the lack of provision of supervisor training, which seems to confirm the assumption that a professor's own experience is enough, at least in his case. He does not problematise any aspects of the supervising work he had to learn or develop in order to improve his competence, nor does he explain how he acquired the knowledge to guide students.

As he began supervising, he reports being offered supervisees who were not able to produce good quality work independently, thus needing additional support to develop their research work as well as their written production (excerpt 30). It can be inferred that the senior professor was not enthusiastic about guiding students who would require a lot of time and hard work from their supervisor, and still be less likely to produce high quality research output. So, considering producti-

vity and evaluations, the senior professor would gladly share the burden of supervising duty with a junior colleague who would accept it.

E2, as a new professor, might have considered it an unfair situation, in which he had to shoulder the harder part of the work, especially if the rewards – international publication and consequent positive evaluation of the professor — were unlikely to materialise. On the other hand, catering to the needs of less academically accomplished students is likely to have provided the novice supervisor with the opportunity to further develop their guidance abilities. In addition, E2 completed his PhD in the UK, where supervisors are required to undergo training. Although he does not mention it, it is very likely that E2's experience as a supervisee was positive and has played an important role in building his expertise.

As a supervisor, E2 leads his students to work on research topics with strong potential to be accepted for international publication, a movement which is in agreement with CAPES's evaluation system for postgraduate programmes and researchers. Indeed, this practice, in addition to the regular co-authoring of journal articles with supervisees, has resulted in "a continuous flow of publications" (excerpt 29). In this field, the number of publications in international journals also reflects the professor's success as a supervisor, and in this aspect, considering the very large number of published articles co-authored with his supervisees, he can certainly be recognised as an outstanding supervisor.

> Then, after I was admitted here at (institution) as a tenured professor, then I started slowly, I started publishing articles from my [PhD] dissertation, and soon I started supervising undergraduate dissertations and [undergraduate] scientific research projects, and I started pulling them towards topics which could result in international publication. So, when a student didn't have an idea of what to do, I'd think about some theme that he/she could develop and later I could publish an article in an international journal from it. That is how I started, at the same time I was publishing articles from my [PhD] dissertation, I started directing these students to produce good quality work, which could result in journal articles later. I did the same with master's and doctoral students, and it was little by little, it didn't come with the post [of professor] and the rich resume didn't come at once. It grew slowly, and in the beginning, we always have few students and we have to do the best with these few supervisees to try to have good quality publications, and then we have more students, more master's and doctoral students, and with a certain number of supervisees at the same time, then it is a little easier, because then we have a continuous flow of publications. (E2 — excerpt 29)

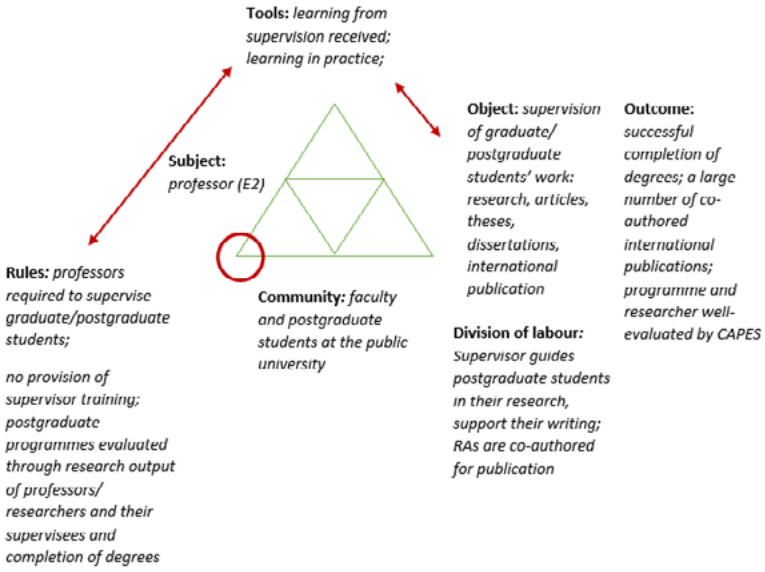
E aí depois que consegui aqui entrar na (instituição) como professor efetivo, aí fui começando aos poucos, eu comecei a publicar artigos da minha tese né... e logo que entrei comecei a orientar TCCs e trabalhos de iniciação científica e comecei a puxar para que os assuntos fossem assuntos que poderiam resultar em publicações internacionais. Então, quando o aluno aparecia sem ideia do que fazer, eu pensava em algum assunto que ele pudesse desenvolver e que daquele trabalho eu pudesse depois publicar artigo em revista internacional. E foi assim que comecei, ao mesmo tempo que fui publicando artigos que ainda tinha da tese, comecei a puxar esses alunos para que fizessem trabalhos de boa qualidade, pudesse depois resultar depois em artigos de revista. E o mesmo fui fazendo com mestrandos e doutorandos, e foi aos poucos né, não caiu de asa delta na função e não caiu um currículo cheio de uma hora pra outra. Ele foi crescendo aos poucos, como no começo a gente sempre tem pouco aluno e tem que fazer o máximo possível desses poucos orientandos que a gente tem pra tentar ter as publicações de qualidade, e aí depois que a gente vai tendo mais alunos e mais mestrandos e doutorandos e tem uma certa quantidade de orientandos ao mesmo tempo, aí fica um pouco mais fácil né, porque aí a gente tem um fluxo contínuo de publicação. (E2 — excerto 29)

I've had a colleague here in my department, who had been my master's supervisor and today is my colleague, as soon as I came back from my doctorate [abroad] and started supervising in the graduate programme, when he had a student who was not very good, who would be demanding, he would say: "look, would you like to help me co-supervise this one here, and that one there", it happened a few times; the good ones he didn't ask me to help co-supervise, why? Because he didn't want the trouble, the good students who already know what and how to do, how to revise, how to write, how to write well, those he didn't offer me to co-supervise. (E2 – excerpt 30)

Eu já tive um colega aqui no meu departamento, que foi meu orientador de mestrado e hoje é meu colega, logo que eu voltei do doutorado que eu comecei a orientar aqui no programa, quando ele tinha um aluno que não era muito bom, que era um aluno que dava trabalho para ele, ele me dava coorientação, ele dizia: "ó tu não quer me ajudar a co-orientar esse aqui, e aquele ali", isso ocorreu algumas vezes, os bons ele não me pedia para ajudar co-orientar, por quê? Porque ele não queria trabalho, os alunos bons que já sabem direito né o que fazer, como fazer, como fazer revisão, como escrever, como escrever bem, esses ele não me oferecia coorientação. (E2 – excerto 30)

In E2's case, as illustrated in *Activity 17a* (Figure 81), the current form of the activity — despite the primary contradiction within the rules, and secondary contradictions between the demands and tools and tools and object — does not represent a threat to the outcome of the activity. Institutions may consider this as the ideal situation: the demands are met with minimal or no provision of support, and the supervisor seems fully capable of keeping the high productivity on his own.

Figure 81 — Activity 17a: Current form of the activity: supervision of postgraduate students (E2)



Source: This researcher

We may note, however, that E2 should be considered an exception. He has somehow found a way to do research and publish a large number of articles in international journals despite the unfavourable working conditions provided by the university. The main factor for his success is his own diligence. He attracts good students to the postgraduate programme, helps them obtain scholarships, guides research work, co-authors most articles, revises all students' texts in detail to make them suitable for submission, makes the best possible with the scarce funding, keeps his prestige high in the community by working as an editor and peer reviewer, and promotes the acceptance of his supervisees into the international community. Although committed researchers often engage in most of these actions, maintaining the intensity of E2's work and the level of his success is a rare feat.

C.2.) Lack of supervisor training

Interviewees E1 and E2 commented on the lack of supervisor training, showing their views on how problematic it is for postgraduate programmes.

According to E1 (excerpt 31), some supervisors are not nearly as qualified as they need to be to perform their duties satisfactorily. They do not produce good articles even in L1, do not guide postgraduate students to produce good theses, and their performance when evaluating other students' work is also inadequate. Even though E1 does not specify whether those supervisors lack knowledge of the discipline, research methodology, academic writing or other requirements, it is clear that he considers they lack the abilities to be competent at their work.

E2, on the other hand, discusses the problem in more detail. It is important to understand that he is immersed in the context of international publication, as an author, co-author/supervisor, peer reviewer and editor. He values international publication greatly – it is his motive — and makes sure that his supervisees participate in the activity. In his view, not doing so is deleterious to the research community, the postgraduate programme, and the university.

He reports that there are supervisors who lack the focus to succeed in international publication, primarily by not discerning the topics which could potentially interest international journals, and consequently not guiding supervisees' research towards those topics. In his opinion, supervisors' own degrees should have been focused on international publication, and not having done so casts doubt on the quality of their studies. He hypothesises that this is a likely source of problems, and he supports the assumption that supervisors are made from the experiences of being supervised as graduate and postgraduate students. Thus, the quality of guidance received would model the type of guidance they may provide.

At his university, E2 has witnessed other issues which he recognises as serious flaws jeopardising the process of supervising:

professors not staying up-to date with current research literature, faulty knowledge of basic research principles, low quality of PhD research, low standards for the selection of faculty, and no supervisor training. In fact, these issues become cyclic, especially if the poor guidance received by doctoral students replicates after they are hired as faculty members. The cycle of problems, if not broken, hinders the participation of these researchers in the competitive activity of international publication, where the quality of research must be high, the topic and literature must be current, and the written production must conform with strict conventions. When these researchers become supervisors, problems can multiply, replicating with each supervisee.

E2 sees that he can contribute to supervisor training by providing instruction on research methodology, which could improve the quality of the research produced by the postgraduate programmes. However, he doubts that current supervisors would acknowledge their need for the training, given their status as established faculty. The current structure does not favour the improvement of supervisors and programmes, as there is little that can be done to persuade professors to change their practices, especially if loss of face might be involved.

The fact that E2 completed his PhD in the United Kingdom – the same country as AS5 – suggests that the current format adopted by British universities, with supervisor training for novice supervisors and periodical briefing for continuing supervisors[38], a standard has been achieved which greatly benefits students. The professors who have had this experience seem to be confident in their guidance of students and are consistent in producing positive results. However, since only few Brazilian PhD students have the opportunity to study at universities where supervisors are highly qualified and not all of them become

38 https://www.ed.ac.uk/institute-academic-development/research-roles/supervisors/fundamentals-of-phd-supervision
https://www.ucl.ac.uk/teaching-learning/professional-development/research-supervision--ucl/research-supervision-training
https://www.imperial.ac.uk/staff/educational-development/workshops/introduction-to/supervising-phd-students/

university professors, this experience cannot be relied upon as a regular source of guidance for novice supervisors. The lack of provision of supervisor training remains a concern.

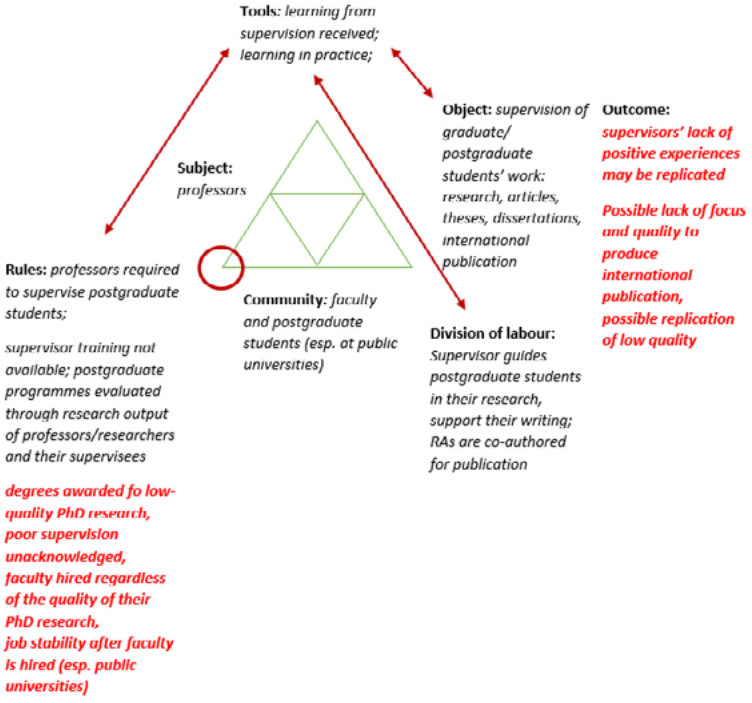
> If you read articles by those people in Portuguese, they are problematic. Theses supervised by those people have problems; the way those people evaluate in an evaluation board, if you start to observe, you understand where the difficulty is: their own educational background. (E1 – excerpt 31)
>
> *Se você pegar artigos dessas pessoas em português, os artigos são problemáticos. A dissertação orientada por essas pessoas tem problemas; o jeito que essas pessoas avaliam uma banca, se você começar a observar, entende onde está a dificuldade: é de formação. (E1 – excerto 31)*

> These resources won't help those who don't know what to do. What I realise is that there are people doing research, but they don't know whether that result, that research will have the potential for publication in an international journal. I think the problem… the origin of the problem may be there. We have professors who'll supervise anything to stay in the postgraduate programme and say that they are supervising master's and doctoral students, but they don't have any idea whether that topic they are researching will produce international publications or not. So, I think that it may be a problem of academic development / education, the quality of the person's master's and doctoral degree in order to start learning there. How they have to research for the literature review in order to find themes in their field which will become publications later. It might be [a problem], but I can't be sure whether is it, but I think it is the issue of educating professors who did doctorate and masters' degrees, and who were undergraduate students, rather than money. (E2 – excerpt 32)
>
> *Esses recursos não vão ajudar aqueles que não sabem o que fazer. O que eu percebo às vezes é que tem gente fazendo pesquisa, mas a pessoa não sabe se aquele resultado, aquela pesquisa vai ter potencial pra ser publicada numa revista internacional. Eu acho que o problema essa ...a origem desse problema pode estar aí. A gente tem professores que orientam qualquer coisa para tá no programa de pós-graduação para dizer que tá orientando mestrado, para dizer que tá orientando doutorado, mas eles não têm muita noção se aquele assunto aquele tema que eles estão pesquisando vai render publicações internacionais ou não. Então eu acho que talvez seja um problema de formação né da pessoa ter feito um mestrado, ter feito um doutorado de qualidade para começar a aprender ali. Como ela tem que buscar essa revisão de literatura dela para tentar encontrar temas dentro da área dela que vá render publicações depois. Talvez seja mas eu também não posso te dar certeza se é isso ou não, mas eu acho que é mais isso essa questão da formação dos professores, que foram doutorandos e que foram mestrandos e que foram alunos de graduação do que dinheiro* (E2 – excerto 32)

The primary contradiction within the rules, illustrated in *Activity 17b* (Figure 82), is clear. If degrees are awarded for low-quality doctoral research, when these PhD holders become supervisors, they are unlikely to guide students to do high-quality research. By not providing and demanding supervisor training, institutions leave the quality of supervision up to each individual's ability and judgement. At public

universities, once faculty are hired, there is very little that can jeopardise their positions, which means that many supervisees might receive subpar guidance if a professor does not seek self-improvement. While their postgraduate programmes may receive low grades from CAPES because of the lack of productivity, their universities cannot dismiss them for this reason. The inadequacy of a professor's supervising abilities may be commented on informally (E1, excerpt 31; E2, excerpt 32), but there are no tools for qualitative assessment. Because there is no official acknowledgement that supervision might be faulty, there is no provision of mechanisms for improvement.

Figure 82 — Activity 17b: Current form of the activity: supervision of postgraduate students (other supervisors)



Source: This researcher

Although there is still no supervisor training, private universities work differently: they tend to offer better contracts to hire and retain productive faculty who can supervise well for their postgraduate programmes, so that their evaluation by CAPES is satisfactory. Productivity and quality of supervision are important in the faculty's job stability, usually measured through students' satisfaction and volume of publication. The lack of supervisor training also has a potential impact on the careers of professors at private universities.

Because of the lack of provision of tools, the secondary contradiction between the rules and the tools arises. The existing tools – supervisors' own experience as supervisees, learning from practice – are not sufficient to fulfil the established demands. Postgraduate programmes are assessed according to their productivity, which depends on how well research is developed and published. However, support for supervisors to become more productive and make their students increase research output is not available. Instead, once again, supervisors who wish to improve their abilities need to seek development by their own initiative.

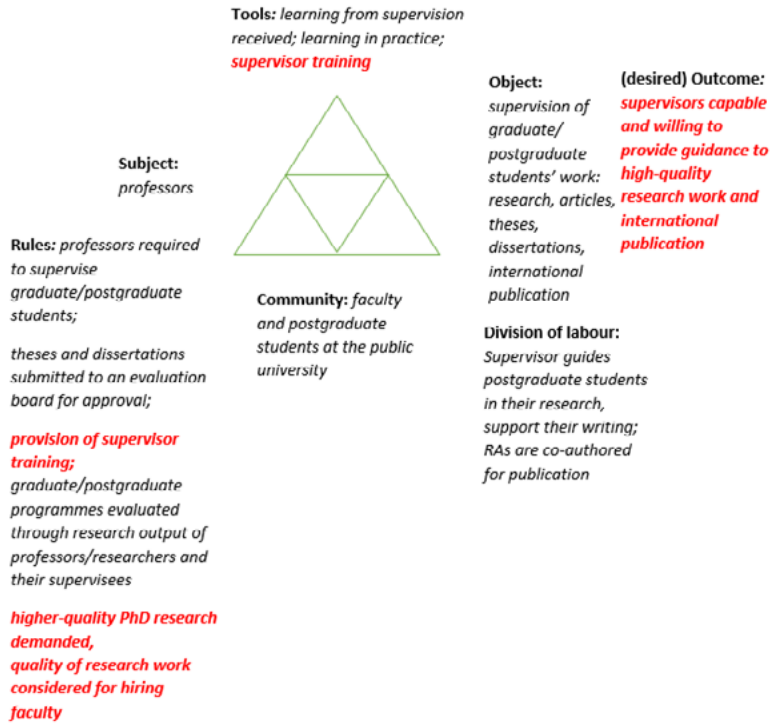
Another secondary contradiction arises between the object and the tools, as the available tools are inadequate to mediate the activity. Supervisors' experiences may vary widely, and having worked on one's own PhD does not guarantee that they will be able to teach students how to do research and produce RAs or dissertations.

A further secondary contradiction appears between the tools and the division of labour, as the supervisors may be unable to fulfil their part of the agreement due to insufficient tools for the task.

Activity 17c (Figure 83) illustrates a new form of the activity of supervising postgraduate students, in which supervisor training would be provided, and the quality of PhD research would be important in the hiring of faculty. The baseline for supervision would be established, and while uniformity would not be the aim, supervisees would have the assurance

of a guidance standard. This would be particularly important for the programmes at public universities, since faculty tend to have a long career, during which they supervise a large number of postgraduate students.

Figure 83 — Activity 17c: New form of the activity: supervision of postgraduate students



Source: This researcher

The far-reaching effects of high-quality supervision are therefore evident. A positive cycle can be created if postgraduate students have a positive experience as supervisees and receive further training as novice supervisors. The likelihood of becoming good supervisors themselves is thus multiplied.

D) Difficulties associated to gaps in basic education

On the topic of gaps in basic education, E1 and E2 have similar views to those expressed by AS participants. E1 agrees that the current system does not foster the emergence of good researchers because they are too focused on repetition and rote learning for success in examinations such as ENEM (Exame Nacional do Ensino Médio)[39] and competitive university entrance examinations. He adds that there is no encouragement for becoming a researcher as a career.

E2 emphasises that most undergraduate students write poorly, with few exceptions. He reports having had to explain basic grammar rules in L1 and having to correct language features in texts as well as content and organisation. According to him, some students never improve their writing enough. He observes that his work could be even more focused on research and publication if the education system taught both Portuguese and English effectively.

Notwithstanding the difficulties caused by such gaps, the engineering participants focus on accomplishing their goals, in this case by working on the weaknesses shown by their postgraduate students, and supporting them in completing their research work, degrees and publications. Once more, their pragmatism and goal-oriented stance is key in their activities, even under unfavourable conditions.

> The second (reason) is the lack of education of students from elementary school, who might know that it is worth investing in a master's or PhD degree when it is time to choose. (E1 excerpt 33)
>
> *A segunda (razão) é a não formação de pessoas desde o Ensino Fundamental que quando chegarem na hora de optar possam saber que de fato vale a pena fazer um mestrado e doutorado, continuar investindo. (E1 excerto 33)*

> So I correct [the texts] showing not only the issues with content, format and structure, but also Portuguese so that they know that they can't write carelessly. (…) there are two extremes, there are those who improve as they work on their masters and doctorates, and of course there are some exceptions that can't be helped, they are unable to improve. (E2 excerpt 34)

39 https://www.gov.br/inep/pt-br/areas-de-atuacao/avaliacao-e-exames-educacionais/enem

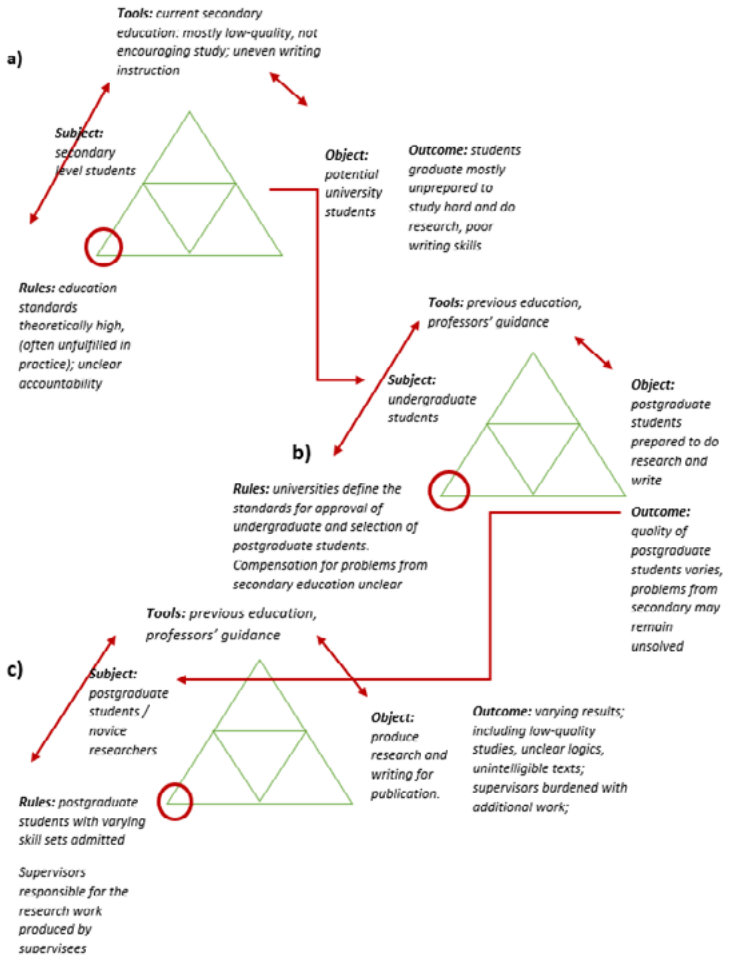
Então eu corrijo mostrando não só o que tem de problema de conteúdo e de formatação e estrutura, mas também o português para ele saber que ele não pode escrever de qualquer jeito. (...) tem os dois extremos, tem aqueles que melhoram à medida que vão fazendo mestrado, doutorado, é claro que tem algumas exceções que de fato não tem jeito, que...não tem, não conseguem melhorar (E2 excerto 34)

I think I go back to the origin of education, education of people; if we had better education, people would arrive here with a better Portuguese, better English, so that they could prepare more adequately to do their work here. (E2 excerpt 35)

Eu acho que eu volto de novo lá na origem de formação, da formação das pessoas; se a gente tivesse uma formação melhor, as pessoas chegariam aqui com o português melhor, com o inglês melhor, pra poder se preparar de forma mais adequada, pra fazer o seu trabalho aqui. (E2 excerto 35)

Activity system 2c (Figure 84) illustrates the subject-forming activity of secondary education, the subject-forming activity of undergraduate courses and the main activity of postgraduate students doing research. The primary, secondary and quaternary contradictions are very similar to those described by AS participants. Students who enter undergraduate courses are unprepared for academic work and lack previous knowledge and skills set. Since there is no clear provision of ways to compensate for those, students graduate without having solved such problems. As a result, some students advance to postgraduate level with academic literacy problems in both L1 and L2 (E2 excerpt 35), while having to produce RAs for competitive international journals.

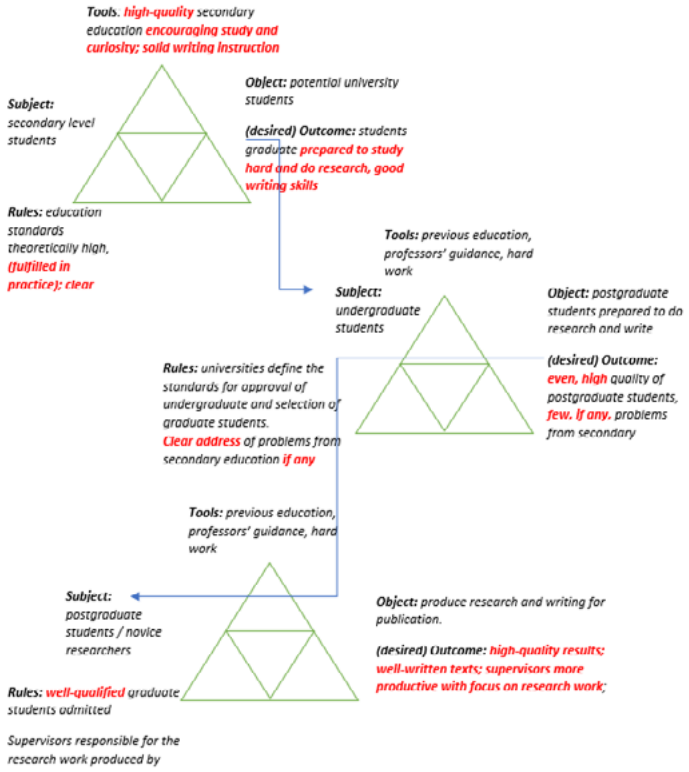
Figure 84 — Activity System 2c: subject-forming and research work



Source: This researcher

Similar to AS participants, the criticism may suggest a new form of the activity, in which there are fewer contradictions, illustrated in the *Activity system 2d* (Figure 85).

Figure 85 — Activity System 2d: New form of the activity: subject-forming and research work (desired)



Source: This author

E) Collaboration

Collaboration is a topic which particularly concerns E1. He thinks that there is little collaboration for a number of reasons, including the culture within the field, the lack of incentives, the evaluation system, and the labour laws. In his opinion, in order to produce high-quality knowledge, researchers should work collectively, inter-institutionally. There should be official incentives and fewer barriers for researchers to

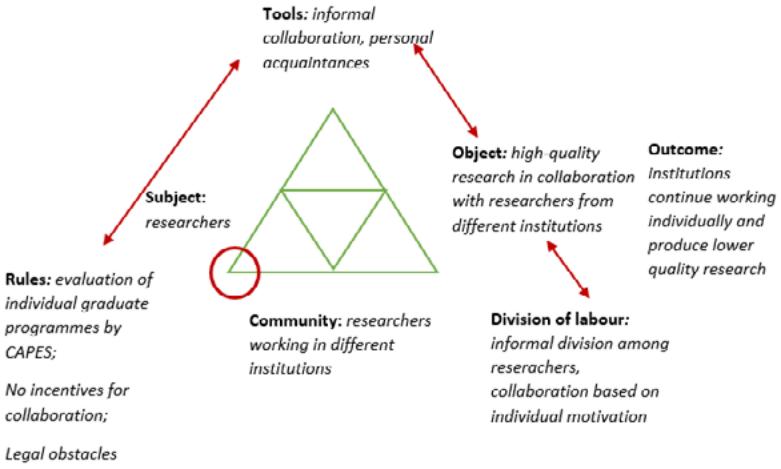
collaborate. However, as the CAPES's evaluation considers individual institutions' performances, researchers are reluctant to take the trouble to circumvent complicated rules and labour laws so that they can collaborate with peers from other institutions.

> The problem may not even be the material means, but the culture of sharing things, which we don't have yet. In the hard sciences, there are few laboratories, we have in (city), where there are several facilities for materials, but not everyone has access. The partnerships happen because there are friendships (among researchers) or because they have known each other for a long time. Sometimes a researcher from an institution knows one from another and they collaborate informally, and then the legal aspect comes in, and everything seems very difficult, and there is no encouragement. This makes things very difficult because several good researchers are scattered, and we don't produce anything alone. Then there is the cruel aspect of the CAPES metrics: the programmes are evaluated, but these are connected to personal goals, and then, each researcher produces their own work (…) so each one starts to take care of their own. (E1 – excerpt 36)
>
> *Talvez não seja nem o meio físico o problema, mas a cultura de compartilhar coisas, que a gente não tem ainda. São poucas, na área de exatas; em termos de laboratório, nós temos em (cidade), que tem várias facilidades de materiais, mas não é todo mundo que tem acesso. E as parcerias que acontecem são por amizades ou por conhecimento de longa data. Às vezes o pesquisador de uma instituição conhece o da outra e daí acaba colaborando informalmente, entra a parte jurídica e parece que tudo é muito difícil e não é fomentado. Isso dificulta demais porque se tem vários bons pesquisadores espalhados, e sozinhos a gente não faz nada. E aí vem também o lado cruel da métrica da CAPES: as avaliações são de programa, mas que traduzem metas pessoais, e aí cada um sai produzindo o seu (...) então cada um começa a cuidar do seu. (E1 – excerto 36)*

E1 also thinks that collaboration should be a feature which includes undergraduate courses as well as postgraduate courses. In his opinion, the exchange among the various engineering courses and research groups should be made more flexible with a view to the development of the whole field.

The conflicts in this activity are quite evident, and are illustrated in *Activity 18a* (Figure 86). There is a primary contradiction, as collaboration is not encouraged by the existing rules, and legal obstacles work against it. Since evaluation does not value collaborative production, the general culture is not that of sharing; as a result, the quality of the individual work is below what it could be collectively.

Figure 86 — Activity 18a: Current form of the activity: Collaboration in research

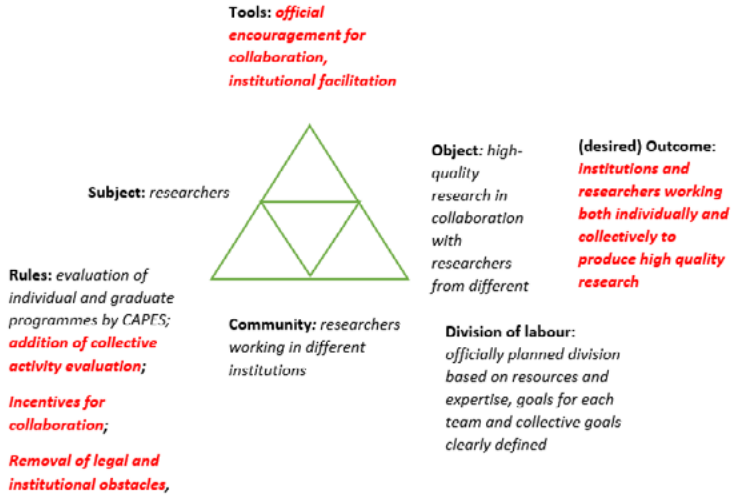


Source: This researcher

Secondary contradictions arise between the rules and the tools since the latter are not regulated. Also, the tools for the activity are not adequate to mediate the activity, and the division of labour does not favour a real commitment towards the achievement of good results.

Activity 18b (Figure 87) illustrates what E1 envisions as a better form of the activity, in which barriers are removed and the rules value collaboration between institutions. In his opinion, collaborative work should be encouraged, so that researchers could rely on each other's expertise in order to be more productive and have higher quality research than they do today.

Figure 87 — Activity 18b: New form of the activity: Collaboration in research (desired)



Source: This researcher

F) Plagiarism

Plagiarism often seems to stem from postgraduate students' lack of awareness of the transgression, as well as the supervisors' overlooking it. Both E2 and E3 report that most of the times, supervisors take for granted that students will know how not to plagiarise, while students may lack the guidance to avoid it. According to E3, students generally do not intend to break rules, but they might do so unwittingly. In these cases, if supervisors fail to check closely, some articles might be submitted to journals with plagiarised fragments, causing serious problems, especially when the supervisor is named as a co-author. In this aspect, E2 is very zealous in revising student's written production to prevent such occurrences, being aware of the risks, especially in international publications.

Another issue is the lack of students' ability to write in their own words. E2 reports that some students have great difficulty producing

academic texts. As they submit their written production to their supervisors and receive feedback indicating many aspects to be improved, they sometimes resort to plagiarism, not knowing how to write an acceptable text. Some students have even dropped out of the graduate programme because they felt incapable of producing texts of their own, without plagiarising.

According to their information, rather than deceit, most plagiarism seems to have its roots in the lack of proper guidance – possibly starting in undergraduate courses and extending to postgraduate programmes- insufficient supervisor attention to the texts produced by supervisees and lack of academic writing instruction and practice. Apparently, the general belief among engineers that reading sufficiently leads to good writing is proved faulty regarding plagiarism.

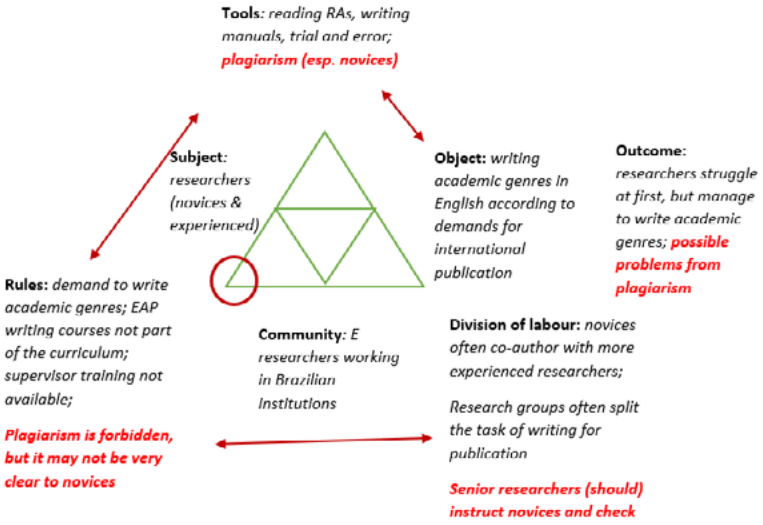
> Then the student writes, sometimes it is not dishonesty, most of the times it is not dishonesty. Nobody told him how he is supposed to do it, what he is supposed to do. As nobody taught him, he believes that it is some assignment just like he used to do in his undergraduate course. Then it is common for things [to happen] like he puts a text, or an equation, and for some reason he doesn't cite, and then it is plagiarism, for any committee. You copied part of someone's work and didn't cite, then it is plagiarism, and it becomes a disciplinary issue, but there was no intention to deceive. (E3 excerpt 37)
>
> *Aí o aluno escreve, às vezes não é má fé, na maior parte das vezes não é má fé. Ninguém disse para o cara como ele deve fazer, o que ele deve fazer. Como ninguém ensinou, ele acredita que é um trabalho igual ao que ele fazia na graduação. E aí é comum acontecer coisa do tipo o cara coloca o texto, ou coloca uma equação e esquece por alguma razão, ele não põe a citação, e aí para qualquer comissão isso é plágio. Você colocou parte do trabalho de terceiro e... não deu os créditos, é plágio, e vira um processo, mas é... não é que houve má fé. (E3 excerto 37)*

In the activity theory framework, plagiarism can be added as one of the outcomes in the current form of the activity of producing academic genres, resulting from the pressure to produce them. Novices may also erroneously consider plagiarism as a tool to produce academic genres, especially if they feel or are unable to write them on their own.

As illustrated in *Activity 6d* (Figure 88), a primary contradiction can be observed, as plagiarism is strictly forbidden in academic practices. Nevertheless, this fact seems to be overlooked, especially by

novices, either because the guidance was not clear, or because there may not have been any guidance concerning it. If plagiarism is perceived as a tool, then a secondary contradiction between the rules and the tools arises and, as a consequence, a contradiction between the tools and the object also appears. In international publication, plagiarism is considered a serious transgression, it cannot be a tool in the activity under any circumstances.

Figure 88 — Activity 6d: Current form of the activity: writing academic genres in English for publication



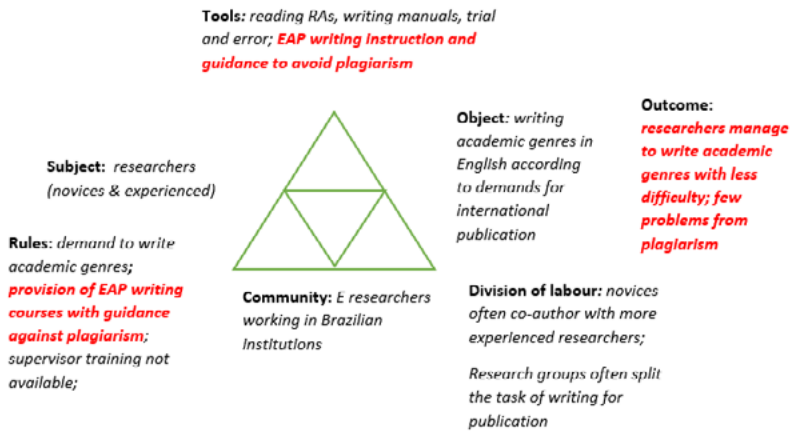
Source: This researcher

An additional secondary contradiction may appear, especially as EAP writing instruction – which would probably approach the topic of plagiarism – is not in place. The guidance concerning plagiarism is added to the senior researcher's or supervisor's work, since there are few other options. Senior co-authors also must check whether novices have plagiarised, and rectify the problem if they have, under the threat of

having their reputation endangered by the forbidden practice. The sanctions are equally severe, regardless of the reasons for the plagiarism.

Activity 6e (Figure 89) illustrates possible new form of the activity, in which the provision of EAP writing courses would make novices aware of the rules and practices of the research and publication activity. Researchers would be better prepared to write academic genres, and therefore less inclined to resorting to forbidden practices. Plagiarism would become an issue of true academic dishonesty, rather than the result of novices' ineptitude at producing texts under pressure.

Figure 89 — Activity 6e: New form of the activity: writing academic genres in English for publication



Source: This researcher

In order to support students in the prevention of plagiarism, in addition to mandatory writing courses, some universities abroad have made a range of resources available, including webinars, online guidelines, and tutoring (Ferreira & Freitas, 2021). Although our universities are yet to structure mandatory writing courses, it might be possible to reach students and raise their awareness by providing resources such as the ones cited.

G) Financial Difficulties

Public and private institutions have been affected by the public budget cuts in recent years. E1, who works at a private university, reports that the reduction in PIBIC[40] scholarships has affected students' interest in postgraduate courses, reducing the volume of postgraduate level research at his institution. Consequently, the research activity has suffered as a whole. E2, from a public university, reports that research projects have been curtailed, as well as publication activities. E3 – whose research projects are mainly privately financed – reports that peers from public universities have had difficulty keeping their research activity due to financial constraints.

E2 confirms that financial resources to produce RAs in English are not available, as the survey results (Question 12) indicate. He explains that, for researchers whose L2 proficiency is low, a good translation service is necessary if they intend to publish internationally, and this needs to be paid for by the author, because the university does not have a budget for it. He also reports that most of his postgraduate students receive a scholarship while working on their degrees, but there is no budget provision for rtigorh equipment and supplies. Thus, so they – and sometimes their families – foot the bill for those items.

E2 expresses his discontent at the fact that, even though financial resources have been drastically reduced and prior commitments have not been met, the agencies continue to issue public calls for proposals– *editais* — of research projects which require financial support. On the other hand, he also doubts that funding alone will solve other issues, such as the quality of research and the problems deriving from the lack of adequate guidance from supervisors.

Once more, he and his supervisees deal with the unfavourable conditions "the best way possible" (E2 excerpt 38) in order to keep

40 Programa Institucional de Bolsa de Iniciação Científica – scholarship program directed to undergraduate scientific research.

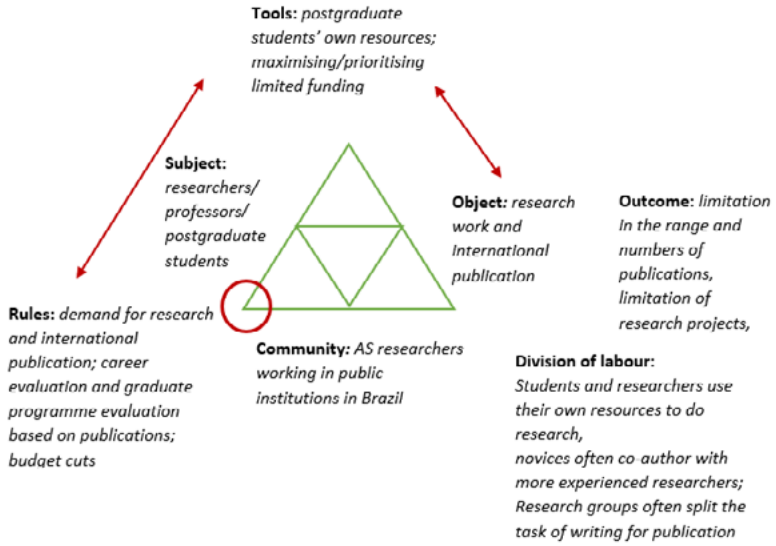
researching and publishing, which currently means spending their own money to finance their research and publication. In this context, unless researchers are independently wealthy, the scope of their research and the possibility of publication may be severely limited. Again, compared to the requirements for evaluation of the graduate programme, the provision of mediation tools is markedly imbalanced, which constitutes a contradiction in the activity theory frame (Figure 89)

> We know that there are budget cuts and we have to deal with them the best way possible. For example, I had a project approved for the (programme) I think it was in 2018, but I had asked for 200,000 and was granted 20 (thousand). [They said] I could accept it or have nothing. Of course, I accepted it, but I still haven't received it. So, I e-mail CNPq and they say that I have to wait because they don't have the money. But what annoys me is that they keep issuing public calls to offer money (for projects). (E2 excerpt 38)
>
> *Corte de recursos a gente sabe que tem e a gente tem que lidar com isso da melhor forma possível. Eu por exemplo tive um projeto do edital (nome do edital) eu acho que foi ainda de 2018 que foi aprovado, mas foi assim oh eu pedi 200.000 me deram 20 (mil), quer 20 assina, não quer, fica sem nada. Obviamente que eu aceitei, mas até hoje não recebi. Então tá naquela de eu escrevo para o CNPQ mando e-mail pra eles e eles dizem: "olha tem que esperar porque tá sem dinheiro". Mas o que me chateia é que continuam publicando editais para dar dinheiro, pra oferecer dinheiro. (E2 excerpt 38)*

Similarly to the way AS researchers in public universities have had their research projects limited by the federal government's severe budget cuts, E researchers have also felt the effects of the reduction. There is a strong primary contradiction within the rules in *Activity 18c* (Figure 90), as the demands for production of research and publication remains the same, while the resources have been drastically reduced. There is a secondary contradiction between the tools – limited funding – and the rules, and a further contradiction between the tools and the object. Although E2 affirms that they do the best they can, he also makes it clear that funding is a major issue. The effects of the budget cuts can already be observed in the reduced research output[41] and, if investments are not resumed, the activity of research and publication may dwindle further.

41 https://revistapesquisa.fapesp.br/financiamento-a-pesquisa-em-crise/

Figure 90 — Activity 18c: Current form of activity: research and publication



Source: This researcher

4.4.3.2. Institutions

The institutions where the Engineering participants work are different in nature: one is a private institution, and the other two are public, a state and a federal university. All interviewees engage intensively in research and publication, apart from their other duties. The descriptions and views provided by each participant depend greatly on how the conditions set by their institutional environment affect their work at their respective workplaces.

Table 7 — Theme: Institution (Engineering)

Category	Cases Engineering (total=3)	Incidences Engineering	Number of words	% of words within the theme
H. Community	2	6	772	10.98
I. Demands	2	17	3069	43.68
J. Support	2	3	198	2.81
K.Structural Problems	3	22	2987	42.51

The institutions where the Engineering participants work are different in nature: one is a private institution, and the other two are public, a state and a federal university. All interviewees engage intensively in research and publication, apart from their other duties. The descriptions and views provided by each participant depend greatly on how the conditions set by their institutional environment affect their work at their respective workplaces.

E1's institution is a traditional private university in the State of São Paulo, well-known for its teaching, research, and innovation in the engineering field. Part of the faculty work exclusively at the university, teaching undergraduate and postgraduate courses, developing research and supervising students. The other part work as engineers in private companies and are valued by students because of their connection with the world outside academia; they usually teach undergraduate courses a few hours a week. All professors are required to have a PhD degree. The university is currently focusing on keeping a high grade in CAPES's evaluation, which is essential to maintain its postgraduate programme. Since CAPES's criteria determine that international publication is a priority, the university's administration demands that all faculty involved in research publish in international journals. The hiring policies have also been changed to match this demand. Funding for research seems to be compatible with the needs for equipment and supplies, but the proficiency in English language and writing ability are taken for granted. The university is working towards strengthening its research lines and making them an institutional trait rather than having individual researchers centralising the activity.

E2's institution is a research-intensive Federal University in a Southern State in Brazil. Its engineering school is recognised as one of the best in the country. However, frequent budget cuts and problems stemming from the changes in the ministry of education's political orientation have caused instability in the postgraduate programmes and research output. The university has a promotion plan — *plano de progressão*; if the professor fulfils enough requirements, they are promoted in small steps, to keep them motivated. Nevertheless, not fulfilling the requirements only withholds promotion; there are no demotions or risk to their jobs. At the top of the range there are excellent, renowned, highly productive researchers, while at the bottom, there are others who produce very little. Low productivity affects the CAPES grades significantly, but it is currently compensated by the work of those who produce a lot. According to E2, the reasons for low productivity may involve lack of motivation, poor supervising ability, and poor researching ability, among other factors.

E3's institution is a research-intensive State University in the State of São Paulo. The engineering school is prestigious and has research groups who develop both privately and publicly funded projects. Differently from the other institutions, a researcher in these groups does not need to be a professor, although a PhD degree is a requirement. The head of each research group is a senior professor in the university, and their postgraduate students are admitted to help develop projects and to be socialised into the research activity. E3 explains that the senior professor is usually more involved with the paperwork – such as contracts for research projects, scholarships, and reports – than actual supervision. Each group has experts working on the development of research and also guiding postgraduate students. The research groups also produce and publish the required number of articles collectively, taking turns to write the text and exchange correspondence with editors and publishers. The authors listed in each article include the whole group, even those who are not directly involved. This keeps the volume of publication of all members high, which, according to E3, is a common practice in the field.

The engineers' contributions through the interviews suggest that they are far more focused on the challenges entailed in their professional activity than the AS interviewees, by discussing mainly demands and problems. These participants indicate that existing structural problems interfere with the fulfilment of the institutional demands. As they explain the challenges, they also reveal their awareness of the major contradiction: the problematic conditions imposed by the institutions often obstruct the achievement of the goals set by the institutions themselves.

E1 and E2 discussed their communities, demands and support, reported in items H, I, J below, while E3 mainly focused on the structural problems of his environment, discussed in item K.

H) Community

E1 characterises his private university as different from public and other private institutions, as it has very peculiar features. One of them is that it is not managed as a business aiming at maximum profit, as many other large private universities are. He observes that many of those have lower quality, crowded undergraduate courses, while hiring well-paid researchers to produce research and international publication so that high grades are awarded by CAPES. By contrast, his university works with different ethics, aiming at providing high-quality education which is connected to their lines of research. Another feature of the institution is being less dynamic than most private universities. It can be inflexible and slow to take decisions, which makes it ill-equipped for implementing changes swiftly, as it may be desirable at times.

According to E1, one of the changes which should be implemented is to have administrative actions that respond to the faculty's academic activity. Although the stipulations for producing and guiding research work are explicit, there are no corresponding rewards or penalties, so there are few incentives for hard work other than the faculty's own motivation.

E1 describes the community at his university as a complex ecosystem. There are different types of practices and a shifting culture. Part of the faculty were hired to work as researchers and professors, whereas another group have teaching responsibilities, often also holding positions as engineers at private companies. He reports that researchers convey the passion for knowledge to students in a way that non-researching professors do not, and their influence on the best students to remain at the university for postgraduate studies has had a key positive effect on the programme.

There are many postgraduate students who have full-time jobs, which limits their availability for projects with their research groups and supervisors. E1 explains that when there are more full-time students, especially on scholarships, the postgraduate programme's productivity is far higher. Although there are regular offers of scholarships, they are not as financially attractive as engineering jobs. As a consequence, there is a fluctuation of research productivity depending on the number of full-time postgraduate students in the programme.

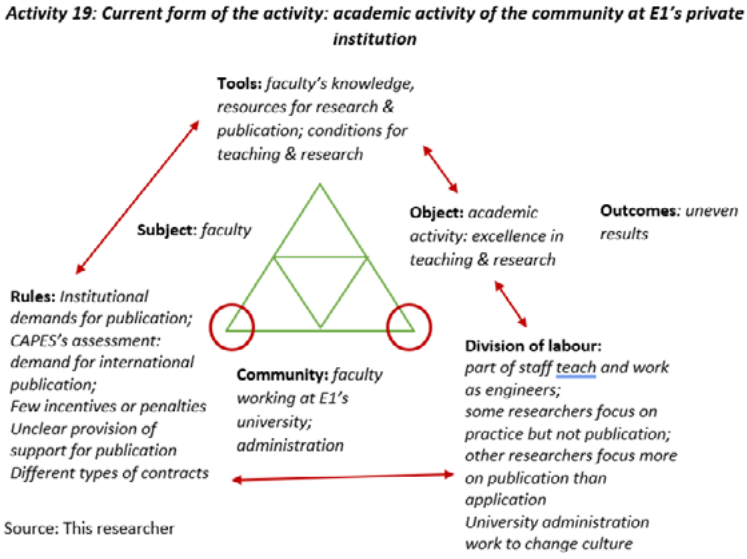
He also explains that, among engineers, there are two common divergent tendencies: to focus on practical solutions and disregard proper documentation, which breaks the link between generation of knowledge and dissemination, or to focus only on scientific research and publication, neglecting the application of knowledge. These tendencies are reflected in his community, and connecting these different orientations in order to have a collective movement is very challenging, but it is a necessary change of culture which is now in progress.

> In Engineering, there is a group of professors, and this is very difficult, who don't understand the need to write a report, structure the knowledge of what has been done. So, they don't have the culture of publication. On the other hand, there are people who work on the scientific aspect and think that publication is the end and forget about application. There is this dichotomy, so the discussion among peers and making everyone move forward is very difficult. (…) If we don't generate knowledge, we won't prepare the professional who will need to adapt more and faster in the future. This is the change of culture which is happening currently, I think that publication is very important, in this sense, but it is still not a reality for us in Brazil. (E1 excerpt 39)

Tem uma linha de professores na engenharia, e isso é muito difícil, que não entende a necessidade de criar relatório, de estruturar o conhecimento do que foi feito. Então não tem cultura de publicação. E por um outro lado tem esse pessoal que trabalha mais para o lado de ciência que acha que a publicação é o fim e esquece da aplicação. Então fica essa dualidade, então é muito difícil a discussão entre os pares e fazer todo mundo caminhar. (...) Se a gente não gerar conhecimento a gente não vai formar o profissional que vai precisar se adaptar cada vez mais e mais rápido no futuro. Então essa é a mudança de cultura que está acontecendo, nesse momento, nesse aspecto, acho que a publicação é muito importante, mas ainda não é realidade para a gente no Brasil. (E1 excerpt 39)

Figure 91 illustrates the complexities of the academic activity of the community described by E1. The primary contradictions within the rules stem from the fact that they are not all aligned to incentivise the faculty to work according to the university's goals. The demands are not matched with all the necessary support, and there are neither specific rewards for faculty who excel at their work nor penalties for those who do not focus their efforts towards achieving set goals.

Figure 91 — Activity 19: Current form of the activity: academic activity of the community at E1's private institution



Source: This researcher

As a consequence of the contradictions in the rules, there are secondary contradictions between the rules and the tools, and the tools and object. The former is generated by the fact that the tools to mediate the activity are not all clearly provided and regulated – the support for publication, for instance, in the form of EAP instruction, translation, editing, and revision services are important tools that are not in place. The contradiction between the tools and object is a consequence of the need for better tools which will actually foster excellence in teaching and research, such as supervisor and teacher training. As E1 explains, the hiring strategies adopted by the institution more recently require candidates to have international publication and high L2 proficiency. However, there is not a baseline set for supervising and teaching skills, which may not contribute to the achievement of positive results in teaching standards and postgraduate research production.

Primary contradictions can also be found in the division of labour. The functioning of teaching and research is fragmented, rather than integrated. As professors work according to different priorities – no focus on research or research with focus on practice or on publication. Instead of collaborating towards the same goals, each professor works independently, which makes achieving the desired results more difficult.

Additional secondary contradictions can be found between the object and division of labour, and rules and division of labour. According to E1, the fact that part of the faculty are not committed to researching conflicts with the goal of attracting students to postgraduate programmes and research. Therefore, the existence of different types of contracts determined by the rules does not contribute to research. Also, professors who have engineering careers might be less committed to teaching well, even though students appreciate professors with practical experience in the industry.

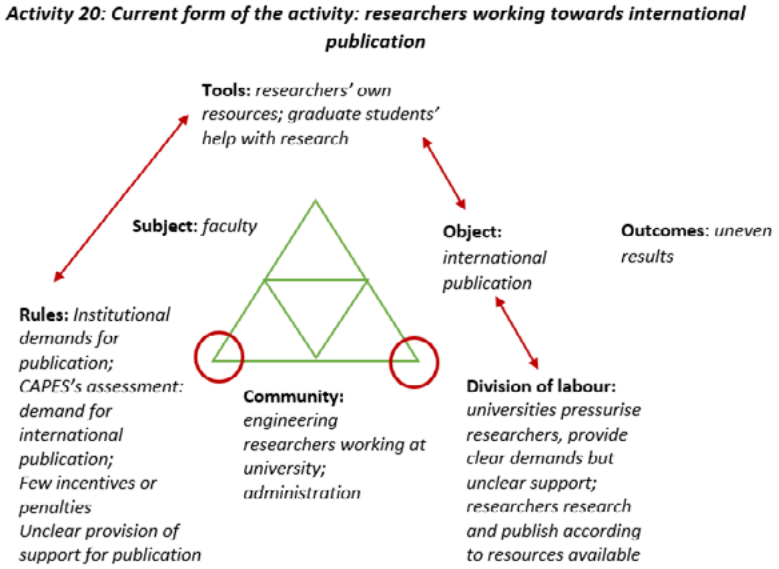
E2 describes the community at his public university as complex. He explains that research and publication efforts depend less on the professor's age than on their interests and goals. The older faculty

consist of both very productive and unproductive professors, which is also true concerning the younger faculty. He reports that their postgraduate programme receives positive evaluations from CAPES due to a small number of extremely productive researchers and their supervisees, rather than an effort of the community as a whole.

> It is exactly like this, we have the two extremes, the older [professors] who keep producing a lot, and those who produce little. This is true for both, the older and the younger, exactly the same thing. (…) Here, in our programme, there are many professors who have less than one article published per year, and still, we have an average of 2 plus, a little less than 3. Why? Because there are those who publish a lot, who are at the top of the list, and then there is this curve (hand gesture downward) it starts here with a lot and decreases to almost nothing. So, how can we make those who are not producing much produce more? So, this is the question, it is not simple. (E2, excerpt 40)
>
> *Tem, exatamente assim, a gente tem os dois extremos, né, tem os mais antigos que continuam produzindo bastante, e os pouco também. Vale para os dois extremos, os mais antigos e para os novos, exatamente a mesma coisa. (...) Aqui no nosso programa tem muitos professores com menos de um artigo publicado por ano, e ainda assim a gente tá com uma média de 2 e pouco, um pouco menos que 3. Por quê? Porque tem os que publicam bastante que tão no topo da lista e depois é assim a curva (gesto descendente com a mão), começa aqui com bastante depois ele vai reduzindo para quase nada. Então, como fazer esses que estão produzindo pouco produzirem mais? Né, essa é a questão, não é simples. (E2, excerto 40*)

The main primary contradictions illustrated in Activity 20 can be observed within the rules of the public university as well. There is not an administrative tool in place to concretely signal to the faculty that their performance may have consequences to individuals careers. The demands are explicit, but there are few incentives or penalties to emphasise that research and publication are priorities among the academic activities.

Figure 92 — Activity 20: Current form of the activity: researchers working towards international publication



Source: This researcher

Secondary contradictions surface as the provision of support for publication is unclear in the rules. With the lack of adequate tools, there is also a secondary contradiction between the tools and the object. Additionally, the division of labour is unbalanced between the institutions and the faculty, which does not contribute to the achievement of goals. Hence, there is a secondary contradiction between the division of labour and the object of the activity.

I) Demands

E1 explains that since he became the postgraduate programme coordinator, the institutional demands regarding academic production at his university have changed. As a response, he has promoted the reorganisation of the research lines so that research topics being

developed are stable at the institution, rather than relying on a single researcher's work. The hiring of new faculty takes into consideration how much they can contribute to the established research lines, and a high L2 proficiency is now a prerequisite.

As a private university aiming at having high quality research and education, the institution needs to be recognised as such by obtaining good evaluations from CAPES. It is important for the postgraduate programme to meet the requirements and be awarded high grades. Since publications are the most important item in the evaluation, efforts have been made to achieve the necessary quality and quantity.

In the postgraduate programme, the goal is for each researcher to publish a yearly article in a Qualis A1 journal, co-authored with their supervisees if possible. This goal is yet to be attained, but alternatively, publications in A2, B1 and B2 level journals have been achieved more frequently. E1 admits that different factors affect the number of articles produced, such as the stage of the research project and the number of full-time postgraduate students in the research group.

Even though E1 recognises that the institutional pressure has caused a positive movement to improve quality, he also criticises the community's reactions to the distortions which the evaluation system has prompted. One of them is that research topics have narrowed to those in which journals and their audiences are interested rather than topics that need development to solve concrete local problems. Also, for some researchers, publication has become a goal in itself, instead of the result of good research and knowledge construction.

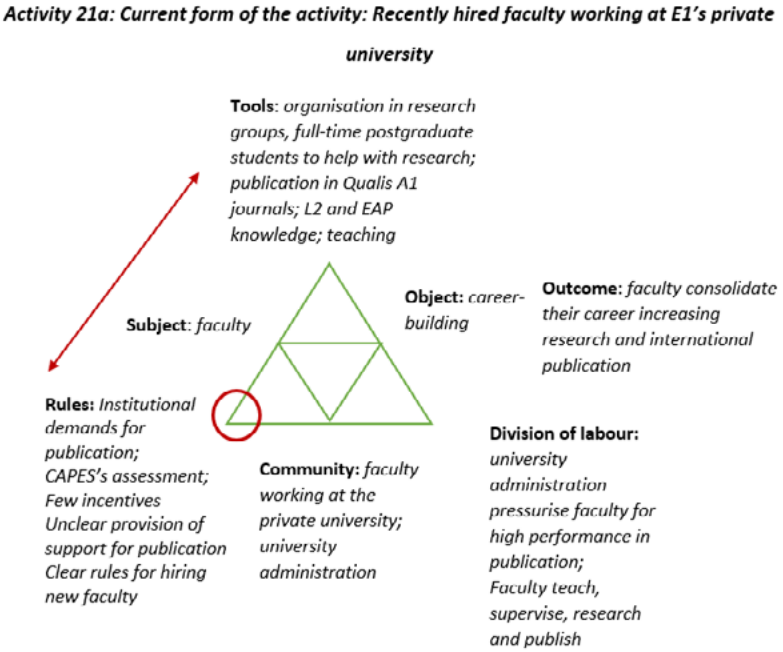
> CAPES grade didn't use to be very important, I think the system has evolved to discipline the academic world, saying "you are in the academic world, you need to produce" (…) now there is this need to finish the doctorate in four years, and one must have two articles published, and then there is the slicing of results, and you don't know understand why they are publishing that. The CAPES system has been very bad in this aspect, because it has valued publication too much, many people started looking for research which would result in publication, instead of research which would later became relevant enough to result in publication. (…) We see many recently graduated PhDs saying that they will work on nanotechnology because it is easy to publish in this topic. (E1, excerpt 41)

> *A nota da CAPES não era tão importante assim, acho que o sistema foi evoluindo a ponto de disciplinar o mundo acadêmico, assim, "vocês estão no mundo acadêmico, vocês precisam produzir" (...) agora surgiu essa necessidade de doutorado terminar em quatro anos, e tem que ter dois artigos publicados, e aí tem fatiamento de resultados, que você não sabe por que estão publicando aquilo. O sistema CAPES foi muito ruim nesse aspecto, porque como ele valorizou demais a publicação, muita gente começou a procurar pesquisas que dessem publicação, e não fazer uma pesquisa que depois de tornasse relevante o suficiente para ter uma publicação. (...) A gente vê muitos recém-doutores dizendo que vão trabalhar com nanotecnologia porque esse tema publica fácil*. (E1, excerto 41)

As the coordinator of the graduate programme, E1's position is not at all comfortable. The institution pressurises him for results in the form of high grades in CAPES's assessments, while providing few tools to achieve them. Among the significant factors, low research productivity does not constitute grounds for penalising a professor according to the older contracts, and there are no funds for translation or editing services to submit articles to international journals, although many older researchers still have insufficient command of L2. Additionally, there are neither prizes or official recognition for those who perform well, nor concrete sanctions for those who perform poorly. Although E1 works on organising the research groups, hiring new faculty who can contribute, and keeping the faculty's focus on producing research and divulging it, the fact that there are no material incentives or penalties does not help to promote the group's movement towards the institutional goal.

There is a primary contradiction within the rules in activity 21a, as the newly hired faculty are demanded to fit into one of the research lines, produce research, and publish in English, but the provision of support is not clear, especially for publication.

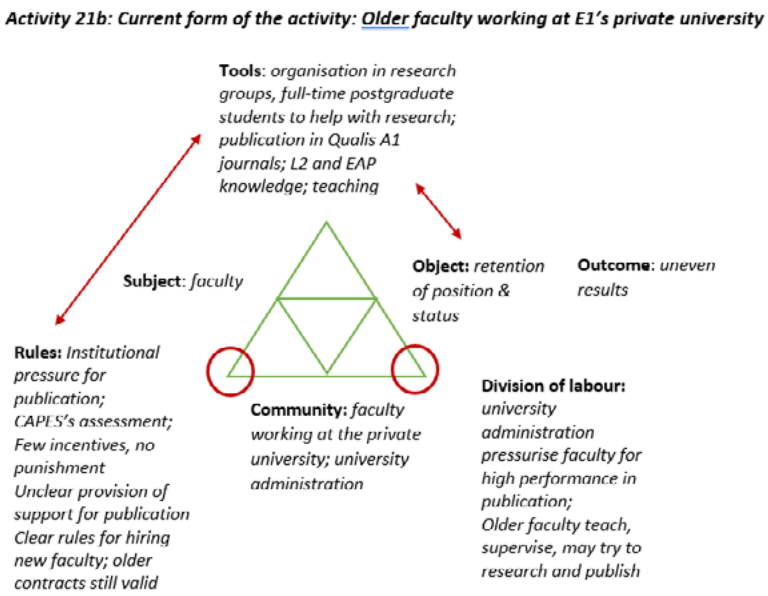
Figure 93 — Activity 21a: Current form of the activity: Recently hired faculty working at E1's private university



Source: This researcher

In activity 21b, in the same institution, professors with older contracts cannot be penalised if they do not contribute to the institutional movement to improve their CAPES assessment. Additionally, these professors' lack of contribution burdens those who work on international publication, as they have to compensate by publishing more to maintain a good average. Even though the older professors cannot be forced to participate in international publication, not doing so affects their prestige in the institution and may disturb the rapport among the faculty. It is not clear to us, however, how each of them deals with this situation.

Figure 94 — Activity 21b: Current form of the activity:
Older faculty working at E1's private university



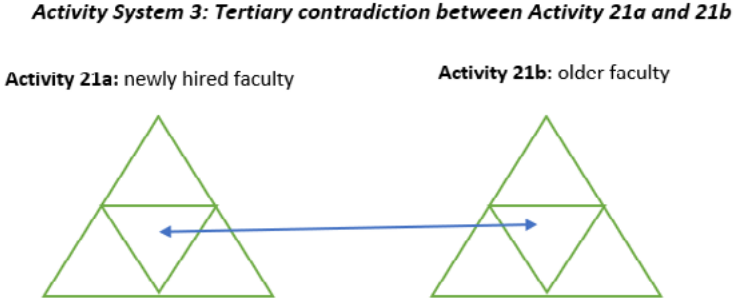
Source: This researcher

The primary contradiction within the rules in 21b can be observed as a consequence of the significant change in the institutional demands from the time when older faculty were hired to the current state of affairs. Many of the older faculty are not prepared to satisfy the more recent demands, especially regarding international publication. The previous institutional demands did not include high L2 proficiency level or production of articles for submission to international journals. Thus, another primary contradiction surfaces, as the necessary tools to allow older professors to participate in the activity of publication are not regulated, namely translation and editing services, EAP writing, and L2 instruction. There is a tension now, as institutional pressure rises, but necessary support is not provided; at the same time, older professors' performance is compared to that of younger faculty hired under different rules.

In activity 21a, the tools are more aligned with the object than in 21b, where the secondary contradiction surfaces as a result of the changes in the institutional demands and hiring policies of new faculty. In 21b, the tools to mediate the activity are not provided, which also results in the secondary contradiction between the tools and the object.

The Activity System 3 below illustrates the tertiary contradiction of activities 21a and 21b, coexisting in the same institution, with different groups of subjects and hired under different conditions, but who are pressurised to produce the same type of results.

Figure 95 — Activity System 3: Tertiary contradiction between Activity 21a and 21b



Source: This researcher

E2 states that demands are many and varied at the university where he works. Faculty are required to fulfil administrative roles such as programme coordination and participation in various types of committees, which occupy a large part of their time but do not afford them any benefits, in his view. In addition, faculty are required to supervise undergraduate and postgraduate students, teach, conduct research and publish articles. E2 is also an editor of two journals — a Brazilian one and an international one based in the UK — and a peer reviewer for several journals in his field. He explains that it is not easy to maintain this very intense rhythm of activity, and he frequently has to decline

requests for peer reviews and other additional tasks. He claims that by teaching and supervising well, he attracts postgraduate students who are committed to working hard, which results in good quality research, often followed by international publications.

His activity as an editor is also very demanding. There are Is several manuscripts which require attention and decisions, deadlines are tight, and peer reviewers frequently need to be reminded to send their reports. He comments that diligent work is necessary in order to keep the good Qualis ranking of the Brazilian journal for which he is partly responsible. In comparison, he reports that the international journal has a larger and better structure, with more editors and an efficient platform to manage manuscripts and reviews, which simplifies the editors' work.

> Here, at (Institution), besides that… the supervision, I've also had administrative positions Ih take a lot of time; I've been the vice-coordinator of our postgraduate programme for several terms, then I was the coordinator for 6 months, and I've been the member of several committees and so on, these are things that nobody wants to do at the university because it takes a lot of time and there is no compensation. But it is feasible, it is possible to have those functions, keep publishing, keep teaching good quality lessons, and they know that, so much so that they come to me for supervising their bachelor thesis, PIBIC, and so on, because they know I like to do [my job] well, so I try to teach well, always considering the students. And in here, I keep working normally, I get my progressions every two years, have those points (grades) that the university demands and in general, I think that is it. (E2, excerpt 42)
>
> *Aqui na (instituição), além disso de ... de ter as orientações, também já tive cargos administrativos que ocupam bastante tempo né, já fui subcoordenador do nosso programa de pós-graduação por várias gestões, depois fui coordenador por 6 meses, e já fui membro de várias comissões e assim por diante, são todas aquelas coisas que ninguém quer fazer né dentro da universidade porque toma bastante tempo e não tem retorno nenhum. Mas enfim, dá para fazer, dá para gente ter essas funções, dá para continuar publicando, dá para continuar dando aula de boa qualidade e eles sabem disso, tanto é que sempre me procuram para TCC, PIBIC e assim por diante, porque sabem que eu gosto de fazer bem feito, então eu tento manter também as aulas sempre em boa qualidade, sempre com atenção para os alunos. E aqui dentro eu continuo trabalhando normalmente, continuo conseguindo as minhas progressões a cada dois anos, né, tendo aquelas pontuações que a universidade exige e de forma geral acho que é isso. (E2, excerto 42)*

E2 explains that because there is always too much to do, he prioritises teaching, guiding his supervisees, conducting research, and working as an editor. Other activities are fit in as possible, and he comments that for each of the accomplished tasks – including published

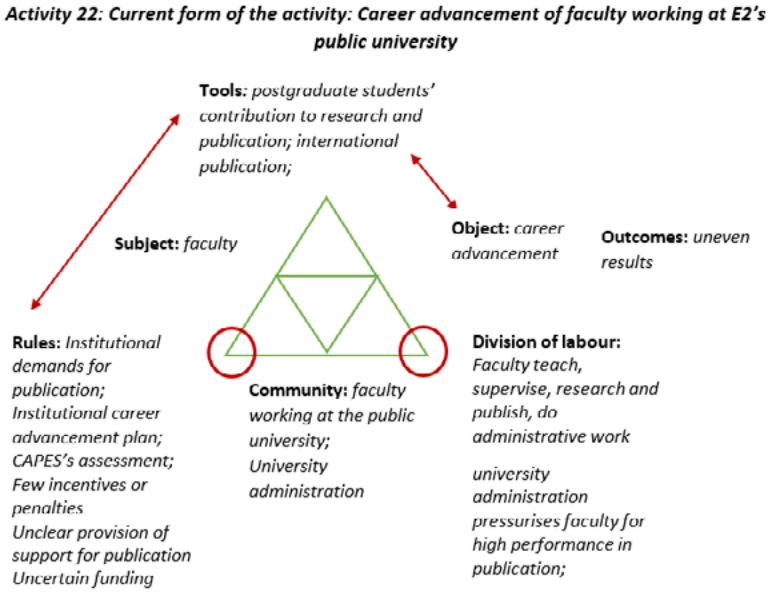
articles, conference papers, reviews, and supervised theses — there are many more which he was unable to undertake.

In his opinion, CAPES's pressure for international publication has had a positive effect on Brazilian researchers in his field. They have had to improve the quality of their research and write better articles to satisfy the demand. E2 reports that there has been a sharp increase in international publication by some researchers at his university, but there are others who produce very little. He estimates that the average has risen to approximately three important articles per researcher in the past four years in the postgraduate programme. Still, he is concerned with this situation because there are no penalties for individual low productivity, but a low CAPES grade for the postgraduate programme would punish the faculty collectively with less autonomy and even less funding.

It is clear that both E1 and E2 agree that the demands issued by CAPES have caused the overall quality of research to improve and the quantity of international articles to increase. However, both also recognise that the demands alone have not been able to persuade the whole community to contribute to institutional goals. Both interviewees are also deeply engaged in the activity of research and international publication, as they understand the worldwide tendency and believe that unless their communities take an active part in it, their institutions will become irrelevant in the academic world. Both interviewees are focused on successfully achieving their goals, despite the little support provided by the universities.

In the current form of the activity (Activity 22), the public university where E2 works has contradicting rules. The demands do not have corresponding actions to enforce them, apart from the career advancement plan. Funding and provision of support are not reliable, which works against the main demand of research and international publication.

Figure 96 — Activity 22: Current form of the activity: Career advancement of faculty working at E2's public university



Source: This researcher

The secondary contradiction between the rules and the tools can also be observed, as the provision of tools is not regulated. International publication is necessary for career advancement, but there is little support to achieve it. As a consequence, there is a secondary contradiction between the tools and the object, since the tools cannot be taken for granted.

J) Support

The main difference in support commented on by the interviewees was that private universities finance the research activity and provide equipment and supplies, while the public universities suffer from frequent budget cuts and often have difficulty to continue their research work. The support for publication – translation and editing services; EAP writing and

L2 instruction – is not available in either institution, and the ability to produce high quality research articles in English is taken for granted. The responsibility for producing publishable articles in L2 falls on the researcher, who does not necessarily have mastery of the process.

The E participants seem to resent their institutions less than the AS participants for the lack of support. They appear to assess the situation and work towards their goals by finding practical solutions, rather than discussing what support institutions should provide to make it possible to fulfil the current demands.

> Here, everyone who is involved in postgraduate programmes has from four to six hours of teaching to undergraduates. The rest of the time is for the postgraduate programme. We don't need to propose a project to have physical infrastructure – to obtain computers, laboratory materials, or even some equipment. The institution really incentives research and provides the conditions for it to happen. So, considering this aspect, I think we have good institutional conditions to do research (E1, excerpt 43)
>
> *Aqui, todo mundo que está ligado à pós-graduação tem de quatro a seis horas-aula por semana na graduação. O resto do tempo das quarenta horas semanais é para a pós. Infraestrutura física, a gente não quer fazer projeto para conseguir computador, insumos de laboratório, até para alguns equipamentos. A instituição de fato fomenta a pesquisa e dá condições para que isso aconteça. Então desse aspecto, acho que a gente em uma condição institucional boa para fazer pesquisa. (E1, excerto 43*)

K) Structural problems

E1 analyses that universities should be more structurally organised and not depend on individual motivation and effort to produce research. He thinks that the institutions should be research centres which attract interested scholars, rather than an individual researcher being the heart of a given line of study. The latter can cause the extinction of research lines when the main researcher retires or moves to a different position, as he reports to have witnessed in more than one occasion. In his opinion, this interruption brings an enormous loss to the development of knowledge, and should not be allowed to happen.

He adds that an individual's motivation may decline,rtigorlly if there is little recognition from the institution. He compares resear-

ch work to volunteering, as researchers obtain no personal gain from their hard work, and they may decide to stop, without consequences to themselves. He claims that productive researchers should be recognised and compensated for their good work, while institutional policies should clearly signal their goals with incentives for achieving them and sanctions for not working towards them.

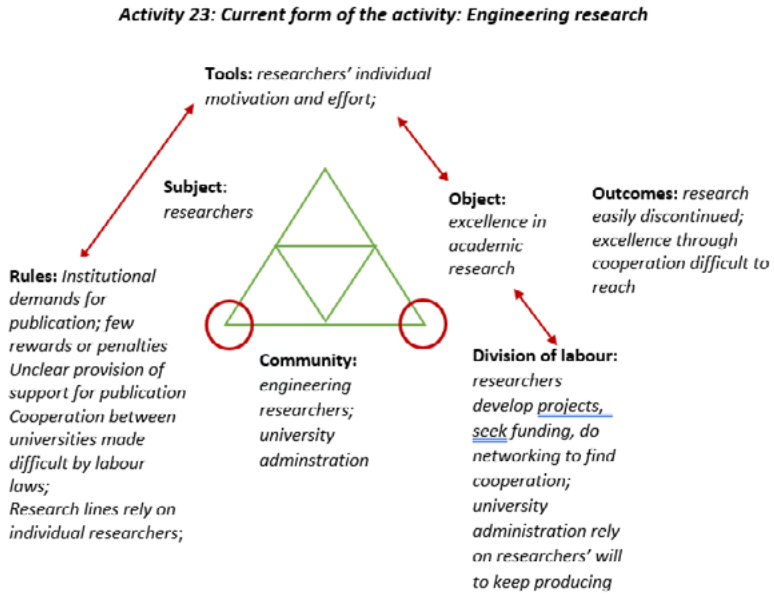
> We have individuals who want to do it [research], and I think this is the problem, because at some point, the individual becomes tired and stops working. I think they [universities] are hostage to the individual researcher's willingness, most of them are. It is not the individual's fault, but the institutions are organizationally weak in not realizing that this is going to happen: when you depend on the individual person, he may tire out. It is the same as asking a group of employees to do an activity you won't pay for. So they will do it voluntarily. They may drop out at any moment and you cannot hold them accountable for the results. This is the problem of voluntary work in general. People do it when they are available, and stop doing it later. If you pay an employee to do the work and set goals, you can demand the results. The institutions are subject to the researchers' willingness. (E1, excerpt 44)
>
> *A gente tem muito mais a vontade de cada um fazer e acho que esse é o problema, porque em um dado momento o indivíduo cansa e para de fazer. Acho que elas são reféns dessa vontade do indivíduo, em grande parte elas são. Não estou pondo a culpa no indivíduo; as instituições são fracas organizacionalmente de não perceber que isso vai acontecer: quando você depende do indivíduo, ele pode cansar. É a mesma coisa que você pedir para um grupo de funcionárias fazer uma determinada atividade para a qual você não vai remunerar. Portanto elas vão fazer de maneira voluntária. Elas podem sair a qualquer momento e você não tem como cobrar. Esse é o problema do voluntariado de um modo geral: a pessoa faz enquanto está disponível, depois não faz mais. Se você paga um funcionário, você pode colocar metas, você pode cobrar. As instituições estão reféns da vontade dos pesquisadores. (E1, excerto 44)*

E1 also criticises the fact that there is virtually no cooperation between universities in the engineering field in Brazil. In his view, collaboration would boost research and knowledge if there were incentives for scholars from different universities to do so. In the current situation, there is no encouragement to deal with the bureaucracy to reach an agreement between institutions, which does not benefit the field's development. According to E1, some of the large public universities could become even more important centres of research and knowledge by facilitating the collaboration with other institutions, public and private.

Activity 23 below illustrates the primary and secondary contradictions. The rules work against each other when they determine the

demands but do not provide much support, incentives, or penalties. In addition, they make cooperation difficult, instead of promoting it to improve the productivity and quality of research. The available tools do not align with the demands set by the rules, and therefore, may also be insufficient to mediate the activity.

Figure 97 — Activity 23: Current form of the activity: Engineering research

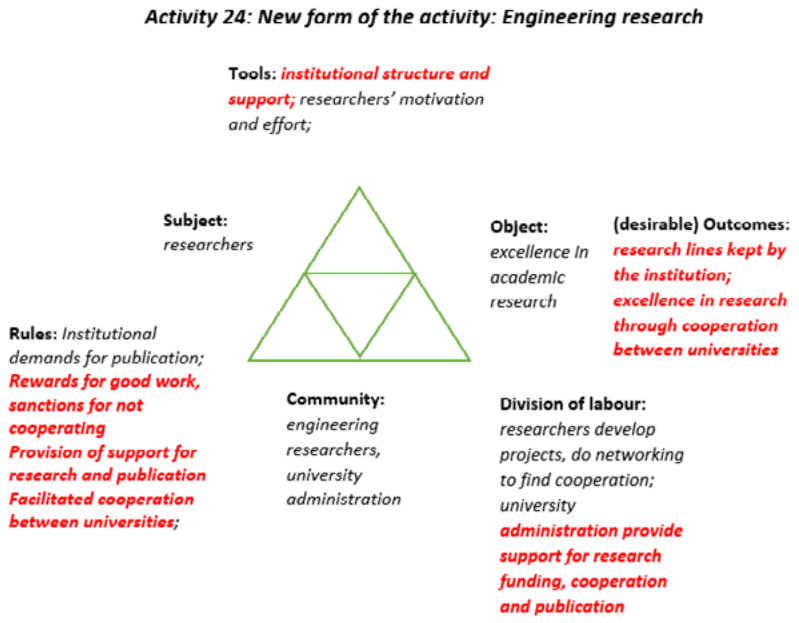


Source: This researcher

As E1 explains, relying on individual motivation to attain institutional goals is not a good strategy. The division of labour is also imbalanced, as the researchers are burdened with most of the work, while the administration seems to do little to support them. This division of labour clearly does not favour the accomplishment of excellence in academic research, which indicates another secondary contradiction between the object of the activity and the division of labour. It seems the institutions' administrations are not strategically prepared to support researchers, and to the hurdles imposed by the existing rules.

According to E1, a new form of the activity, illustrated in Activity 24, may produce better results by reducing most of the contradictions from the current form of the activity. Evidently, researchers' motivation is key to the development of research, but institutional support, recognition and encouragement would collaborate towards researchers' job satisfaction. If the rules were altered in order to regulate the activity more consistently – especially the provision of tools and division of labour-, researchers would certainly be able to focus more on their main research than spend their energy on other issues such as circumventing rules which interfere with their goals.

Figure 98 — Activity 24: New form of the activity: Engineering research



Source: This researcher

The main structural problem described by E2 is similar to the one described by E1, illustrated in activity 19. Even though there is pressure to produce research and publication, there are few rewards for those

who do it, and no sanctions for those who do not. Some of the older faculty who refused to comply with CAPES's demands are now retired, and others are close to retirement. The expectation that newly hired faculty would contribute with research work and publication was partly frustrated because some of them do not seem very motivated to engage in the activity. E2 explain that when postgraduate programmes are downgraded by CAPES, consequences such as the loss of financial autonomy are felt by all. Still, not all researchers are willing to collaborate to have good results in their programme's evaluation.

In E2's opinion, the lack of resources is a poor excuse to explain the low productivity of some of the faculty. He explains that the main issue is whether they are willing to work on research, regardless of the conditions. He assesses that additional financial support for research would increase the productivity of faculty who are already researching and publishing, whereas those who produce little would probably remain the same.

E2 also indicates a different problem in his university's structure. The institution's rules require that any service should be estimated by different providers, and the lowest price defines the contract. As a result, the quality of the services is usually the lowest as well. In the past, the university could afford translation services for publications, but due to the contract system previously mentioned, they were of such poor quality that the submission of the manuscripts was not possible.

> On the other hand, I can also observe that the new [professors] who were hired recently, there are several, are also down this path. They produce little, and we don't see any effort to improve. Some of them say "it's because I have few supervisees", I reply "look, in the beginning I didn't have any supervisees, I didn't start by having the twelve supervised I have today". When I started, I published bachelor theses, PIBIC reports, I steered [the work] towards topics which I knew we could produce articles and publish in journals. "But our students today are weak and we can't ask for this and that", so we hear this type of excuse, and of course, I don't know whether they will improve with time or not. But what I have seen, in this curve of production, those who have low productivity are some of the older and also some of the younger; maybe the younger are still catching up, maybe a few years from now they'll be able to pick up and increase production, but only time will tell. (E2, excerpt 45)

Só que, por outro lado, eu também estou percebendo que os novos que entraram recentemente, tem vários, também tão nesse caminho. Eles têm pouca produção, e a gente não percebe esforço para melhorar. Alguns alegam: "ah é porque eu tenho pouco orientando"; eu assim: "olha no começo eu também tinha orientando nenhum, eu também não entrei no programa tendo os doze orientandos que eu tenho hoje." Quando eu entrei, eu publicava TCC, eu publicava relatórios de PIBIC, eu puxava para os assuntos que eu sabia que ia dar para fazer artigo para publicar em revistas. "Ah mas os nossos alunos hoje são fracos não dá para pedir isso não dá para pedir aquilo", então a gente ouve esse tipo de desculpa, e, claro, eu não sei se eles vão melhorar com o tempo ou não. Mas, o que eu tenho percebido, dessa curva de produção, quem está lá com produção baixa são alguns mais antigos e são os mais novos; por um lado, pode ser porque os novos ainda né talvez estejam entrando no ritmo, talvez daqui alguns anos eles consigam deslanchar e aumentar essa produção, mas aí só o tempo vai dizer né. (E2, excerto 45)

We've had this experience in the past (…). So, it comes back to the root, we (researchers) don't have the money to have [articles] translated, the supervisor may not know English, then he has to pay for someone to translate, the university will hire the cheapest service and they won't do it right. (E2, excerpt 46)

A gente já teve essa experiência no passado (...). Então, acaba voltando na origem né, a gente (pesquisadores) não tem dinheiro para traduzir, o orientador pode não saber inglês, aí tem que pagar alguém pra traduzir, a universidade vai pagar uma empresa que é a mais barata de todas e que não vão traduzir direito. (E2, excerto 46)

E3 also discusses problems concerning lines of research. He agrees with E1 that, in order to develop significant research in the long term, institutions need to be the centres to develop it and attract scholars to contribute. In this sense, there should be a consistent strategic plan to define which research lines are beneficial to the country, the goals for the research, and the financial support. In his opinion, doctoral and postdoctoral studies abroad should also be related to those lines of research in order to maximise the benefit of the experience.

The current practices, in which the experience abroad results in research that only an individual scholar develops, is unproductive. Moreover It seems to lead to the situation described by E1, in which one scholar is the main developer, and their retirement results in the research's extinction. In E2's evaluation, the lack of an overall strategy to develop research in Brazil scatters resources instead of taking full advantage of them.

> We have been sending people abroad who get in touch with specific research areas and when they come back to Brazil they don't have a way to coordinate what they studied abroad with the reality we have in the country, because when you go to a university like (institution), they don't have a solo research, usually because of the funding they have and all, usually their research is carried out by very large groups and fit into what I'd call corporate-like strategies (…) So you cover the guy's study cycle from A to Z, and then they come to Brazil, they arrive here and there is no before or after the know-how that they acquired. It is a serious problem at the university, (…) that we send people abroad (…) and then they come back with major specialisation in an area for which there is no support here in Brazil, then this person sets up a course in the university (…) students attend it for the credits, but nobody is capable of justifying it well… where it came from, where it is going to, the role of the university in all that, why it is an important study for Brazil, so, this is a serious problem. (E3, excerpt 47)
>
> *A gente tem enviado pessoas pro exterior que entram em contato com áreas específicas de pesquisa e quando voltam para o Brasil não têm como coordenar o que eles viram lá fora com a realidade que temos no país, porque quando você vai pra uma universidade do tipo (instituição), eles não têm pesquisa solo, normalmente até pelo... pela forma de financiamento que eles têm e tudo o mais, né, normalmente as pesquisas deles são feitas por grupos muito grandes e são enquadradas dentro de estratégias que eu diria corporativas (...). Então você tem... você cobre o ciclo daquele estudo do cara de A a Z, aí essa pessoa vem para o Brasil, ele chega aqui não tem o antes e o depois do know how que ele adquiriu. Isso é um problema sério da universidade, (...) que a gente manda pessoas pro exterior (...) e aí elas voltam com grande especialização numa área que... não tem nem suporte aqui no Brasil... aí essa pessoa monta um curso dentro da universidade (...) os alunos assistem ao curso porque dá crédito, mas ninguém é capaz de justificar muito assim... donde isso veio, pra onde isso vai, qual foi o papel da universidade nisso tudo, porque é importante esse estudo para o Brasil né, então fica... isso é um problema sério. (E3, excerto 47)*

4.4.4 Comparisons

The contents of the interviews are compared and summarised in this section to allow for the understanding of the similarities and differences between the attitudes and behaviours of the researchers from the two fields of study. It is necessary, however, to bear in mind that due to the small sample size, it is not possible to generalise these findings. However, their concerns certainly represent those of a reasonable part of the community of scholars who work in Brazilian higher education institutions.

4.4.4.1. Difficulties and instruction

A) EAP writing instruction and EAP knowledge

All interviewees observe that EAP writing instruction is not provided at Brazilian universities in general. The engineers adopt a problem-solving approach to this issue, as well as to many others: they devise a way of obtaining what is necessary to achieve their goals. Since writing "technical English" is not taught, they acquire it autonomously through reading and trial and error, in order to produce their research articles. They recognise, however, that most plagiarism instances could be avoided if writing instruction were available.

The applied social scientists, who discuss the issue of instruction more thoroughly, argue that EAP writing should be part of postgraduate studies, since students are required to write and publish articles – if possible, in international journals – as a precondition to graduation. It is also possible to hypothesise that, in the applied social sciences, writing may require more refined skills in argumentation than in engineering because of the nature of the field; therefore, EAP writing instruction may play a more central role than in some hard sciences.

B) L2 instruction and L2 knowledge

Engineers and Applied Social Scientists also acknowledge that a good command of L2 is a requirement for the participation in the internationalisation of higher education and research publication. The engineers in this research, having acquired L2 through private instruction, do not question this practice, seemingly considering that paying to learn an additional language is an acceptable solution to the problem of poor language education in the regular school system.

The applied social scientists see that most postgraduate students and even professors need language support in order to write for publication and interact in international contexts. In their view,

institutions should provide this support, but the effectiveness of current initiatives are variable. There is a contrast between the practices in public and private institutions, as the former provide a few language courses whose benefits are difficult to measure, and the latter focuses on funding professional translation and editing services which are instrumental in the success of their researchers' international publication. Neither initiative seems to promote the autonomy of researchers through the achievement of a high level of L2 proficiency.

C) Supervisor training

Supervisor training can be seen as one of the key success factors in the process of internationalisation of research publication. Currently, supervisors have a very important role in leading research groups in projects which may result in publication, as well as other functions, such as literacy brokerage, networking, and co-authoring with novices. The engineers in our research are apparently very confident in their work, have clear goals, and know how to achieve them. In their interviews, they criticise those whose low-quality work as supervisors does not provide enough guidance for postgraduate students to become good researchers. They indicate that poor supervision multiplies the problem of poor research, as PhD students graduate and may become weak supervisors themselves, for lack of a better reference.

The applied social scientists indicate that, in order to supervise postgraduate students and guide them towards international publication, supervisors should be able to rely on their experience in this activity. Further, one of them points at the need for a better form of assessment of postgraduate students' theses and dissertations by establishing parameters for quality, which might also be useful for evaluating the quality of supervision.

The interviewees from both fields recognise that the current practice of supervision depends heavily on the researchers' experiences as postgraduate students. The quality of supervision seems to vary widely,

since there are no parameters for a baseline of supervision, and training is neither provided nor demanded. Although supervisors may seek self-improvement, it would be yet another item added to their individual workload, rather than anrtigorionally supported initiative. The interviewees from both fields who received supervision in countries where training is compulsory recognise its value and report that they replicate the good practices. It seems that supervisor training could be a key factor in improving the quality of research in Brazilian higher education.

D) Gaps in basic education

The problems stemming from gaps in basic education are also mentioned by both groups of interviewees. According to them, the public education system, especially, needs to be restructured to be able to qualify students who will be able to fully take advantage of their undergraduate studies. At universities, even though professors often complain about poor basic knowledge, the issue remains unaddressed. As a consequence, students may advance to postgraduate programmes still displaying problems such as poor writing ability. It would be desirable for basic education to have higher standards of teaching and learning, but the possibility of addressing the shortcomings of previous schooling within the undergraduate courses would certainly be beneficial.

E) Financial difficulties

The comparison regarding the financial difficulties is more related to the type of institution – public (federal, state) or private – than the field of study. Interviewees working at federal universities report that the reduction of funding which started in 2015 has worsened since 2019, affecting their research and publication severely[42]. The recession which started in 2014 (Barbosa Filho, 2017), has affected all public institutions, and the COVID-19 pandemic has further worsened the crisis. Professors at federal universities from both fields have reported using

42 http://portal.sbpcnet.org.br/noticias/cortes-na-ciencia-e-na-educacao-deixaram-as-universidades-publicas-em-situacao-calamitosa-denuncia-presidente-da-sbpc/

their own personal resources — as well as postgraduate students' – in order to continue their research and /or pay for publication expenses. State universities have also suffered from the recession, but some states have managed to keep funding research projects through agencies such as FAPESP [43](Fundação de Amparo à Pesquisa do Estado de São Paulo) in the state of São Paulo, and similar agencies in other states.

Private institutions depend little on public funding for their research and publication, so their research output has not been affected. Financial difficulties were not mentioned by any of the interviewees from either field of study. Considering the current scenario, it is likely that the proportion of publication from private universities may grow in relation to the total of research papers published by Brazilian researchers.

F) Collaboration

Collaboration among universities in Brazil was only mentioned by the engineers, which may represent one of the ways this community works. If they collaborated in large projects, with each smaller group developing part of it simultaneously, more progress might be made than with the current modus operandi. According to the interviewees, labour laws and CAPES evaluations work against collaboration, which surely needs rectifying.

Among applied social scientists, collaboration was mentioned in joint projects with foreign universities, especially as foreign funding for research has become more important due to the economic crisis and budget cuts. The importance of the collaboration in terms of research was not emphasised, however.

G) Plagiarism

Plagiarism was only mentioned as a problem by the engineers. They highlight the importance of guidance by supervisors, who might

43 State-funded agency that supports research by providing scholarships and research grants in the State of São Paulo.

be implicated in charges of plagiarism if co-authored articles with supervisees are found to have pieces of texts lifted from other researchers' work without due credit. Interviewees have mentioned that, if there were an academic writing course, the issue could be better dealt with, as cases of plagiarism frequently stem from inability to write well and lack of guidance.

The fact that plagiarism is not even mentioned by any of the applied social scientists might indicate that they are not faced with this problem very often, or that they have found a way of guiding students so that the incidence of plagiarism is not significant.

4.4.4.2. Institutions

Since the institutions where each interviewee works is the central theme, there are major differences, especially when comparisons are made between public and private universities. Even though the CAPES assessment applies and is important to all postgraduate programmes, the responses differ, especially due to the conditions provided by each institution.

H) Community

The communities in engineering and applied social sciences have diverse behaviours, especially due to their university's conditions and support for research and publication. In both fields, the private institutions have promoted changes in their structure – for instance, reorganising the postgraduate programmes, focusing on improving the quality of research, changing the requirements for hiring faculty – in order to respond to the increasing importance given by CAPES to international publication. Researchers are provided with support for research and receive recognition for good work and, in exchange, must produce results and publications or risk losing their jobs.

On the other hand, the public universities have started pressurising the faculty to conform with the changing demands, but there have been few internal changes to support them to achieve institutional goals. As the conditions for research and publication are becoming even more unfavourable with frequent budget cuts, keeping a high productivity is a challenge even for excellent researchers. According to the interviewees, there are researchers who struggle against such conditions and try to maintain their research activity, but there are also those who adopt a different position and produce very little. Although most universities have devised a plan for small promotions based on the achievement of academic goals, serious penalties are not applicable to those who do not achieve much. Progressive promotions 44 are a relatively recent event and are also subject to the availability of funds.

I) Demands

Institutional demands have been growing as a result of the increasing value given to international publication in the evaluation of postgraduate programmes. Since private universities need to keep their prestige and grades high to attract students, they have organised their structure to increase the volume and quality of international publications. The private institutions where our interviewees work have high standards, aiming at excellence in teaching as well as research. Such goals put a strain on the faculty, who need to shoulder most of the work – leading research, supervising, publishing, and teaching about 8 hours a week between undergraduate and postgraduate courses. The quality of their teaching is monitored and regular publication in well-ranked journals is expected. The pressure of such demands is very high, even though private institutions offer adequate material conditions and rewards for good work.

44 http://jornal.usp.br/especial/wp-content/uploads/jornal_da_usp_especial_avaliacao_docente.pdf
https://cppd.paginas.ufsc.br/files/2018/01/RN114_2017CUN_Progress%C3%A3o_Docente-1-FiInal.pdf

The demands at public universities are even greater, as faculty's additional workload includes taking up administrative duties, obtaining funding for research projects, developing international partnerships, and dealing with conflicting rules and bureaucracy. Although there is a demand for teaching hours, the institutions rarely monitor the quality of teaching or supervision, trusting the professors' ability and engagement in those activities. Faculty who endeavour to do the best possible under the current conditions spend energy and sacrifice their personal time working, but are frequently frustrated facing bureaucratic barriers and lack of support.

J) Support

Considering support, different universities provide support according to their own priorities and resources. The private institution where three of the applied social scientists work provides the most support among our participants' employers. Research funding is generous, there is financial support for participation in international conferences for professors as well as postgraduate students, and translation, editing services and publication costs are also covered. In exchange, productivity and publication in well-ranked journals are expected from faculty.

The private institution where one of the engineering interviewees works also provides research funding, financial support for professors to take part in conferences, and covers publication costs. However, postgraduate students rely mostly on publicly funded scholarships (FAPESP, CAPES, CNPq), and there is no budget for translation and editing of manuscripts before submission to international journals.

The state university where one interviewee works has a good infrastructure, and his research projects are mostly privately funded. He claims that for him and his research group translation or editing services are unnecessary, so they would not use them even if they were available. It is not clear, however, whether other forms of support should be in place.

The federal universities in different states where three of our participants work all suffer from the same issues with lack of support, since the main rules and funding are organised by the federal government. The applied social scientists seem to understand problems as issues to be discussed – their origin, their consequences, and their possible solutions. On the other hand, the engineer seems to be focused on solving problems in order to achieve his goals.

Differently from the applied social scientists, our three engineers do not discuss the causes of problems to try to solve them structurally. They tend to find a pragmatic solution that will enable them to proceed toward their goal and are not easily deterred by obstacles.

K) Structural problems

The structural problems discussed by our interviewees are different in nature. The professors at federal universities – one engineer and two applied social scientists — focused on internal problems, while the two other engineering participants discussed the structural problems of the community and of universities in general.

The problems in one federal university may be understood as affecting all federal universities, as the rules are issued by the central government. One of the applied social scientists explains that the main structural problem is that rules are unstable and highly contradicting – while they set the goal very high, demanding quality research and international publication, they also withdraw the material conditions that make the achievement possible, for example by reducing the research funding.

One of the engineers indicated two other structural problems of federal universities: bureaucratic rules which work against the quality of results — such as hiring the cheapest services — and low productivity of some of the faculty. He claims that the problem of unproductive faculty is that there are no rewards or sanctions to persuade them to work differently, regardless of funding for research.

The two other engineers expressed their concerns about the research activity of the field in general. Contrary to the current practices, they think that research lines need to be strategically organised and institutionally strengthened, rather than dependent on individuals and their commitment. Research should be more collaborative among institutions and collectively developed and owned, which would contribute more to the country's progress.

5

Conclusions

The movement toward the internationalisation of higher education in Brazil has been felt the most by researchers, as institutions have been increasing the pressure for international publication. One of the main reasons for this pressure is that publication in international journals has a direct influence on the position occupied by universities in the international rankings. The methodology of most rankings considers research productivity and impact as the most important factors. Currently, the University of São Paulo has the best position among Brazilian institutions in the THE ranking, being classified between the 201st and the 250th places [45]. Surely, universities from developing countries would not be expected to be at the top of the list, especially due to the limited resources available for research. However, the position in the ranking also indicates that international research publication is not an easy task for Brazilian scholars.

This research contributes to the knowledge of the practices of Brazilian researchers from two fields of study – applied social sciences and engineering — in the activity of research and publication. Particularly, this study records the current troubled state of the academic activity of Brazilian scholars, as the alignment of rules, tools, division of labour are mostly imbalanced, making the achievement of goals very difficult. The whole community needs to face the challenge of transforming the activity into new, more developed forms, with fewer contradictions. However, since many of the conflicts stem from the rules, it is vital that policy makers and institutions address the most critical issues to allow new forms of the activity to flourish. This study also contributes with suggestions of possible actions which may mitigate the current contradictions.

45 https://www.timeshighereducation.com/world-university-rankings/university-sao-paulo

5.1. CONFLICTS

It is clear that there are many critical conflicts in the current practices, especially when we detail and analyse components of the activity, as we have in this study. The most serious contradictions originate from the rules that regulate the activity: they are frequently divergent and inconsistent, instead of organising the elements of the activity towards the achievement of set goals.

Many of the contradictions arise from the fact that demands are defined by the rules, while the mediation tools are usually unclear, unprovided and/or wrongly taken for granted. Researchers often need to find or devise tools by themselves in order to try to meet the demands but are often unsuccessful, because the tools available to them are inadequate to mediate the activity.

Important contradictions are observed as the outcomes of the subject-forming activities do not fulfil their purpose as expected. There are gaps in undergraduate students' education resulting from the school system, which are not necessarily addressed at the university level, as this knowledge is taken for granted. It is possible that such shortcomings remain unremedied until students reach postgraduate programmes, when they may become critical problems – notably writing skills and L2 proficiency, as indicated by the participants of this study.

A particular issue that needs to be acknowledged is that divergent goals - such as mitigating social injustices through increasing the access to higher education and demanding that the Brazilian academy become more competitive in the international scene — are not easy to reconcile. While policy makers are focused on providing access to universities, they seem oblivious to the fact that access alone will not result in qualification and completion of degrees. Currently, few institutional actions are in place to address shortcomings students might bring from previous schooling. As a result, professors are tasked with

managing such students' needs at undergraduate and postgraduate levels. At the same time, professors are also pressurised to have all postgraduate students – regardless of their academic abilities — participate in high-quality research and contribute to increase the volume of international publication. According to current rules, it is the professors' responsibility to ensure that students who are admitted to postgraduate programmes complete their courses satisfactorily without dropping out, produce high quality research and publication in addition to theses and dissertations. However, the same rules do not provide tools for professors to accomplish these challenging tasks.

Another central conflict in the current practices — especially in the public universities — is the lack of support to produce research and articles for international publication, while the demand increases. The availability of funding has gradually decreased in the past five years, which makes high-level research nearly impossible. When articles are somehow produced and accepted by a journal, authors need to pay for the publication costs if they wish to have them published. Once more, researchers are charged with the responsibility to fulfil the institutional demands without the adequate means.

Regarding conflicts, there are significant differences between the practices in public and private institutions. In the former, rules generate a wealth of contradictions while offering few solutions, while in the latter, institutional policies seem more aligned to achieve the set goals.

5.2. MEDIATION TOOLS

Mediation tools are required to enable subjects to complete activities. According to the analysis in this study, it is necessary to address the tools which make research and publication possible: adequate funding for research and publication charges, L2 instruction, EAP writing instruction, translation services for those who are less

proficient in the use of L2, editing services for shaping texts according to the Anglo-cultural conventions.

Many of the tools are ignored by institutions' administrations, which forces researchers to try to find other ways of mediating the activity. This study indicates that personal resources are used for L2 instruction, translations services, publication costs and even for research, although researchers are aware that these cannot be permanent solutions. Further, low-cost solutions are also applied, such as electronic translation tools and informal revision, which are not very effective, according to our participants.

The rules also demand that professors supervise postgraduate students in research, ensure that they complete theses and dissertations, and co-author with them to publish articles. Since the experiences of professors as supervisees are not necessarily the most effective tools for them to become good supervisors, it would be ideal to provide supervisor training to support professors in these academic activities.

5.3. MITIGATION OF CONFLICTS

Many of the current conflicts are the result of the divergences in the rules that regulate the activities. Demands for international publication are not accompanied by the support needed. Surely, comprehensive measures would be desirable, such as a school system that would enable all students to be highly proficient in L2 and competent in writing in both L1 and L2, but these would be long-term investments. At present, actions such as L2 language support and EAP writing instruction could have a direct positive impact on the success of researchers' publication activity.

The incompatibility between the current material conditions and demands needs to be recognised. The lack of funding for research makes the researchers' situation untenable, as institutions demand that

they produce research and international publications. If demands are maintained, the corresponding support must be in place. Researchers should not be burdened with the obligation to develop their research work and publish relying on their own personal resources to fulfil institutional objectives. On the other hand, if public funding must be reduced, then adjustments in the institution's demands should be considered.

Private institutions seem to be more aware of the conflicts and work on supporting researchers so that they achieve the institutional goals. In exchange for material conditions, private institutions demand results – high-quality research, publication in well-ranked international journals, good evaluation from students, excellence in postgraduate programmes. There is considerable pressure on researchers to accomplish all their tasks satisfactorily, otherwise their jobs may be at risk. Researchers might feel less pressurised if their own personal goals are aligned with the institutions', but as interviewees report, balancing all demands is a challenge.

5.4. PRESENT AND FUTURE

The internationalisation of higher education is a worldwide trend (OECD 2009; Knight & de Wit, 2018). The academic activity is in the process of changing from the focus on local knowledge to a more global knowledge, with a wide range of effects. At one end of the continuum, higher quality of research, exchange of knowledge with researchers from different countries, participation in a global context can be expected. At the opposite end, less focus on local needs, problems brought by competitiveness, matters of inequities may be observed. Other complex issues have also arisen, such as the adoption of a dominant form of knowledge validation and conventions for its communication. Although most of our participants agree that the use of a language in common is necessary, as well as standards for

knowledge and communication, the current form of the activity can hardly be considered an ideal form, given the contradictions that have been indicated in this study. In particular, the adoption of uniform standards for rankings and publications do not accommodate the differences in culture, material conditions and epistemologies; therefore, fundamental conflicts are inevitable. Dissenting voices within the community (Bennet, 2014; Canagarajah, 2002; B. S. Santos, 2018) can be observed, but how these conflicts may be settled remains to be seen.

Currently, the workload of professors/ researchers is extremely heavy, especially in public universities. The institutions do little to support academics' activities and sometimes generate additional difficulties for them. Researchers must teach undergraduate and postgraduate students, supervise them, lead research, find international partnerships, find ways of dealing with insufficient funding, revise students' work for content and language, check for plagiarism, write articles in English without language support, manage publications, serve as peer reviewers and editors, organise academic events, perform administrative duties. Their share in the division of labour is far too large, and studies indicate that their health is deteriorating (Barreto *et al*., 2022; Mazzafera & Andrade, 2022; Silveira, 2021). Unless institutions and agencies recognise that provision of better means to support researchers are needed and address the issue, there is a possibility that individual researchers will feel discouraged to continue working so hard. As interviewee E1 mentioned, individuals may tire of doing so much, especially with little support.

The current state of affairs is a risk to Brazilian research[46]: instead of making researchers increase productivity as agencies expect, a substantial part of the community might succumb under the pressure. Researchers such as the participants in this study – especially those working in federal universities — continue their research and publication activities struggling against the increasing difficulties because they are intrinsically

46 http://portal.sbpcnet.org.br/noticias/corte-de-verbas-ameaca-producao-cientifica-brasileira/ http://portal.sbpcnet.org.br/noticias/corte-de-verbas-no-cnpq-coloca-em-risco-desenvolvimento-de-pesquisas/

motivated. Nevertheless, if work conditions deteriorate further, it may become impossible for them to proceed regardless of their will.

If the current priorities established by CAPES are maintained, urgent changes in policies and practices are needed to support the research community. First, stable, adequate funding needs to be provided for the high-quality research which generates the type of knowledge that is valued by the international community. Second, postgraduate students/ novice researchers need to have ample access to L2 and EAP writing instruction to be able to write their own academic texts throughout their careers. Third, experienced researchers who do not have the necessary proficiency in the additional language to write their own articles need to have access to language support. Fourth, novice supervisors should be required to undergo a training scheme to enable them to guide their supervisees effectively, and a baseline for the quality of postgraduate students' work could be established. This supervisor training scheme might be offered to other supervisors who wish to improve their abilities, benefitting both supervisees and postgraduate programmes. Fifth, internationalisation should be an institutionally organised movement, with the administration and faculty working collaboratively to establish joint projects, exchanges of professors and students. This movement would also entail disciplines taught in an additional language – possibly English – which also emphasises the need for consistent L2 language instruction and high proficiency level for the students, faculty and administrative staff.

5.5. LIMITATIONS AND FURTHER INVESTIGATION

This study was based on data collected from a small number of participants. Although the same qualitative approach might not have been possible with a larger population, the size of the sample

restricts the possibility of generalising the information for a wider research community in Brazilian universities. Even though other theories, such as Bourdieu's constructivist structuralism might have been used to interpret the data gathered in this study, a different theoretical framework applied on the same data would probably have emphasised other aspects of the activity. Cultural Historical Activity Theory was chosen because it reveals critical conflicts of human activities and may suggest possible solutions through the mitigation of those conflicts. Diverse approaches may complement each other and provide even more insight into the investigation.

By recording the current practices of these participants, this study registers a fragment of a far larger picture in which all researchers from all disciplines are represented. Further investigation with the participation of researchers from other fields, as well as a wider range of universities – for example state and private universities from other states – will certainly contribute to a better understanding of the community. The results obtained in this study may inform university administrators and policy makers of some of the steps that are needed to improve the activity of scholars. The addition of more knowledge about other fields may refine the comprehension of different needs and corresponding actions to be taken.

The worldwide tendency of internationalisation of higher education cannot be ignored or refused, but it should be regarded critically. As indicated by this study, there are negative effects which need to be acknowledged and mitigated. Since international research publication is only one aspect of internationalisation, further research is needed into how internationalisation could be implemented in Brazilian universities, what resources it would require, and especially, what benefits it can be expected to bring to our society.

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