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Original Article

Blended education and its possibilities of application in stricto sensu graduate graduation in Brazil

O ensino híbrido e suas possibilidades de aplicação na pós-graduação stricto sensu no Brasil

La enseñanza híbrida y sus posibilidades de aplicación en el postgrado stricto sensu en Brasil

Authors:

Rafael Afonso — rafaelfonsao@gmail.com

Silvio Carvalho Neto — silvio@facef.br

Abstract

This article aims to investigate the possibilities of applying blended learning in Stricto Sensu graduate programs in Brazil. The work method is bibliographical exploratory research, with a qualitative approach. The article is an extraction of partial results of an ongoing research that seeks to describe the benefits of implementing blended learning in the various aspects that involve Stricto Sensu Postgraduate programs. The initial results indicate that hybrid teaching can be used in the implementation of disciplines, in defense and qualification benches, in interinstitutional lectures, in the collaboration of research groups, in the internationalization process, among other sectors that can benefit.

Keywords: Blended Learning; Postgraduate studies; Stricto Sensu; University education; Educational technology.

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Resumo

O presente artigo tem como objetivo investigar as possibilidades de aplicação do ensino híbrido na pós-graduação Stricto Sensu no Brasil. O método do trabalho é a pesquisa exploratória bibliográfica, com abordagem qualitativa. O artigo é uma extração de resultados parciais de uma pesquisa em andamento que procura descrever os benefícios da implantação do ensino híbrido nos diversos aspectos que envolvem os programas de Pós-Graduação Stricto Sensu. Os resultados iniciais indicam que o ensino híbrido pode ser utilizado na realização das disciplinas, nas bancas de defesa e qualificação, na realização de palestras interinstitucionais, na colaboração de grupos de pesquisa, no processo de internacionalização, entre outros setores que podem ser beneficiados.

Palavras-chave: Ensino Híbrido; Pós-Graduação; Stricto Sensu; Ensino Superior; Tecnologia Educacional.

Resumen

Este artículo tiene como objetivo investigar las posibilidades de aplicar la enseñanza híbrida en los estudios de posgrado Stricto Sensu en Brasil. El método de trabajo es la investigación bibliográfica exploratoria, con un enfoque cualitativo. El artículo es una extracción de resultados parciales de investigaciones en curso que buscan describir los beneficios de implementar la enseñanza híbrida en los diversos aspectos que involucran los programas de Postgrado Stricto Sensu. Los resultados iniciales indican que la docencia híbrida puede utilizarse en la docencia de materias, en juntas de defensa y calificación, en la realización de charlas interinstitucionales, en colaboración con grupos de investigación, en el proceso de internacionalización, entre otros sectores que pueden beneficiarse.

Palabras-Clave: Enseñanza Híbrida; Posgraduación; Stricto Sensu; Enseñanza superior; Tecnologia Educacional.

1. Introduction

Hybrid learning is conceptualized as broad and complex, as it offers a range of interpretative possibilities, but in general terms, the term "hybrid" means something that is mixed or blended and refers to the combination of various spaces, activities, and methodologies. The advancement of new technologies has allowed the teaching-learning process to blend the use of new digital tools, offering education with more mobility and connectivity (MORAN, 2015). The term "Hybrid," according to Andrade and Monteiro (2020), comes from the Greek Hybris and corresponds to a miscegenation or mixture that violated natural laws.

Recently, during and after the Covid-19 pandemic in the years 2020 and 2021, hybrid learning experienced an unprecedented boost, as a large part of the population faced social isolation measures in an attempt to contain the pandemic. All educational sectors were affected, including higher education. It is observed that a significant portion of higher education had to adapt to internet-based platforms to offer aspects of hybrid learning. This study investigates the possibilities of implementing hybrid learning in Stricto Sensu graduate programs in Brazil. The research method can be characterized as exploratory, with a qualitative approach, primarily conducted through bibliographic research from January to March 2023, searching for theoretical references in Brazilian articles and journals on the topic, using keywords such as "hybrid learning," "graduate education," and others related, applying the Stricto Sensu graduate filter after obtaining the results.

In the first instance, the concept of hybrid learning is addressed, and the characteristics of hybrid methodologies are pointed out. Subsequently, the focus shifts to the presentation of the application of hybrid learning in Brazil, with emphasis on existing legislation regarding hybrid learning and the Ministry of Education's (MEC) report on hybrid learning in higher education institutions. Finally, some considerations are made regarding the process of hybrid learning in Stricto Sensu graduate programs in Brazil.

2. Teaching and hybrid methodologies

Education has become ubiquitous, meaning it can occur at any time, hour, and space. According to Erigleidson (2018), this is possible due to the advancement of digital technologies and cultural practices. The author states that hybridism can occur in various instances, but for this to happen, recognition of the dimensions is necessary so as to pave the way for hybrid learning environments. According to this author, "Blended Learning (BL) is an educational trend that emerges from cyberculture through the intertwining of face-to-face education and online Distance Education." It can be inferred that the hybrid model should supersede both modalities, offering not only alternation between them but also the development of new strategies and technologies.

According to Erigleidson, "blended learning" can be seen as a modality that encompasses collective intelligence, which is an intelligence that arises through the interaction of groups, facilitated by new communication technologies, due to the possibility of creating a space that allows interaction for knowledge construction. In this case, hybrid learning allows the creation of a space with multiple possibilities, aiming to overcome the boundaries of online and face-to-face teaching. For this to happen, it is necessary for flexible instructional design to be well implemented, thus creating a dynamic teaching and learning environment (ERIGLEIDSON, 2018).

Hybrid technologies, according to Moran (2015), are tools that allow for the blending of activities happening in real time (physical space) with virtual ones. Hybrid learning enables greater flexibility, offering personalized pathways to meet the needs of each student, aiming at fostering autonomy and active participation with the content. With the pandemic, physical classroom environments were redesigned, adopting new digital platforms and the use of mobile devices such as smartphones and tablets, allowing students to access content and online classes.

Bacich *et al.* (2015) assert that the interaction of digital technologies not only refers to being able to alternate between physical and virtual spaces but also to mediating and fostering students' creativity and critical thinking. Hybrid learning emerges as a way to redefine the teaching

process. In this case, the use of digital tools enables new possibilities in education, enriching school planning as well as the development of activities aimed at achieving more meaningful learning for the student. The teacher will assume the role of a knowledge mediator, promoting student participation and engagement.

In the literature, hybrid education has been discussed even before the pandemic. According to Machado *et al.* (2017), the hybrid modality has been tested and implemented in various countries. As pointed out by Brito (2020), hybrid learning originated in the United States and Europe with the aim of addressing the issue of dropout rates in distance learning courses, allowing for greater engagement and interactions with content, instructors, and both online and face-to-face classes. Hybrid learning differs from Distance Education (DE) because it allows access to a class happening in-person, in real-time, not just virtually like DE.

At the University of Northampton, the pedagogical model emphasizes development through the "active blended learning (ABL)" method (PALMER *et al.*, 2017, p. 2). The ABL method aims to cultivate autonomy and independence, placing the student at the center of the teaching-learning process so that they can progress at their own pace and enhance digital fluency. Digital fluency can be seen as a skill that can be developed through practical activities; its goal is to understand digital changes and how to use digital tools to achieve objectives or goals. This method combines synchronous and asynchronous classes, allowing students to play an active role and interact with the content even when they are not in the classroom.

Upon careful analysis of the synchronous modality: it involves the instructor delivering a live broadcast via software (e.g., Zoom, Microsoft Teams, Google Meet); the asynchronous modality is when the instructor provides materials through a digital platform (e.g., Moodle or Learning Management System - LMS). The ABL method allows for the integration of these two teaching modalities, from accessing content/materials to attending classes, which can be accessed virtually or in person.

Peres and Pimenta (2011) describe that the synchronous modality can complement the asynchronous modality, allowing for more interaction

of participants with the content and thereby favoring knowledge construction. Hybrid learning allows for the development of new teaching strategies; among them, the five hybrid methodologies stand out: Flipped Classroom, Flex, Rotational Lab, À La Carte, and Station Rotation. Each modality has its methods and objectives, but they also have common points when it comes to improving student engagement and autonomy. The flipped classroom allows students to develop at their own pace, where activities are carried out individually or in groups, using active methodology. The teacher can assist the student, but this method aims to develop student ownership through activities and projects, so that they can solve and apply knowledge in a particular subject (MACHADO *et al*., 2017).

Valente (2014) states that digital technologies are changing the dynamics of classrooms regarding students' relationships with teachers, information, and spaces (both physical and virtual). The flipped classroom, according to the author, allows students to study before attending class; thus, they become the main agents/protagonists in knowledge construction. Bergmann and Sams (2018, p. 76) argue that "flipped learning in the mastery classroom combines mastery learning principles with information technology to create a sustainable, replicable, and manageable learning environment." It is understood that through this modality, students can manage their own pace of learning, playing an active role in activities and research. To achieve this, the authors point out, teachers need proficiency and training to reach these objectives. This modality allows for non-linear classes; the teacher must always find ways to engage students and improve their engagement. Materials such as videos, spreadsheets, and books should be shared with students. According to Bergmann and Sams (2018), the institution, as well as the local IT department, should provide students with access to online servers.

The Flex method is predominantly online; however, even though it directs students to offline activities at certain times, they follow an activity guide aimed at promoting autonomy with the assistance of the teacher/mediator (CHRISTENSEN *et al*., 2013).

The À La Carte method allows students to participate in one or more online courses, thus enabling them to have educational experiences in traditional schools. For example, in elective subjects, students can choose

to take them online and devise a study plan, with the assistance of the teacher. This method allows students to take courses online or in person (CHRISTENSEN *et al.*, 2013).

The Rotational Lab method involves dividing students into two workspaces: the computer lab and another space defined by the teacher (for example, the classroom). In this methodology, the teacher sets a time frame, and then students alternate between the spaces. The computer lab should be used for online activities (MACHADO *et al.*, 2017).

The Station Rotation methodology is similar to the previous one. The teacher can set up workstations, and each station has a specific learning objective that is also connected to the central goal of the lesson. This method is part of the hybrid model; one of the stations should involve online work. The teacher sets a time frame, and as a result, students alternate between the stations. The stations should be independent, allowing activities to be developed at each student's own pace.

3. Hybrid teaching in Stricto Sensu postgraduate programs in Brazil

In Brazil, hybrid learning has been a major challenge as it interferes with the accommodation of traditional teaching methods; however, with the pandemic, it is evident how much this modality can benefit education by allowing access to a course or class through a computer or mobile device. For hybrid learning to be effective, it is necessary for teachers to receive training and preparation so that they can mediate the use of these digital resources with students for the development of autonomy and knowledge (ANDRADE; MONTEIRO, 2020).

Hybrid learning emerges to redefine education in Brazil, seeking to chart new personalized paths. This change may have been driven not only by the pandemic but also by technological advancement. The challenge for education in current times is to adapt to changes, and perhaps this is the greatest challenge for the country. Pereira (2018, p. 168) suggests that the traditional model, which occurs in the classroom, and the virtual model will blend to promote learning, gradually becoming complementary.

As described by Andrade and Monteiro (2020, p. 9), "the role of the teacher in hybrid methodology requires the deconstruction of the position as the sole source of knowledge or transmitter of information in expository classes." This highlights the potential of hybrid methodology, as it allows the student to be a protagonist, but alongside the teacher/mediator, so that knowledge becomes meaningful, enabling the student to use this knowledge in everyday life. To achieve this goal, it is necessary not only to deconstruct but also to update teaching, consolidating it with other modalities, as hybrid learning allows for the blending of modalities.

Learning is not only about transmitting knowledge but also about how to make the student apply what they have learned in everyday life and in the development of skills. Educational institutions need to organize and reorganize themselves, seeking to offer more integrated activities, training, and establish a connection between theory and practice (CAMARGO; DAROS, 2018). Hybrid learning allows students to develop at their own pace, with the assistance of a mediator, for the development of competencies, but for this to happen, the institution needs to provide the necessary resources (infrastructure and training) to achieve these objectives. Camargo and Daros (2018) suggest that "the majority of teachers in Brazil follow the traditional pedagogical model, institutionalized," which, for the authors, can be a major challenge in implementing the hybrid modality. The pandemic has demonstrated how technology can be a great ally in education, but if there is not a positive interaction of these resources between teachers and students, it can become a major obstacle.

Prensky (2001) argues that today's students are no longer the people the educational system was designed to teach. Currently, young people, from childhood to college, are the generations that have grown up with new technologies, using computers, video games, digital music players, video cameras, cell phones, and other tools of the digital age. Students of this new generation are known as digital natives and prefer to receive/access information quickly. According to the author, teachers need to learn to communicate in the language and style of their students, that is, learn to contextualize and interact with their students. This is the main challenge for teachers facing new modalities in this technological era. It

will be up to digital immigrants to adapt and learn the language of digital natives, creating new methods and assessments.

The author's reflections pertain to digital immigrants and digital natives in the face of changes and the need to update themselves amid technological advancements. Digital immigrants are those who keep up with technological changes and seek to update themselves to comprehend and manage these new resources. Digital natives are those who have grown up and had exposure to these resources from an early age. The major challenge for education is to reconcile immigrants with digital natives, and for this, it is necessary for teachers to undergo training to operate these digital resources to promote learning. Today, students have access to the internet and various resources (hardware and devices), and it is the responsibility of the teacher to mediate these resources for knowledge construction. Hybrid learning does not solely aim to allow the blending of modalities (face-to-face and virtual), but rather to involve the student in this process, allowing them to develop at their own pace, with the assistance of the teacher.

According to Christensen *et al.* (2013), hybrid learning does not aim solely to replace traditional classrooms, but to expand both modalities and foster the future of education. They explain that hybrid learning is a formal education program that also offers online access, with control and supervision, so that students can study at their own pace. There are courses that allow for alternating between modalities (face-to-face and virtual), providing more freedom of choice for students. It is inferred that hybrid learning can benefit education in Brazil, as this modality aims to broaden and facilitate access. It will never replace the teacher, who remains the primary agent for knowledge construction and skill development. The hybrid methodology involves the student in the teaching-learning process, allowing them to develop at their own pace under the supervision of a teacher. The combination of synchronous and asynchronous modalities allows students to interact more, assuming an active role in relation to activities administered by the teacher. Hybrid learning enables a more connected education, reducing transportation costs (e.g., student and teacher travel) and allowing for alternating between face-to-face and virtual classes.

Fermozelli (2016) observed, through their research, that learning pathology in medical schools reflected students' lack of interest due to subjects that are not directly related to professional practice and a lack of pedagogical resources that motivate/engage student participation. As a result, a study was conducted on the application of blended learning in the medicine course at FCMS of PUC-SP. According to Fermozelli (2016), the use of blended learning can offer greater contextualization of theory with practice if well applied. In the medicine course, students showed interest in this modality, leading to increased engagement with the content, stemming from the contextualization of pathology in medical practice.

The author argues that there is still a need for the training of professionals to meet the current demands of society, so that they can have more capacity for action and problem-solving in their daily work. She refers to the Ministry of Education (MEC) releasing the National Curricular Guidelines for Undergraduate Medical Courses (DCN) in 2001, emphasizing the importance of adopting active teaching methodologies aimed at placing the student at the center of the learning process, allowing them to construct their own knowledge. She points out that medical education has been undergoing a period of questioning regarding the quality of the teaching-learning process, which tends to seek innovative methods. She also notes that today's new generation of university students has grown up interacting with various technological resources, and that there are students who do not feel comfortable with a passive methodology and expository lectures (FERMOZELLI, 2016).

Braz *et al*. (2019) argue that hybrid learning can offer many advantages to graduate students, enabling them to study and prepare for work. Hybrid learning is also flexible, allowing students to progress at their own pace, thereby overcoming distance barriers and making costs more accessible. This modality enables students to access classes that may be taking place in a physical location remotely, thus engaging with the content and interacting with professors and peers without the need for physical attendance. The authors highlight "the new profile of students studying in remote locations," emphasizing the need for institutions to provide tutors, mediators, and coordinators to manage content, pedagogical projects, and assessments for the construction of new knowledge. Braz *et al*.

(2019) also point out the challenge of accessing Stricto Sensu graduate courses in Brazil. Not all regions have access, as indicated by the authors' survey, which found that Brazil had approximately 122,295 students, of whom 76,323 were in academic master's programs, 4,008 in professional master's programs, and 41,964 in doctoral programs.

According to Braz *et al.* (2019), hybrid learning can be developed and applied in various ways as it blends and alternates between spaces. They emphasize that the university's pedagogical project should offer a hybrid education to understand digital technologies, allowing students to take advantage of both face-to-face and virtual environments simultaneously. They point out that technology is not a mandatory factor in the classroom but rather complements teaching by offering new access, strategies, and pedagogical proposals. The incorporation of ICTs should adapt and contextualize the new practices of students and teachers. The main benefits highlighted by Braz *et al.* (2019) of Hybrid Education in Graduate Studies are as follows: Flexibility, freedom, and autonomy - students study at their available time, develop autonomy, and have the freedom to engage with the content in a manner that suits them, thus fostering a critical and proactive attitude; Proactivity - students construct their study schedule and enhance their competence as subjects in their study time; Development of a researcher posture, as they achieve higher quality in knowledge construction; More meaningful learning through flipped classroom, as students research and study before face-to-face meetings, participating much more in the debate and exchanges in the classroom; and Enhancement of connection among students, who come closer and develop a cooperative relationship.

Caneppele *et al.* (2019) state that the teacher must adapt to societal changes by designing active methodologies to place the student at the center of the teaching-learning process. In this active methodology, the goal is to make teaching more efficient, thus promoting stimulation and engagement with the content, as well as fostering students' critical thinking. Hybrid learning emerges as a methodology that combines online and conventional teaching modalities, alternating between them with the aim of connecting content and fostering critical thinking. Caneppele *et al.* (2019) conducted research to investigate the perceptions of students

and teachers regarding the online platform Google Classroom for the teaching and learning process of a discipline taught in a hybrid format in a Stricto Sensu graduate program at the Faculty of Agronomic Sciences of the "Júlio de Mesquita Filho" São Paulo State University, in the city of Botucatu-SP. The researchers found that the Google Classroom platform and the hybrid modality benefited the teaching and learning process, including through its utilization, interaction, and alternation between online and face-to-face modalities.

The Ministry of Education and the National Council of Education (CNE) released a report on the General Guidelines for Hybrid Learning, presenting the role of hybrid teaching in Brazil and its importance in education. Opinion CNE/CP No. 14/2022, approved on July 5, 2022, presents national guidelines for teaching and learning by competencies and for institutional research in-person, mediated by information and communication technologies (Brazil, 2022). According to the Ministry of Education (MEC), the proposal for implementing the hybrid teaching process aims to overcome the emergency stage and the difficulties imposed by the state of pandemic, to ensure as much learning as possible in adverse situations. The MEC points out that, faced with this urgent scenario, measures were necessary, including hybrid learning methodologies. Hybrid learning emerges as a flexible teaching method, where face-to-face and non-face-to-face times and spaces can be alternated. To make this happen, it is necessary to review the practices of the teaching and learning process, aiming to create "strategies to exit the crisis generated by the closure of schools for face-to-face classes" (Brazil, 2022).

According to the Ministry of Education (MEC), "the hybrid and flexible vision of education has been redefined by increasing connectivity," which means the adoption of various technological devices, allowing greater mobility and connectivity in the relationships and mediations between teachers and students. According to the MEC, "the basic concept of this hybridism proposes it as a real enrichment of face-to-face teaching"; it refers to hybrid teaching as a modality that adds to face-to-face teaching, meaning that through technology, students can be helped to play an active role in the teaching-learning process. With the adoption of new technologies in education, new ways of teaching emerge, and thus, new

learning environments, both physical and virtual. The MEC's report discusses the challenges of hybrid learning, referring to the reorganization of teaching and learning dynamics in Brazilian education, where it points out the role of the council in this process, integrating different academic processes. It also raises an interesting issue to be analyzed when it states that "technology enhances agility and helps organize learning, in addition to providing an opportunity for an active role for students in using digital resources"; which leads to the understanding that technology, increasingly present in schools and universities through connectivity and interaction, enriches the teaching-learning process, allowing knowledge to be transmitted, shared, and expanded.

The report also clarifies the importance of the mediator for knowledge construction and the development of students' competencies. According to the National Council of Education (CNE), the teacher "acts as a guide and mentor in this productive process, assuming partnership in collective construction and authorial action." Regarding the school community, the Ministry of Education (MEC) discusses the expanded educational challenge, referring to new methodological perspectives, pedagogical practices, and modalities that allow the use of new technologies in the teaching-learning process.

As per the CNE report, it is evident that the use of new technologies can benefit education by constructing new teaching strategies aimed at developing competencies and engaging students with the content. The Ministry of Education (MEC) (Brazil, 2022) reinforces that "Brazilian educators have sought to stimulate the protagonism and effective participation of students in the results of their learning"; which means that teachers should engage their students so they can have autonomy, authorship, and an active role in the teaching-learning process.

Regarding Higher Education Institutions (HEIs), the Ministry of Education (MEC) emphasizes the importance of implementing "remotely mediated activities for their students enrolled in face-to-face courses" as a way to complement teaching, enabling mobility and easy access to it (Brazil, 2022).

With hybrid learning, one can envision education becoming more mobile, allowing for virtual presence in the classroom. For this to happen, it is necessary to train teachers so that they can facilitate the use of these new technological tools for the teaching-learning process of students. The challenge for implementing hybrid learning, whether in education or in HEIs, is related to the "current regulatory evaluation process," as pointed out by the MEC report to the CNE (Brazil, 2022).

At the end of 2022, the president of CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel) established Ordinance No. 315, dated December 30, 2022, which embraces, in accordance with Opinion CNE/CP No. 14, dated July 5, 2022, unanimously approved, the use of the hybrid teaching and learning process by stricto sensu graduate programs in Brazil (CAPES, 2022), and provides for "the use of the hybrid teaching and learning process by stricto sensu graduate programs in Brazil" in its articles:

> Article 1: This Ordinance embraces, in accordance with Opinion CNE/CP No. 14, dated July 5, 2022, unanimously approved, the use of the hybrid teaching and learning process by stricto sensu graduate programs in Brazil.
> Article 2: Evaluation areas may suggest parameters, in line with the Evaluation Directorate (DAV), aimed at measuring the efficiency of the hybrid teaching and learning process.
> Article 3: The Evaluation Directorate (DAV) is responsible for proposing operational norms for the implementation of this Ordinance, respecting university autonomy.
> Article 4: This Ordinance comes into force on the date of its publication.

This ordinance refers to the implementation of hybrid teaching in stricto sensu graduate programs in Brazil, integrating the alternation of activities in different times with face-to-face teaching. It maintains the perspective of face-to-face instruction in stricto sensu graduate programs while expanding the development of curricula and pedagogies focused

on competencies.

Questioning the real impact of hybrid teaching on stricto sensu graduate programs in Brazil involves examining whether it was possible to alternate between modalities and how educators, coordinators, and rectors reacted to the implementation of this modality. Initially, the main benefits of implementing hybrid teaching in various aspects of stricto sensu graduate programs include conducting classes, thesis and qualification defenses, holding interinstitutional lectures, fostering collaboration among research groups, contributing to the internationalization process, and identifying other sectors that benefited. However, it is necessary to identify the difficulties programs face in establishing hybrid methodologies in their structures, presenting the reasons for acceptance/rejection by the academic community, especially regarding training for the use of new digital tools and adaptation to current regulations.

The present article aimed to discuss the possibilities of implementing hybrid teaching in stricto sensu graduate programs in Brazil. The method employed was exploratory and bibliographic, with a qualitative approach. The article is an extraction of partial results from an ongoing research project seeking to describe the benefits of implementing hybrid teaching in various aspects of stricto sensu graduate programs. It presented the concept of hybrid teaching and its characteristics, the application of hybrid teaching in Brazil, focusing on existing legislation regarding hybrid teaching and the MEC report on hybrid teaching in higher education institutions. Finally, some considerations about the process of hybrid teaching in stricto sensu graduate programs in Brazil were provided. The initial results of the ongoing research suggest that hybrid teaching can be used in conducting classes, thesis and qualification defenses, holding interinstitutional lectures, fostering collaboration among research groups, contributing to the internationalization process, among other sectors.

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