Stimuli and obstacles in the use of active teaching methodologies: a study based on the perception of bachelor's degree professors in Administration courses from federal universities in southern Brazil

Estímulos e bloqueios no uso de metodologias ativas de ensino: um estudo baseado na percepção de professores de cursos de bacharelado em Administração das universidades federais da região sul do Brasil

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ABSTRACT

The need of discussing the use of active methodologies (AM) in higher education has received great attention in recent years. In this context, identifying the limitations that hinder the implementation of these methodologies, as well as the stimuli that lead professors to apply this type of approach, becomes essential for the change in the learning style in Management. In this sense, this study aimed to analyze different stimuli and blocks in the use of AM's in Administration teaching. The research is characterized as a quantitative study, carried out with 126 professors in Administration from nine federal institutions of higher education in the south region of Brazil. The results pointed out the professors' attitude towards the use of AM's and the institution's support as the main stimuli for the AM use in Management education, while the professors' formation stood out as the main block of its use. Professors perceived an increase in the teaching workload in planning, organizing and developing activities related to AM's, although this factor has not been shown significant for the professor to stop using these methodologies in class. The study highlights several contributions that can be explored by professors, researchers and educational institutions interested in the implementation and use of AM's in the field of Administration, as well as in the teaching of a broader form.

Keywords: active methodologies; teaching-leaning; administration

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RESUMO

A necessidade de discutir o uso de metodologias ativas (MA) no ensino superior tem recebido grande atenção nos últimos anos. Nesse contexto, identificar as limitações que dificultam a implementação dessas metodologias, bem como os estímulos que levam professores a aplicar este tipo de abordagem, torna-se essencial para a mudança no estilo de aprendizagem na área de Administração. Nesse sentido, este estudo teve por objetivo analisar diferentes estímulos e bloqueios no uso de MAs no ensino de Administração. A pesquisa se caracteriza como um estudo de natureza quantitativa, realizado com 126 professores da área de Administração de nove instituições federais de ensino superior da região sul do Brasil. Os resultados apontaram a atitude docente quanto ao uso das MAs e o apoio da instituição como os principais estímulos ao uso das MAs no ensino da Administração, enquanto a formação dos docentes destacou-se como o principal bloqueio a sua utilização. Os professores perceberam um aumento na carga de trabalho docente em atividades de planejamento, organização e no desenvolvimento de atividades relacionadas às MAs, embora este fator não tenha se mostrado significativo para o professor não utilizar essas metodologias em aula, devendo, entretanto, ser identificadas formas de amenizar esse esforço. O estudo destaca uma série de contribuições que podem ser exploradas por professores, pesquisadores e instituições de ensino interessadas na implantação e no uso de MAs na área de Administração, assim como no ensino de uma forma mais ampla.

Palavras-chave: metodologias ativas, ensino-aprendizagem, administração.

Introduction

Currently, possessing a college diploma no longer guarantees employability for future university graduates, as the labor market has been examining its professionals for qualities and abilities such as creativity, innovation, interpersonal intelligence, conflict management, teamwork, and other characteristics, indicating the need to change the profile of professionals graduating from the universities (URIAS; AZEREDO, 2017). In this scenario of broad and deep social and educational changes, the use of active methodologies (AM) appears as a recent topic in academia (GOBBO; BEBER; BONFIGLIO, 2016; FILASTRO; CAVALCANTI, 2018; GODOI; FERREIRA, 2017), being no different in the field of Management.

According to Borges and Alencar (2014), professors must rethink the construction of knowledge, with the mediation and interaction provided by them being the essential presuppositions for learning to occur, making it more than time for university pedagogical practices to be revisited so that future professionals are no longer labeled as "copies" who went through college by merely reproducing the existing knowledge without contributing anything new. In this sense, the education of future Administration professionals must go beyond the acquisition of technical or mostly theoretical knowledge, with the new student profile, the use of new digital technologies, and the adoption of active teaching methodologies in classes being recurring themes in meetings, conferences, and in articles about Higher Education in Management. This brings about numerous pedagogical questions regarding "how" to present the content with approaches that are different, motivating, significant, and tied to the daily lives of the "new students" (URIAS; AZEREDO, 2017).

Berbel (2011) states that making students seek out previous theoretical knowledge brings about new elements that have not yet been considered by the professors, creating autonomous motivation and awakening curiosity due to the students' perception of being the origin of the search for their knowledge in the teaching-learning process. In this context, active methodologies encourage the construction of knowledge by students by stimulating the action-reflection-action process, making the students actively involved in the stages of learning, with the professor taking up the role of a mediator, advisor, and enabler (FILASTRO; CAVALCANTI, 2018). However, it is known that their application is associated with the use of new technologies, bringing about structural and technological demands and generating cultural or human resistance conflicts, which creates numerous factors limiting their applicability.

Even among all the obstacles connected to the use of Active Methodologies for teaching, there is an extensive line of professors and researchers who currently defend the use of differentiated methods that encourage active student participation in classes and that contribute as learning tools (AZEVEDO; PACHECO; SANTOS, 2019). This line defends that using active teaching methodologies leads to student evolution in terms of knowledge and to a better interaction with classmates and professors in the classroom, promoting more logical and critical thinking as

well as involvement and the encouragement of creativity (DUMINELLI; EZEQUIEL; YAMAGUCHI, 2018).

In this environment contextualized by the literature, with the benefits and obstacles associated with the use of Active Methodologies, in addition to the educational requirements for future professionals and the eminent need to modernize teaching practices in Management in favor of a greater involvement and better education for students, the following question appears: Which are the main stimuli and obstacles for using active methodologies in the perception of Management professors? To answer this research question, this study aimed to analyze various stimuli and obstacles for using active methodologies from the perspective of Management professors. The paper presents the results of a survey conducted with 126 professors who teach in undergraduate-level Management courses at nine Federal Universities of Higher Education in Brazil's southern region, with analyses based on data collected through an electronic questionnaire.

The paper is structured in the following manner: after presenting the research problem and the study's objective in this Introduction, the following section contains the theoretical background with an emphasis on the main concepts, characteristics, and types of active learning methodologies and the stimuli and obstacles identified in the literature that are associated with the use of AMs. Afterwards, there is the Methodology section, which describes the methodological procedures that were followed throughout the study, highlighting the research instrument's development and validation procedures. In the following section, the Results and their discussion are presented, with the paper's last section containing the final considerations and conclusions reached by the study.

Theoretical Background

According to Mattar (2017), active teaching methodologies are pedagogical strategies that place the student in the center of the learning process, with the professor assuming the role of an enabler, advising the students in their search for learning. Araújo (2015) states that active methodologies, also known as active schooling, establish a priority of students over their professors, turning students into self-learn-

ers. In these lines, according to Gobbo, Beber and Bonfiglio (2016), active teaching methodologies are characterized as an interactive process including knowledge, analysis, studies, research, and individual or collective decisions, geared towards solving problems.

Barbosa and Moura (2013) put forth that active learning occurs when students interact with the subject they are studying, by listening, speaking, asking, discussing, doing, and teaching, with students being encouraged by their professors to construct their own knowledge instead of passively receiving it. To Hartz and Schlatter (2016), the use of active methodologies is related to shifting more responsibility for the success of the learning process from the professors to the students, transforming the students into the main actors of the relationship between teaching and learning. Russo, Pedron and Souza (2018) further highlight that in active learning, students are directed to conduct reading, writing, and discussion activities, exploring their own attitudes and values, resulting in the development of analysis and synthesis capabilities. Thus, by working with active teaching methodologies, professors must take up the role of facilitators, working in the classroom with problematization methods and placing students at the center of knowledge construction to develop their ability to reflect and criticize (SUGAHARA; DELLAPORTAS, 2018; HARTZ; SCHALATTER, 2016).

According to Marin *et al*. (2010), active methodologies have in common the use of problems as a manner of developing the teaching-learning processes, emphasizing the feeling of valuing the ability to learn how to learn, with the encouragement of reflection to bring about the exchange of experiences geared towards problem-solving. Within this same slant, active methodologies have the purpose of student autonomy in the pedagogical process as their principle, with the promotion of research acting as a manner of facilitating learning and the development of intellectual autonomy and criticality (RICHARTZ, 2015).

Paiva *et al*. (2016) state that education has undergone major transformations throughout the last few decades, with the increased questioning of teaching conceptions and techniques, resulting in new understandings related to teaching and the construction of new alternate proposals based on a problematizing pedagogy, in which students are encouraged to assume an active posture in their learning process, resulting in their autonomy in the search for previous knowledge in conformity with significant learning.

Considering the aforementioned process of transforming and questioning teaching conceptions and techniques, Aragón, Eddy and Graham (2018) highlight the growing evidence of active learning's efficacy, leading educators to consider adopting these practices in university classrooms. The progress of information technology brought radical changes in information dissemination, democratizing its access. The major differential for information is no longer having access to it, but knowing how to choose it, access it, and apply it. The field of Management implemented major structural changes in corporations due to the era of knowledge, establishing the need for innovation and creativity, even though such characteristics remain incipient in management and business education, leading to the non-retention of students at institutions of higher education (SALVADOR; IKEDA, 2019; GUIMARÃES *et al*., 2019). According to Gobbo, Beber and Bonfiglio (2016), considering this challenging and motivating scenario, an essential factor comes to light, which is the need to educate teaching professionals about various information and communication technologies (ICT), so that they are capable of using these resources as new mediums for learning.

Among the various types of active methodologies, it is possible to note that practically all of them have in common the use of problematization as a manner of developing the teaching-learning processes, encouraging reflection, and resulting in exchanges of experiences in the quest for solving problems. During problematization, the process is geared towards the construction of a type of knowledge that is collaborative, innovative, and creative, in which many categories of active teaching methodologies were created throughout the years, such as Team-based learning (TBL), Problem-based learning (PBL), flipped classroom learning, project-based learning, and Gamification (teaching helped by simulators and games) (BACICH; MORAN, 2018).

In the last few years, according to Godoi and Ferreira (2017), active learning methodologies have received special attention, being considered a radical proposal of change in relation to traditional teaching. This has attracted the attention of professors seeking alternatives to traditional teaching methods, geared towards updating teaching-learning techniques in business education. Some of these techniques are discussed below.

ACTIVE LEARNING METHODOLOGIES APPLIED TO MANAGEMENT TEACHING

This section briefly highlights each of the previously mentioned methodologies.

Team-based learning (TBL)

Team-based learning, or simply TBL, is based on the principles of active education methodologies and on the evidence demonstrating that the best way of learning about a specific topic is by applying it and teaching it, with the addition of socioemotional competencies that are increasingly important for life in society and the development of new careers (WATTE et al., 2018). According to Hartz and Schlatter (2016), team-based learning was created by Larry Michaelsen in the 1970s at the University of Oklahoma for academic use. This method consists of organizing the students into teams or groups and the course contents are organized into units. The groups are found to have an elevated level of commitment to their well-being, increasing the level of trust between members.

TBL happens in a structured sequence with three stages: (1) previous preparation, in which the students read material that was previously prepared by the professor; (2) guarantee of preparation, in which students undergo individual and group testing with immediate feedback, allowing the professor to answer questions about the subject; and the introduction of activities geared towards concept application, which corresponds to stage (3), in which the students apply the concepts they learned in exercises (SILVA et al., 2018). The method first occurs with an individual testing stage for the students so that they can conduct a self-evaluation regarding their comprehension and mastery of the subjects that will be studied. Normally, this test involves an answer sheet with multiple-choice questions about the subject, to see whether the students have assimilated the previous content. The students mark their answers on the answer sheet individually. Afterward, the students get together in groups to take the same test, which is then known as the Group Preparation Guarantee Test; that is, they once again answer the same questions, on an answer sheet similar to the first one. This is when the first interaction among group components occurs. The group members answer individually, exposing their arguments in an at-

tempt to conclude the common answer among all of the members for each question on the test. The professor follows the idea development and discussions, helping by answering questions when requested. At the end of this activity, if there are still questions or disagreements regarding the topic in question, it is up to the professor to give a quick lecture on the topic (SILVA et al., 2018).

Problem-based learning (PBL)

PBL is a methodology that is applied to guarantee the active participation of students in the learning process by facing problems to find their solutions in practice, guided by the professor. It usually follows these steps: (1) problem definition, which is conducted by the instructor; (2) analyzing the needs, done by the students through a cooperative discussion that uses their previous knowledge and is reinforced by contributions from their instructor; (3) independent group work, in which new knowledge must be incorporated and the students should propose possible solutions and progress reports should be presented; and (4) the final report or presentation of results, with the presentation and discussion of the proposed solution with the rest of the students. Upon analyzing these stages, it is possible to note that in PBL the teaching and learning processes are systematized and the contents that are taught are applied in practical situations, that is, in the students' daily lives, which makes teaching stop being based on a passive approach and start to be a more active teaching process, inviting the students to be their own producers of knowledge based on their personal and social experiences (FONSECA; GÓMEZ, 2017).

Flipped classroom learning

The teaching methodology known as Flipped Classroom Learning proposes an inversion of the traditional teaching methods. In this approach, students must study before their in-person classes, which makes them more active, bringing up questions and discussions during the practical activities (LIMA; SILVA; ARAÚJO, 2018). According to Alves (2020), in traditional teaching methods, professors develop their classes and contents, preceded by homework, while in the flipped classroom method, this process is inverted in the sense that the students previously seek out and make the knowledge by their own beforehand, and conduct assignments

in the classroom that are related to the previous work done on the subject, with the professor assuming the role of answering questions.

To Schneider et al. (2019), the flipped classroom is an active methodology that brings a new sense to learning, intending to make students take up the role of protagonists in the teaching-learning process, developing an investigative and collaborative sense. In this context, the professor acts by suggesting subjects and encouraging the students to seek out knowledge on the proposed topics.

Project-based learning

Project-based learning is a teaching model that allows the students to compare questions to real problems from the world of work, to find alternatives and solutions cooperatively, resulting in high levels of student involvement and contributing to the education of professionals with active characteristics. With this, there is higher information retention for a longer period, as well as the development of the students' problem-solving capabilities (SANTOS, 2020). Project-based learning is also characterized by the extensive exploration of topics, issues, or problems without pre-defined answers, aiming to provide the students with a closer involvement in reality, in the form of an interactive strategy focusing on teamwork and on the development of essential competencies such as problem-solving capabilities, result presentation, people management and leadership, critical thinking, planning, organization, interpersonal communication, and creativity, among others (NEUMANN; BORELLI; OLEA, 2016).

According to Santos (2020), there are six key recommendations for obtaining an effective result when adopting this method: (1) supporting the students, who must be guided to develop the ability of time management for each activity that is conducted, as well as the ability to use technological resources; (2) teacher support, especially from the course direction, facilitating professional development; (3) participation of all group members to guarantee the quality and sharing of experiences; (4) balance between didactical instruction and research, making students obtain an acceptable level of previous knowledge before they get more involved; (5) reflective evaluation on the subject, which is always monitored and reported through self-evaluations and peer-conducted ones; and (6) student autonomy, allowing students to perceive a sense of control over their learning.

Gamification

Although the use of gamification applied to teaching was made popular very recently, it was possible to observe that this methodology tends to promote participation and involvement, while reducing the students' fear of making mistakes. In gamification, prizes and rewards are given to recognize improvements in student performance and the levels of knowledge shown by the players, with four main points guiding this method's application: (1) tasks that are fulfilled are converted into points; (2) student progress is tied to the game levels; (3) feedbacks are necessary during the game; and (4) mistakes should be seen as an attempt to solve problems. One of the most commonly used applications in the field of education is Kahoot, which is a platform that serves as a tool for the digital gamification of student answers and is used to get them involved through questionnaires in a multiple-choice test environment adapted for mobile devices (ESPIG; DOMINGUES, 2020).

Numerous other active methodologies were also found during this study's literature review stage and, similarly, have been used for teaching in general and in Management education, such as the Mock-Jury, the Case Study, the Technical Visit, Peer- Learning and the use of Seminars (MENDES et al., 2017). The next section contains different stimuli and obstacles mentioned by the literature as aspects that interfere with the use of active learning methodologies in teaching.

STIMULI AND OBSTACLES ASSOCIATED TO THE APPLICATION OF ACTIVE LEARNING METHODOLOGIES IN MANAGEMENT EDUCATION

According to Urias and Azeredo (2017), a perceived stimulus to the use of active methodologies is the change in professors' attitudes, associated with the appearance of a new student profile and the social demand regarding the education of future professionals who, besides technical and theoretical knowledge, also possess a more active profile through the use of new technologies and the adoption of active teaching methodologies. Thus, such topics are becoming increasingly common among professors, as demonstrated by conferences and articles on Higher Education in Management, acting as a social influence related to numerous pedagogical issues on "how" to present content in forms that are different, motivating, significant, and related to students' daily lives.

According to Azevedo, Pacheco, and Santos (2019), continued education stimulates professors, making them rethink their teaching practices, bringing about perceptions on the use of different methodologies, demonstrating that higher education is a large challenge that must be constantly invented or reinvented. Still according to Azevedo, Pacheco and Santos (2019), active methodologies cannot be used unless professors master the techniques that are involved and should not be applied simply because they are popular, as each methodology is based on epistemological presumptions that must be in accordance with the conception of development that professors have regarding their students. These methodologies require rethinking the role of professors, which justifies the presence or undertaking of courses about active methodologies for professors at the institutions where they work.

Aragón, Eddy and Graham (2018) state that evidence from educational research supports the benefits of active learning related to an increase in motivation, since when professors are successful in implementing active learning, they perceive positive results from their efforts, manifesting positive attitudes and feelings about this increase in motivation and the desire to teach. Even so, the current educational system is still very similar to that of the Industrial Economy era, focusing on knowledge that is transmitted exclusively by the professor, leading students to assume a passive posture. Within this reality, many universities do not fulfill their roles of improving student knowledge, becoming centers of "non-learning", and valuing technical knowledge to the detriment of teacher education.

In docent learning, technical knowledge and research are important, but it is also important for there to be respect, contextualization, empathy, humility, the development of a critical perspective and the encouragement of reflection (SALVADOR; IKEDA, 2019). According to Guimarães *et al*. (2019) and Gobbo, Beber and Bonfiglio (2016), an obstacle to success in implementing Active Methodologies of Learning in educational institutions is the lack of management care present in the absence of monitoring whether students are noticing a higher quality in their learning, without knowing if the use of active teaching methodologies is truly improving student learning. In this sense, it is necessary for there to be constantly monitoring the students' perceptions, with constant verification of the perceived quality level of the teaching-learning progress. Other obstacles are identified by Aragón, Eddy and Graham (2018), with the most common ones being: the lack of an appropriate course load, the

requirement of more time for lesson preparation, and resistance to change due to a high comfort level in using the traditional teaching model. The next section contains the methodological procedures that were followed during this study.

Methodology

This is a quantitative exploratory-descriptive study, conducted through a survey which, according to Gil (2002), is characterized by asking questions directly to the population whose behavior is being examined. The survey was conducted by sending an invitation to 278 professors in the field of Management who actively teach in Management courses at nine federal Institutions of Higher Education in Brazil's south region. A total of 126 valid responses were obtained (corresponding to a response rate of 45.3%) with the following distribution: Universidade Tecnológica Federal do Paraná/UTFPR (Federal Technological University of Paraná) (n = 22; 17.5%), Universidade Federal do Rio Grande do Sul/UFRGS (Federal University of Rio Grande do Sul) (n = 21; 16.7%), Universidade Federal do Rio Grande/FURG (Federal University of Rio Grande) (n = 17; 13.5%), Universidade Federal de Santa Maria/UFSM (Federal University of Santa Maria) (n = 14; 11.1%), Universidade Federal da Fronteira Sul/UFFS (Federal University of the Southern Border) (n = 14; 11.1%), Universidade Federal de Pelotas/UFPel (Federal University of Pelotas) (n = 13; 10.3%), Universidade Federal de Santa Catarina/UFSC (Federal University of Santa Catarina) (n = 10; 7.9%), Universidade Federal do Paraná/UFPR (Federal University of Paraná) (n = 9; 7.1%) and Universidade Federal do Pampa/UNIPAMPA (Federal University of the Pampa) (n = 6; 4.8%). The sample characteristics can be better visualized in Table 1.

Table 1 Sample Characteristics

Respondents	n	%
FURG	17	13,5
UFPEL	13	10,3
UFSM	14	11,1
UNIPAMPA	6	4,8

UFRGS	21	16,7
UFSC	10	7,9
UFFS	14	11,1
UFPR	9	7,1
UTFPR	22	17,5
Gender	**n**	**%**
Male	51	43,7
Female	71	56,3
Age	**n**	**%**
30 years or less	6	4,8
31 to 40 years	39	31
41 to 50 years	53	42,1
51 to 60 years	21	16,7
61 years or more	7	5,6
Level of Education	**n**	**%**
Master's degree	12	9,5
Doctorate	89	70,6
Post-doctorate	25	19,8
Total	**126**	**100**

Source: study authors.

Regarding the respondents' profile, it is possible to identify a slight majority of female participation (56.3%) compared to male participation (43.7%), with most of their ages falling between 31 and 60 years, representing 89.8% of the sample. It was also possible to note that, regarding educational levels, more than 90% of the study's participants had a doctorate, at least. The next section discusses the development of the data collection instrument used in this study.

DEVELOPMENT OF THE DATA COLLECTION INSTRUMENT

The data collection instrument was created based on an extensive literature review conducted on the Scopus and Web of Science databases, focusing on the use of active methodologies in higher education. The questionnaire was divided into

three sections. Block 1 (Respondent Profile) contained six questions about age, gender, schooling, academic affiliation, and previous knowledge regarding active teaching methodologies. Block 2 (Using active methodologies) included eleven questions and sought to identify the main active methodologies used by the professors in their teaching activities, while the third and final block (Stimuli and Obstacles) was composed of 15 closed questions about the professors' perception of potential stimuli and obstacles for the application of active teaching methodologies in Management teaching. The instrument was operationalized through a 5-point Likert scale, varying from (1) Totally Disagree to (5) Totally Agree.

Before the data collection stage, a pre-test of the questionnaire was conducted with four professors from the field of Management with knowledge and experience in active learning, to investigate potential weaknesses of the instrument and any difficulties that could be identified by the respondents while filling it in. Each participant was asked to report any ambiguity, error, or doubt regarding the questions, the structure of the questionnaire, or interpretation difficulties. At the end of this process, no need for alteration was found or suggested.

VALIDATION OF THE DATA COLLECTION INSTRUMENT

After the data collection was over, different validation procedures were conducted, including: a) exploratory factor analysis (EFA), with the aim of investigating the grouping of questions in their respective constructs; and b) calculating Cronbach's Alpha, which is a coefficient used to verify the reliability of the scales and items used in the study.

The analysis of the main components occurred through factor rotation (using the Varimax method), using the values of the factor loads and commonalities to form the factors. The EFA grouped the questions about stimuli and obstacles associated with the use of active methodologies into four groups of independent variables (Table 2). Based on the content of the questions and considering the theoretical base used in the study, the four dimensions that were formed were defined as follows:

i. Professor's education: includes the questions tied to professor formation, more specifically, to teaching methods geared towards active learning as undergraduate, specialization, master's level, and doctoral level students.

ii. Attitude: includes the questions linked to the professor's attitude (favorable or unfavorable) regarding the use of active teaching methodologies.
iii. Social influence: includes the questions about the influence that other professors in the course and even in the institution had on the respondent regarding the use of active methodologies in teaching.
iv. Workload: includes questions tied to professor perception regarding the increase in workload and in the time demanded using active methodologies in teaching.

The four dimensions proposed in the instrument explain 61.7% of the variation in the original questions, which represents an adequate data synthesis rate. The KMO sample adequacy test had a value of 0.61, demonstrating a moderate degree of data adjustment for applying EFA, confirmed by Bartlett's sphericity test, which showed a significance level of 0.000. Furthermore, the scales' reliability was verified through Cronbach's alpha, generating values between 0.63 and 0.83, which are considered satisfactory for studies of this nature.

Table 2 Exploratory Factor Analysis: stimuli and obstacles for using AMs

Items	F1	F2	F3	F4
Docent education				
4. During my doctorate I had classes that used AMs in teaching activities	**,884**	-,012	,084	-,064
3. During my master's degree I had classes that used AMs in teaching activities	**,832**	,075	-,006	-,129
2. During my specialization I had classes that used AMs in teaching activities	**,813**	-,019	,211	,123
1.During my undergraduate studies I had classes using AMs in teaching activities	**,587**	,264	,078	-,137
Attitude				
23. I feel more motivated when conducting teaching activities that use AMs	-,040	**,867**	,235	,084
12. I adapt to AMs easily	-,151	**,797**	-,117	-,182

6. I sought out complementary education to help me use AMs in teaching activities	,283	**,624**	,093	-,116
17. I am interested in participating in continued education about using AMs	,237	**,607**	-,086	,223
Social influence				
18. I am encouraged to use innovative teaching methods by my peers (professors) or my institution	,098	,032	**,836**	-,064
31. My peers share their experiences with using AMs in teaching activities	,080	,060	**,799**	,033
21. My course direction is open to using new methodologies in the classroom	,084	-,006	**,782**	,073
Workload				
30. Using AMs increases the workload for professors “outside of the classroom”	-,031	,067	-,045	**,807**
22. Using AMs increases the workload for professors “inside the classroom”	,242	-,091	-,034	**,691**
28. I feel that the hours are not adequate and that more time is needed for preparing lessons using AMs	-,216	,145	,050	**,613**
13. Using AMs negatively affects my work routine	-,256	-,217	,118	**,578**
Initial Eigenvalue	3,27	2,14	2,11	1,74
% Explained – rotated Variance (61.7%)	21,80	14,28	14,04	11,60
Cronbach’s Alpha	0,83	0,70	0,69	0,63
KMO – Sample Adequacy test (instrument) – 0.61				
Bartlett’s Test: chi-squared = 4488.11				

Source: study authors.

Additionally, four questions regarding the use of different active methodologies by the professors when teaching their Management courses were grouped (Table 3), being used as a dependent variable in the study. Cronbach’s alpha coefficient had a value of 0.62, which is considered satisfactory for exploratory studies.

Table 3 Exploratory Factor Analysis: using AMs in Administration teaching

Use of AMs (Cronbach's Alpha = 0.62)	F1
USE3. In my courses, I use: [Approaches based on problem-solving, such as Case Studies, Problematization, and PBL]	,792
USE4. In my courses, I use: [Approaches that rely on group activities, such as TBL and Mock Jury]	,730
USE2. In my courses, I use: [Creation of collaborative content (Ex. Google Docs, Dropbox)	,641
USE1. In my courses, I use: [Simulation and games]	,578

Source: study authors.

Results and Discussion

Initially, the respondents were asked about their level of knowledge regarding Active Methodologies. Most of them indicated that their knowledge was average (n = 53; 42.1%), followed by the group of professors who believe they have a good level of knowledge about AMs (n = 37; 29.4%). These values can be considered promising regarding the level of knowledge demonstrated by Management professors regarding AMs, since a significant portion of these professors knows about the theme, with some of them even considering their levels of knowledge to be good, which can represent an interesting indicator for the current and future use of AMs in the teaching practices of Management professors.

Among the best-known active methodologies are the flipped classroom (n = 101; 80.2%), project-based learning (n = 78; 61.9%), problematization and the use of games/simulation (n = 65; 51.6%), team-based learning (n = 41; 32.5%) and hybrid teaching (n = 31; 24.6%). On the other hand, case studies, mock juries, technical visits, and virtual classrooms were cited only once. According to Souza and Duarte (2017), studies conducted at FAE - Centro Universitário (FAE University Center) in Curitiba, Paraná by collecting data through questionnaires, observations, and documents to investigate the impact of using the flipped classroom method in student learning in Management courses proved that using the Flipped Classroom method shows a significant impact, improving the student performance in learn-

ing, comprehension, and fixation of the discussed topics, as well as bringing about better classroom relations, with an increase in student motivation and involvement, supporting the use of this methodology in Management courses.

Regarding the use of project-based learning in business education, factual, conceptual, procedural, and attitudinal contents have been used in a manner that fulfills the National Curricular Guidelines for Undergraduate Courses in Management as well as the requirements of the labor market, which favors professionals who are reflective, critical, and who have the autonomy to solve problems that are inherent to the world of work (NEUMANN; BORELLI; OLEA, 2016). This method allows students to be more involved with reality, besides being an interactive strategy that focuses on teamwork and on developing competencies that are highly valued in the current corporate scenario, such as the capacities to solve problems, present results, manage and lead people, think critically, make plans, organize, communicate with others, and be creative, among other capabilities.

As for problematization, Ribeiro and Viana (2018) highlight that PBL can strengthen the teaching-learning process and bring about progress in the field of Management by encouraging the solving of management problems, promoting the development of critical thinking and social and communication abilities, since learning occurs through real or simulated problems that challenge the mind and boost the acquisition and sharing of knowledge. Posing challenges in the form of problems that are relevant to the students' future work before presenting them with the theory is considered to be the method's main nucleus, making the students learn by solving complex problems, which do not have only one correct answer.

Another methodology that is very well-known by the professors who participated in the study is gamification. According to Silva and Mascarenhas (2018), the inclusion of game elements in students' daily lives is a manner of stimulating and developing the abilities and competencies that motivate them to take real action. In this sense, the games can easily be applied in the context of business and education, with the possibility of becoming an object of study on the Management field, with an emphasis on the education of future professionals, using competitivity as a differential to stimulate motivation in education, besides helping with cooperation and communication among the future professionals, and being considered strategic for classroom engagement.

Regarding the respondents' perception of the stimuli and obstacles associated with using AMs in Management education (Table 4), it is possible to note that their attitude (average = 3.63) can be interpreted as a stimulus for using these methods, especially considering the interest expressed by a good portion of the professors regarding participation in courses or qualifications on the use of AMs, as well as the fact that they feel motivated to conduct activities that use these methodologies since they perceive ease in adapting to using them.

Tabela 4 Análise descritiva: Estímulos e bloqueios ao uso das MAs

Stimuli and obstacles	n	Average	Standard deviation
1. Attitude	126	3,63	0,827
17. I am interested in participating in continued education about using AMs	126	4,31	1,047
12. I adapt to AMs easily	115	3,82	,844
23. I feel more motivated when conducting teaching activities that use AMs	118	3,76	1,027
6. I sought out complementary education to help me use AMs in teaching activities	126	2,84	1,134
2. Workload	119	3,27	0,804
30. Using AMs increases the workload for professors "outside of the classroom"	117	4,16	,937
28. I feel that the hours are not adequate and that more time is needed for preparing lessons using AMs	118	3,65	1,208
22. Using AMs increases the workload for professors "inside the classroom"	116	3,05	1,271
13. Using AMs negatively affects my work routine	115	2,17	1,194
3. Social influence	126	3,19	0,787
21. My course direction is open to using new methodologies in the classroom	126	4,14	,936
18. I am encouraged to use innovative teaching methods by my peers (professors) or my institution	126	2,94	1,212
31. My peers share their experiences with using AMs in teaching activities	126	2,50	,817

4. Professor education	126	2,02	0,877
4. During my doctorate I had classes that used AMs in teaching activities	118	2,19	1,176
3. During my master's degree I had classes that used AMs in teaching activities	126	2,13	1,088
2. During my specialization I had classes that used AMs in teaching activities	84	2,05	1,129
1.During my undergraduate studies I had classes using AMs in teaching activities	126	1,76	,843

Source: study authors.

On the other hand, many professors who participated in the study stated that they did not seek out complementary education for using AMs in their teaching activities, which can constitute an important obstacle if the professors or the institutions in which they work do not provide workshops, events or even technical support for their professors. According to Ferreira *et al*. (2019), all proactive actions performed by an individual without needing someone to delegate orders to constitute the initiative of not waiting for things to happen before dealing with them, using all of one's knowledge and abilities along with the decision to make things happen. In this sense, Lourenço, Lima and Narciso (2016), upon following the constant changes in social and business contexts as well as in student profiles, point out the need for a new posture for professors in Management courses, in the sense of seeking, in continued learning and professor qualification, a new experience of what it means to be a professor.

Regarding the workload (average = 3.27), the study respondents noted that their work is affected by the moderate use of AMs. However, they noticed that their workload outside of the classroom increased significantly (4.16) and also that they require more time to prepare lessons (3.65). According to Vantroba (2021), using active methodologies in Management teaching brings about significant increases in professors' workloads, as well as the time required to learn about new technologies, which happens outside of the classroom. On the other hand, the professors did not see the use of active methodologies as negatively affecting their work routines (2.17). Aragón, Eddy and Graham (2018) state that when professors are successful

in implementing active learning and notice positive results stemming from their efforts, there is the appearance of positive feelings and attitudes such as an increase in motivation and the desire to teach, more confidence in active teaching, and a renewal of the passion for teaching.

As for the influence exerted by other colleagues or even by their institutions for using AMs, the respondents highlighted the positive role played by their course directions, which are open to the use of innovative methodologies (4.14), although they also notice a low sharing rate among professors for success stories related to the use of active methodologies (2.50). According to Urias and Azeredo (2017), it is common for professors to share information about results obtained by using AMs in university-level education in Management, with the shared information acting as social influence regarding many pedagogical issues. However, this was not evident among the institutions that were analyzed based on the participants' answers. Guimarães et al. (2019) observed that public Institutions of Higher Education (IHE) are not yet systematically using active methodologies, suggesting that studies should be conducted to help reduce this limitation, not only to improve teaching processes, but also because the high retention of students at these institutions.

Finally, the respondents' perception of their education on AMs during their formal undergraduate and graduate courses was shown to be the most fragile point (average = 2.02). Most of the investigated professors had no contact whatsoever with AMs as undergraduate, specialization, masters, and doctoral students. According to Lourenço, Lima and Narciso (2016), the literature suggests that most of the institutions of higher education in Management exhibit a type of pedagogical "amateurism" in their teaching practices, leading to a series of negative consequences for the quality and excellence of higher education in Management in Brazil. Still regarding pedagogical education in Management, it is a consensus in the literature that Graduate levels of education are focused on research, and the student teaching they include is not enough for teacher education. Thus, these issues must be reviewed by the graduate programs and the departments and agencies of education responsible for the national education plans, to ensure the growth and continued improvement in the quality of these programs, providing quality education, with the amplification and deepening of these debates, as well as reflections about teaching methods in Management.

Regarding the use of AMs in Management education, the respondents indicate using problem-based learning approaches more frequently (3.74), such as case studies, problematization, and applied projects. Creating collaborative content (2.69), approaches based on group activities (2.48), and especially the use of simulation and games (2.30) are used less frequently. According to the literature, it is possible to note that all of these methods have in common the characteristic of using problematization as a form of developing teaching-learning processes, encouraging reflection, and leading to exchanges in the search for solutions to problems (BACICH; MORAN, 2018).

A multiple regression analysis was conducted to analyze the influence of different stimuli and obstacles on the use of AMs in Management teaching. The model was shown to be significant but showed a low level of explanation for the dependent variable ($R^2 = 0.235$; $p < 0.000$). The results suggest that the professors' attitudes ($b = 0.35$; $p < 0.000$), professors' education ($b = 0.21$; $p < 0.05$), and social influence ($b = 0.17$; $p < 0.05$) are the main factors that influence the use of AMs in Management teaching. In this sense, the more favorable the professors' attitudes are towards AMs, the more complete their education is regarding AMs, and the more their institutions and colleagues support them in using AMs, there is a higher probability of the professors who teach in Management courses using these methodologies. In this sense, Santos (2020) emphasizes that professors need support, especially from the course direction, to stimulate the improvement and application of active methodologies in their classes. With this, their professional development will be enabled, as well as that of the institution, providing consequently a better education for the students.

Table 5 Regression Model

Variables	Use of AMs	
	b	*p*
Attitude	**0,35**	***0,000***
Professor education	**0,21**	***0,014***
Social influence	**0,17**	***0,038***
Workload	0,02	0,771
Adjusted R^2	23,5%	

Source: study authors.

Based on the results referring to the variable averages (Table 4) and the results of the regression analysis (Table 5), it is possible to indicate the professors' attitudes regarding the use of AMs and the support of the institution/course direction as important stimuli for using AMs in Management education, while the lack of professor education stands out as an important obstacle against their use. The fact that the workload was not shown to be significant in the model ($p > 0.05$) suggests that even though an increase in docent workload is noticed, whether in planning, organizing or developing activities related to the AMs, this does not influence the professor in his/her decision to stop using these methods in classroom. However, manners must be found to reduce this effort, such as professor support through tutorials or the allowance of hours specifically for planning and developing teaching activities that use AMs.

Final Considerations

As contributions from this study, it is important to mention the creation of a data collection instrument regarding the use of active methodologies in Management teaching, which was validated through a sample of 126 professors who teach in Management courses from nine Brazilian public federal universities. It is possible to use this research instrument in other studies linked to the use of active methodologies in Management teaching or even in other fields of education. Another important part of this study's contributions is the fact that it presents a set of characteristics that must be investigated in Learning Institutions for professors and administrators to conduct work geared towards the implementation and use of Active Methodologies in business education, as well as in education as a whole.

Based on the results that were obtained, it is possible to indicate that professors' attitudes towards the use of AMs and the support they receive from their institutions/course direction are vital for the development and application of different AMs in the teaching of Management. Additionally, it was possible to identify that the lack of professor education on this subject represents a strong obstacle against the use of AMs, demonstrating the need for measures to be taken by learning institutions and also by the professors themselves geared towards conducting ped-

agogical qualifications, the search for structural resources and more investments in ICTs and laboratories at the institutions. The professors who participated in the study pointed out the increase in their workload, whether in planning, organization, or in the development of activities related to AMs, without, however, indicating that the aforementioned workload interferes with their decision to stop using AMs in their classes. Nevertheless, it is recommended that steps be taken to reduce the perceived increase in workload, possibly including support in the form of tutorials or the allowance of specific work hours for planning and developing activities for teaching with AMs.

A limitation of this study is the fact that it does not focus more deeply on other types of teaching methodologies, or even on other institutions of learning (besides the Federal ones), which would have allowed the study to delve deeper and draw deeper conclusions. As a suggestion for new studies regarding the use of AMs, there are five recommendations proposed in Chart 1.

Chart 1 Suggestions for new studies regarding the use of AMs

1	Broadening the studies about stimuli and obstacles regarding the use of AMs in other institutions of higher education, public and/or private, in the field of Management.
2	Conducting studies specifically focusing on one or another active methodology in the field of Management, whether those that are more or less frequently used by Management professors, as a manner of developing them and making them more accessible.
3	Conducting experiments with “test groups” and “control groups” in learning institutions, with these groups adopting (or not adopting) active teaching methodologies (which would permit the identification of the impact AMs have on student learning), as well as evaluating the perceptions of the students regarding the use of these methodologies.
4	Creating an explanatory didactic manual, containing the active methodologies that are more frequently used in Management learning institutions, containing their characteristics, usage guidelines, and examples of their application.

5	Proposing management models that can be used by course directors or managers that guide them through the implementation of active methodologies at the learning institutions where they work.

Source: study authors.

Such studies would certainly help fill in barely investigated research gaps, especially in Brazil.

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