



ORIGINAL RESEARCH ARTICLE

OPEN ACCESS

## THE 2017 QUADRENNIAL ASSESSMENT OF INTERDISCIPLINARY PROFESSIONAL MASTER'S PROGRAMS IN BRAZIL: ACHIEVEMENTS AND CHALLENGES

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### ARTICLE INFO

#### Article History:

Received 05<sup>th</sup> October, 2017  
Received in revised form  
23<sup>rd</sup> November, 2017  
Accepted 07<sup>th</sup> December, 2017  
Published online 31<sup>st</sup> January, 2018

#### Key Words:

Professional Master's Programs,  
Interdisciplinary Area,  
Quadrennial Assessment,  
Brazil; CAPES

### ABSTRACT

The aim is to examine the criteria of the 2017 Quadrennial Assessment of Professional Master's Programs in the Interdisciplinary Area in Brazil. The content collected in the document research was systematized into three categories: the composition of the assessment criteria; the participation of students in academic and technical productions; and the dedication of professors to the programs. Based on Vergara's methodological steps, we described the results obtained in each category and interpreted the data in the light of the theoretical-conceptual support. We argue that the assessment criteria sought to recognize the specificity of the activities and research produced in the scope of the interdisciplinary professional master's programs and brought a greater recognition of the technical production of professors and students of such courses in relation to the academic master's programs. However, the recognition of such specificity is not complete, considering the imprecision of criteria for the "Social Insertion" item, the difficulties of the students' access to the most highly-qualified academic production and the dilemmas between the dedication of professors to the programs and other administrative and teaching activities in the educational institutions in which they work, as well as between such dedication and their performance in the market.

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Citation: Dr. Diego Santos Vieira de Jesus and Dr. Veranise Jacobowski Correia Dubeux, 2018. "The 2017 Quadrennial Assessment of Interdisciplinary Professional Master's Programs in Brazil: Achievements and Challenges", *International Journal of Development Research*, 8, (01), 18695-18700.

### INTRODUCTION

The scope of scientific knowledge beyond the boundaries of universities in Brazil is extended not only to the interests of profit-motivated private actors, but the state and social movements organizations, which seek improvements in the elaboration and implementation of public policies and actions (Ribeiro, 2005). To meet the demands of these actors, the professional master's programs in the country sought to qualify a skilled workforce that has more to offer than the knowledge brought by undergraduate courses. The creation of professional master's programs required universities to have professors who were not strictly devoted to academic research and developed new materials, technological structures and market research.

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The professional master's programs seek to promote the connection among different areas of knowledge and define a set of experiences and activities aimed at the establishment of transversal competences for the implementation of market, political and social interventions (Castro, 2005). One of the disciplinary areas in which professional master's programs were created in Brazil is the Interdisciplinary Area, defined by the Coordination for the Improvement of Higher Education Personnel (CAPES, its acronym in Portuguese) in 1999 under the name "Multidisciplinary Area" and designated as "Interdisciplinary Area" from 2008 onwards. The growth of this area – which implies theoretical and methodological exchanges and the generation of new concepts and methodologies in different areas of knowledge – was stimulated by the development of research groups and academic programs focused on innovation and the emergence of new universities devoted to advanced training of human resources in numerous parts of the Brazilian territory, including places far from the largest cities in Brazil. Most interdisciplinary master's courses are offered in the

Southeastern region (41.9% of the total of 351 courses in 2016). As the Interdisciplinary Area covers a significant number of master's programs, it has been divided since 2011 into four chambers to meet the challenge of conducting quality assessments: Development & Public Policies; Social Sciences & Humanities; Engineering, Technology & Management; and Health & Biology. The need for an Interdisciplinary Area was justified by the complex nature of problems that require the interaction among distinct areas and the formation of human resources that operate beyond disciplinary boundaries for the solution of these issues (Ministry of Education, 2016). In the light of the greater diversity of programs among all the areas recognized by CAPES, the Interdisciplinary Area has a quadrennial assessment that requires the frequent improvement of procedures and instruments. From 2007 to 2016, the number of professional master's programs in the Interdisciplinary Area with grade 3 went from 24 to 71, and those with grade 4 went from 5 to 22 (Ministry of Education, 2016). In 2017, 92 professional master's courses in the interdisciplinary area were evaluated by the CAPES Quadrennial Assessment. Of these, only two got a grade 5, the highest among all of them; 29, grade 4; 46, grade 3; 13, grade 2; two, grade 1 (CAPES, 2017). The aim of this article is to examine the criteria of the Quadrennial Assessment of Professional Master's Programs in the Interdisciplinary Area in Brazil, held by CAPES in 2017. We argue that these criteria sought to recognize the specificity of the activities and research produced in the scope of the interdisciplinary professional master's programs and brought a greater recognition of the technical production of professors and students of such courses in relation to the academic master's programs. However, the recognition of such specificity is not complete, considering the imprecision of criteria for the "Social Insertion" aspect, the difficulties of the students' access to the most highly qualified academic production and the dilemmas between the dedication of professors to the programs and other administrative and teaching activities in the educational institutions in which they work, as well as between such dedication and their performance in the market – one of the differentials of the professional master's programs in relation to the academic ones.

### **Theoretical framework and methods**

The professional master's programs had to manage the tensions between academic values and the demands of political, social and economic actors. They sought to incorporate theoretical and conceptual references and practical tasks for the qualification of professionals in terms of their flexibility in the articulation of multiple forms of knowledge and the promotion of innovation. By bringing thematic pillars, experiences and hybrid simulations, the formation developed by professional master's programs represented an alternative to the academic bias, which preponderated in the creation of master's courses in Brazil. With relatively recent regulations dating back to the mid-1990s, professional master's programs faced the opposition of some academics, who saw them as courses geared toward market interests in perpetuating profits. While some professional master's programs sought to form multi qualified professionals who already worked in their respective areas, others focused on more specific sectors so that professionals could develop more skills in managing concrete issues. These programs were more attractive for beginners and people who aimed at professional growth or

relocation (Andrade et al., 2004; Fischer, 2005). More recently, it is possible to observe professional master's programs joining both mentioned profiles. Although both the academic and the professional master's programs promote student immersion in research activity, the professional master's program seeks to enable professionals to perform diagnosis in their field and use knowledge in the value aggregation to business, government and social activities. Traditionally, it is conceived that the academic master's programs require a withdrawal from the student in relation to professional activities outside the academic dimension, while the professional master's programs stimulate learning concomitant to the student professional practice. It eliminates the rigid boundaries between academy and market and the difficulties of student's reinsertion in the market when he / she finishes the master's program (Moreira, 2004). In the tasks performed throughout the course and in their completion work – which are not necessarily theses / dissertations –, students in a professional master's program typically seek to solve problems in their professional area. They develop interventions with the aim of mitigating problems in their field (Ribeiro, 2005).

In the Interdisciplinary Area, the accomplishment of such activities by the students presupposes a critical and reflexive positioning on the part of the higher education institution, the constant interaction between theory and practice and the continuity in the improvement of transversal competences, mobilized in varied situations. Instead of strictly limiting itself to acting in the pedagogical dimension, the professor must develop practices connected to the multiple forms of systematization of social knowledge, which presupposes great flexibility in adapting methods and practices to the particularities of each class and the incentive to exchange experiences among students and the most relevant political, economic and social actors. The interdisciplinary professional master's programs allow the students to improve research skills, use organizational analysis tools and manage conflicts at professional group activities (Andrade et al., 2004). This exploratory study was based on the compilation of information retrieved in the Document of the Interdisciplinary Area, developed by CAPES, in 2016; the 2017 Quadrennial Assessment of the Interdisciplinary Master's Programs and the Qualis Periódicos system, at the Sucupira Platform, which evaluates the journals in each disciplinary area defined by CAPES. The research was carried out in December 2017. The aim was to identify, in the first two documents, the main criteria for the evaluation of master's programs in the Interdisciplinary Area – especially the professional master's programs – and the results obtained in the last assessment by the professional master's programs in this area, respectively. In the Qualis Periódicos system, the purpose was to identify the evaluation criteria of the journals for each stratum in the Interdisciplinary Area.

In the analysis of the data collected in the documents, the content collected in the document research was systematized into three categories: the composition of the assessment criteria; the participation of students in academic and technical productions; and the dedication of professors to the programs. Based on Vergara's (2012) methodological steps, we described the results obtained in each category and interpreted the data in the light of the theoretical-conceptual support, which makes it possible to identify the subjective elements of the documents under analysis.

## RESULTS

### *The composition of the assessment criteria*

The initial data base for CAPES assessment of interdisciplinary master's programs is constituted by the following elements: 1. Theses and Dissertations; 2. Bibliographic Production; 3. Technical Production; 4. Artistic Production; 5. Faculty; 6. Disciplines; 7. Research Lines; 8. Research Projects; 9. Program Proposals; 10. Professors' Activities; 11. Professors' Production. In the assessment sheets, five items are considered. The first – Program Proposal – is not assigned weight, but it is evaluated permanently, based on the coherence between the focus of the program proposal, areas of concentration, research lines, projects, disciplines, faculty and egress profile. The other four – Faculty; Theses and Dissertations; Intellectual Production and Social Insertion – have different weights for interdisciplinary academic and professional master's programs: 20%, 35%, 35% and 10% for the first, and 15%, 30%, 30% and 25% for the latter, respectively (Ministry of Education, 2016).

One of the main benefits of the 2017 Quadrennial Assessment was the growing recognition of the relevance of technical production in the “Intellectual Production” item of interdisciplinary master's programs – in particular, the professional ones–, as it was highlighted at the Document of the Interdisciplinary Area itself. The technical production represents, in the assessment of the “Intellectual Production” item of the professional master's programs of the Interdisciplinary Area, 20% of this item. This category includes technical publications for international, national, federal state or municipal bodies; articles published in technical journals; participation in technical committees; preparation of protocols or norms; consulting; technical products; prototypes; patents; improvement courses; training or specialization for professionals in the area. In the follow-up seminars of the Interdisciplinary Area in 2013 and 2015, numerous suggestions were given for the elaboration of a classification instrument that would value the technical and technological production and count on the participation of the academic community in the elaboration of more precise parameters of assessment of different types and subtypes of technical production, especially for professional master's programs whose profile is oriented predominantly to technical products (Ministry of Education, 2016). However, regarding the classification of technical activities, most courses in the “Social Sciences & Humanities” chamber may face greater difficulties than the others, given the more subjective nature of certain productions of programs in that chamber, as well as the shortage of journals and technical products in comparison to Engineering, Technology & Management and Health & Biology chambers, in which this type of production is more frequent. In addition, the Interdisciplinary Area considers that the evaluation of technical production should highlight the benefit it brings to “the training of human resources at the graduate level, in the context of the program, as well as its social impact” (Ministry of Education, 2016, p.28).

The “Social Insertion” item, which is fifteen percentage points higher for professional master's programs than for the academic ones, refers in part to the educational, social, cultural and technological / economic impacts of the programs at the local, regional and national levels. In the case of professional master's programs, the “Program Impact” subitem, which

represents 40% of the “Social Insertion” item, evaluates whether the training of qualified human resources meets the objectives defined by the professional master's program and contributed to the development of students, public or private organizations and society. In the light of the importance of cooperation with external sectors to the programs and the production of relevant results, it is sought, in this subitem, to evaluate the constitution of human resources for the improvement of public management and the population's living conditions, particularly in basic and higher education, technical education and innovative teaching proposals. The contribution of technical production to the business sector – with the dissemination of techniques and knowledge – is also considered, as well as the greater efficiency it promotes in public and private organizations. On the other hand, the subitem “Integration and cooperation with other courses / programs for postgraduate development” – which represents 20% of the item – evaluates participation in cooperation and exchange projects with other programs, and the subitem “Integration and cooperation with organizations and / or institutions related to the Program's knowledge area, with a view to developing new solutions, practices, products or services in the professional and / or academic environment” accounts for another 20% of the “Social Inclusion” item. The remaining 20% are related to “Publicity and transparency of the activities of the Program”, with emphasis on the management of the program's website on the Internet. In such website, there must be the public description of the objectives of the program; the course structure; the criteria for students' selection; the faculty; the technical, scientific or artistic production of professors and students; the financing received from public development agencies and private entities; the institutional partnerships; and the diffusion of knowledge and good practices (Ministry of Education, 2016).

However, the establishment of clear criteria for the definition and classification of activities that can be considered in the “Social Insertion” item and the convenience of weights for this dimension are still debated issues in CAPES itself. According to the assessment sheets of the professional master's programs, available at the Document of the Interdisciplinary Area, the importance of the course in the professional performance of graduates – which represents 60% of the “Social Insertion” item– is evaluated based on the answers provided by graduates and course coordinators. The remaining 40% focus on the policies of dissemination and transparency of the program's activities and performance. The evaluation of these policies is qualitative, based on the information available at the course website. The lack of precise criteria for the qualitative assessment is evident.

### *The participation of students in academic and technical productions*

Nearly a third of the CAPES assessment results for all graduate courses depend on the intellectual production of their faculty and students. The Qualis Periódicos is one of the fundamental instruments for the evaluation of the intellectual production of graduate courses in Brazil. It adds quantitative and qualitative aspects through specific indicators of each area, including the Interdisciplinary one. Currently, the journals of a given CAPES disciplinary area are categorized into eight strata: A1 (the highest level), A2, B1, B2, B3, B4, B5 and C (the lowest level). The C stratum is intended for publications that do not constitute scientific journals or do not meet the minimum criteria established in each area to be classified.

These strata are updated annually by committees of consultants specialized in each area, with criteria defined by the Technical and Scientific Council of Higher Education and registered at the CAPES Area Documents. The general and specific criteria used in each CAPES disciplinary area are available in the respective Area Documents. The Interdisciplinary Area is the only one that performs the update of *Qualis Periódicos* on a date separated from the other areas. Its classification is based on the combination of the classifications carried out by the other disciplinary areas. One of the main criteria used by all areas in the *Qualis Periódicos* evaluation is that the journal presents a high impact factor in databases recognized worldwide. Thus, the greater the number of national and international databases in which the journal is included, the greater its assessment will be. It is worth mentioning that some international databases are too careful and slow to accept the indexing of new journals. It imposes on Brazilian publishers a constant concern regarding the different criteria of adequacy imposed by different indexers. The *Qualis Periódicos* assessment of the Interdisciplinary Area covers all areas of knowledge and their interfaces and accounts for about a third of the total *Qualis Periódicos* journals. For the journal classification, quantitative and qualitative indicators are evaluated. The Quantitative Indicators are the bibliometric indicator of impact in the Journal Citation Report (JCR) in the last available classification and the last five years; bibliometric impact indicator in SC imago Journal & County Rank (SJR) and number of programs whose members published in a journal indexed in the Scielo database. The Qualitative Indicators are the indexing in the main general and specific databases (Scielo, Scopus, Latindex, Web of Science and PubMed), as identified in the set of journal articles published in the Interdisciplinary Area in the four-year period; edition of the journal by scientific societies; journal scope and composition of editorial staff and reviewers. Journals with local characteristics were classified in the B5 stratum and journals that did not present a good performance on the indicators were classified in the C stratum. In the highest strata (A1 and A2), there are mainly foreign language journals – especially English-language ones – with high impact factors. In the analysis of the quantitative indicators, the bibliometric indexes of journals within the same area of knowledge were compared, and, in the analysis of the qualitative indicators, the assessment developed by other CAPES disciplinary areas were also considered (Ministry of Education, 2016).

The intellectual production of an interdisciplinary master's program is evaluated considering that a high-quality production can offer students a more promising condition for their performance. In this sense, the participation of the students in the academic production is fundamental to the evaluation, especially their participation in scientific events – in the light of the exchange of experiences, the accomplishment of collaborations and the adjustments to their research projects – and the co-authoring in productions of greater impact in various modalities, including journals that are qualified in the highest strata of the *Qualis Periódicos*. The CAPES vision is that the student co-authoring in a qualified production signals the quality of human resources formed by the program and positively influences the insertion of the egress in the labor market (Ministry of Education, 2016). According to Ferreira (2005), for a journal to have a scientific character, it is necessary to follow a rigorous system of quality certification. The quality certification is still subjective in many respects, with limited explicit metrics in the journals' guidelines.

The journal guidelines are based on recommendations from international committees and research ethics. All journals usually include the scope, the policies and the editorial process; the structure of the articles; the documents required and the description of the submission process. Some journals indicate the specific formatting standards of the article. Others only suggest that the authors consult the style guidelines and standards provided by the Brazilian Association of Technical Standards (ABNT, its acronym in Portuguese). Some journals immediately reject articles that do not fit the requirements. Among these requirements, the author's education level stands out. This restriction is sometimes not explicit in the journal's guidelines, the indexers norms or even the website of the Brazilian Association of Scientific Editors (ABEC, its acronym in Portuguese). However, it is a way of filtering the quality of articles, as some editors recognized in non-structured interviews we made in the beginning of this research. Due to the large volume of received articles, some editors necessarily restrict the authorship by taking the education level of the author as a reference: only authors who hold a PhD have access to publish their manuscripts in some journals. Ferreira (2005, p.273) suggests that "priority should be given to authors with greater scientific maturity and to works with an impact on the scientific field of the journal". This suggestion can be criticized, mainly because it underestimates the quality of the intellectual production of students, thus creating an additional obstacle for them. It is not always explicit that the article quality metric is related to the author's academic title. However, many publishers use the author's educational level as a selection filter.

The efforts in the internationalization of the Brazilian graduate courses have been gradually intensified in the Interdisciplinary Area and are visible in the grades attributed by CAPES to the programs. Internationalization happens when the program demonstrates, in addition to the parameters of excellence regarding the permanent teaching staff and student production, a good performance in some publishing indicators presented at the Document of the Interdisciplinary Area. Among many parameters of internationalization, it is possible to indicate the publication of articles, by professors and students, in foreign language journals (Ministry of Education, 2016). There is an additional obstacle imposed mainly on the students, which is the elaboration of the manuscripts in a foreign language. If the articles were mainly written in English, they could be accessed by the international scientific community, which rarely consults Brazilian Portuguese-language journals. Many professional master's programs' students do not dominate a second language, which makes more difficult for them to submit articles for highly-evaluated journals at CAPES *Periódicos*. It has a direct impact in the assessment of the programs in which they study, since it lowers the score for the program's intellectual production.

The diversity of the authors' institutional affiliation is one of the requirements for a journal to be classified in a higher strata. For A1 and A2 journals, for example, a minimum of authors affiliated to five different institutions in each number of the journal is required. From this perspective, one of the concerns of the editorial staff is to stimulate institutional diversity, as well as the diversity of areas of concentration, research lines, theoretical approaches and regional and international insertion. In the light of this concern on the part of the editorial staff, students face resistance in producing articles to publish at the journals connected to the professional master's programs in

which they study. Another problem for students is the challenge to produce articles in a limited period. For professional master's programs students, the time to produce academic manuscripts is even more limited, because their academic activities are performed concomitantly with their professional tasks.

### ***The dedication of professors to the programs***

The Interdisciplinary Area considers that the permanent faculty must dedicate a minimum of 15 hours to the activities of the master's program. Each professor must be the advisor of the work of a maximum of ten students. Most professors must have a dedication regime of 40 weekly work hours in the higher education institution. In the case of professional master's programs, the professor's activities are evaluated considering the leadership in thematic projects; the obtaining of funding for projects; the existence of integrative projects, with the participation of professors from different areas of origin that meet the proposed interdisciplinarity; the relevance of the research at regional, national and international levels, as well as its impact on the training of human resources. The participation of professors in scientific and technological research projects financed by the industrial sector or the corresponding social policy area is also examined, as well as the capacity of the permanent faculty to establish technical-scientific collaborations and exchanges with research, development and innovation groups (Ministry of Education, 2016).

In Brazil, most professors in master's and doctoral programs work only in universities, not in companies. Professional master's programs should correct a distortion that occurs in Brazil in relation to more economically developed countries. However, professors in private higher education sector in Brazil who work at professional master's programs usually have excessive work hours in undergraduate classes, so that the hours that should be devoted to intellectual production and social insertion are reduced. Another great difficulty faced by professors – especially in private higher education institutions – is to reconcile the market performance with academic activities. It becomes more difficult for them to preserve their market experience, which is desirable for a better performance according to the criteria of assessment of professional master's programs, including the ones in the Interdisciplinary Area.

## **DISCUSSION**

The expressive and gradual recognition of technical production in the 2017 Quadrennial Assessment of Professional Master's Programs in the Interdisciplinary Area is fundamental in the light of the very nature of some of these programs, whose profile is predominantly focused on this type of production. According to Ribeiro (2005), technical skills allow the search for solutions for issues in the field of the master's program, which makes it possible to identify gaps in the performance of political and socioeconomic agents and allows interventions in terms of improving instruments to contribute to business, political, social and scientific activities. However, when the complexity of the Interdisciplinary Area is considered, it is possible to say that there are clear differences among its chambers regarding the classification of technical productions, especially those that do not have a technological or biomedical function. Such differences can lead to the lowering of assessments in the "Intellectual Production" item, partly due to

the difficulty of classifying technical activities and products for the purposes of evaluation and establishing criteria for the assessment, as well as the lack of technical journals or products in areas that are traditionally more related to the production of social, political, philosophical or metaphysical studies. The greater weight of the "Social Insertion" item is compatible with the idea developed by Andrade et al. (2004) that, given the constant interaction between theory and practice for the improvement of transversal competences to deal with varied problems, the methods and practices developed in the interdisciplinary professional master's programs are characterized by deep flexibility and stimulate the exchange with political, economic and social actors involved. However, as it is possible to identify in the results of this study, the assessment of the social insertion of an interdisciplinary professional master's program is still full of "grey zones" of undefined criteria and non-classification of productions in such item. The adequacy of the placement of weights is questionable both for the definition of the importance of the course in the professional performance of the graduates and the policies of dissemination and transparency of the program's activities and performance. The composition of the assessment of the first item is partially based on the answers to some questions brought to graduates and course coordinators, who, often due to the lack of precise criteria, can offer answers that do not correspond to the reality of the programs' activities. This may inflate or lower the results in the light of the lack of precision. The policies of disclosure and transparency are evaluated in a qualitative way, which leaves a wide margin for the subjectivity adopted in the assessment to be excessive. This may have a direct impact on the grade received by the interdisciplinary professional master's programs. Besides, because of editorial policies and language limitations, professional master's programs' students have many obstacles to submit articles for highly-scored journals at CAPES Periódicos. This affects the evaluation of the programs in which they study, since it lowers the score for the program's intellectual production.

The scientific knowledge of researchers – professors or students – should be used to raise the quality of services, processes and products. The Document of Interdisciplinary Area considers that the permanent faculty must dedicate a minimum of 15 hours to the activities of the program and advise the work of a maximum of ten students. However, it seems impracticable for these professionals to reconcile market and academic tasks. In 2017, Education Minister José Mendonça Filho said that the economic crisis led to a slowdown in higher education in the light of the reduction in income and recession experienced in Brazil since 2015 (São Martinho, 2017). The financial recession in the country, motivated by the adverse international economic situation and the political chaos caused by allegations of corruption and misappropriation of funds by politicians and businessmen, forced the Brazilian government to reduce and limit access to student financing contracts from 2015 on. The Brazilian government reduced the financing contracts and drastically redefined the rules for them. Students from the poorest classes could not enter private higher education or continue studying at a private university. In this context, not only the government budget was affected, but also the level of employment in society. With the high unemployment rate in the country and the reduction of wages in multiple sectors of Brazilian economy, students cannot pay for higher education courses in private institutions. Since 2016, the private educational sector

has been characterized by mass professor dismissals and the reduction of the salaries of people who remain in private institutions of higher education. In this scenario of crisis, many professors who work at private higher education institutions were relocated to teach in a larger number of undergraduate classes and take on administrative activities at these institutions (Jesus & Dubeux, 2018). This affects directly the assessment of professional master's programs, because the dedication that professors have to these programs become more limited in terms of academic and technical productions, as well as their performance in the market, which is a very important element in the evaluation of professional master's programs by CAPES.

### Conclusion

The 2017 Quadrennial Assessment of Professional Master's Programs in the Interdisciplinary Area in Brazil sought to recognize the specificity of the activities and research produced in the scope of the interdisciplinary professional master's programs and brought a greater recognition of the technical production of professors and students of such courses in relation to the academic master's programs. However, many problems remain in the assessment process, such as the imprecision of criteria for the "Social Insertion" item, the difficulties of the students' access to the most highly qualified academic production and the dilemmas between the dedication of professors to the programs and other administrative and teaching activities in the educational institutions in which they work, as well as between such dedication and their performance in the market.

It would be necessary to stimulate debates on the elaboration of classification instruments that value the technical and technological production. These debates should include the academic community in the formulation of more precise parameters of assessment of different types and subtypes of technical production. Besides, it would be important to stimulate the technical and academic production of students in foreign languages, so that they could participate in international academic and technical events and submit manuscripts for international journals. The teaching and practice of foreign languages in interdisciplinary master's programs in Brazilian universities – mainly English language – would have a positive effect for the student performance and the assessment of the programs.

To face the problems brought by political and economic crisis, especially in the private higher education institutions which have professional master's programs, some strategies could be developed, such as scholarships, alternative financing from private banks, discounts for those who pay the current monthly fees and the creation of educational endowments. This could help solve problems in undergraduate programs and allow professors to have more time to dedicate to their academic and technical production in the professional master's programs.

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