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Teacher Actions: The Influence on Entrepreneurial Behavioral Characteristics of Students

Las acciones del profesorado: La influencia en las características de comportamiento emprendedor de sus estudiantes

Ações do professor: a influência nas características comportamentais empreendedoras dos estudantes



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Abstract:

Aims. This study aimed to identify the activities teachers from a Brazilian public higher education institution developed to analyze how these activities influenced undergraduate students' entrepreneurial behavioral characteristics (EBCs). **Method.** The study applied a mixed method; the quantitative approach used the EBCs measurement instrument (Mansfield et al., 1987), analyzed with the Analytic Hierarchy Process (AHP), prioritizing the most important EBCs in the perception of 792 students. The qualitative approach implemented a semi-structured interview script and content analysis. This approach identified the activities teachers developed and characterized as distinct according to students' perception and their relationship with the EBCs. **Discussion.** Thus, it was possible to identify that practical activities and those aimed at student autonomy, directed towards reality, with correlations between disciplines, and with interactive participation, dialogue, favorable environment and learning through experience, converge to developing the entrepreneurial characteristics of the students and are being carried out in the classroom. It was also found that commitment was the most evident characteristic. **Conclusions.** It can be concluded that the institution presents a promising scenario to develop entrepreneurial education. However, the activities currently carried out in the establishment are not efficient or sufficient since, at the same time, as the existence of entrepreneurial activities was proved, the students presented some unsatisfactory EBCs. Therefore, a longitudinal cut is suggested to analyze the EBCs and better understand the students' evolution with the insertion of these practices in the classroom.

Keywords: Entrepreneurial behavior; entrepreneurial behavioral characteristics; innovative teaching practices; entrepreneurial education; public university.

Resumen:

Objetivo. Este estudio tuvo como objetivo identificar las actividades desarrolladas por docentes de una institución pública de educación superior brasileña, con el propósito de analizar la influencia de estas actividades en las características de comportamiento emprendedor (CCE) de estudiantes de pregrado. **Metodología.** Se utilizó un enfoque mixto. El enfoque cuantitativo usó el instrumento de medición CCE (Mansfield et al., 1987), para el análisis jerárquico de procesos. Los CCE fueron priorizados a través de la percepción de 792 estudiantes. Y mediante el enfoque cualitativo, con una guía de entrevista semiestructurada y análisis de contenido (Bardin, 2011) se identificaron las actividades desarrolladas por docentes que se caracterizaron como distintos en la percepción de estudiantes y su relación con los CCE. **Discusión.** Así, fue posible identificar que las actividades prácticas y actividades encaminadas a la autonomía estudiantil, dirigidas a la realidad, con correlaciones entre disciplinas y con participación interactiva, diálogo, ambiente favorable y aprendizaje a través de la experiencia, están siendo desarrolladas por este grupo de docentes y que son convergentes al desarrollo de las características de conducta emprendedora del estudiantado. También se encontró que la característica más evidente fue el compromiso. **Conclusiones.** Se puede concluir que la institución presenta un escenario promisorio para el desarrollo de la educación emprendedora, pero las actividades que actualmente se realizan en la institución no son eficientes ni suficientes, ya que al mismo tiempo que se comprobó la existencia de actividades emprendedoras, el estudiantado presentó algunos CCE insatisfactorios. Se sugiere un corte longitudinal para analizar las CCE y comprender mejor la evolución estudiantil con la inserción de estas prácticas en el aula.

Palabras claves: Comportamiento emprendedor; características de comportamiento emprendedor; prácticas de enseñanza innovadoras; educación emprendedora; universidad pública.

Resumo:

Objetivo. O objetivo do presente estudo é identificar as atividades desenvolvidas pelos docentes de uma instituição de ensino superior pública brasileira, analisando a influência destas atividades sobre as características comportamentais empreendedoras (CCE) de estudantes de graduação. **Método.** Por meio de multimétodo, a abordagem quantitativa utilizou o instrumento de mensuração de CCE (Mansfield et al., 1987), analisado pela Análise Hierárquica de Processos (AHP), priorizou-se as CCE de maior importância na percepção de 792 acadêmicos. E, utilizando a abordagem qualitativa, com roteiro de entrevista semiestruturado e análise de conteúdo (Bardin, 2011), identificaram-se as atividades desenvolvidas por docentes caracterizados como “distintos” na percepção dos alunos e a sua relação com as CCE. **Discussão.** Dessa forma, foi possível identificar que atividades práticas e voltadas para autonomia do aluno, direcionadas para realidade, com correlações entre assuntos, e com participação interativa, diálogo, ambiente favorável, e aprendizagem por experiência estão convergentes com desenvolvimento de características comportamentais empreendedoras dos alunos e estão sendo realizadas em sala de aula. Verificou-se também que a característica mais evidente foi o comprometimento. **Conclusão.** Pode-se concluir que a instituição apresenta um cenário promissor para o desenvolvimento da educação empreendedora, porém, as atividades realizadas atualmente na instituição ainda não são eficientes ou suficientes, pois, ao mesmo tempo que se comprovou a existência de atividades empreendedoras, os alunos apresentaram algumas CCE pouco satisfatórias. Sugere-se realizar corte longitudinal para analisar as CCE e compreender melhor a evolução dos estudantes com a inserção dessas práticas em sala de aula.

Palavras-chave: Comportamento empreendedor; características comportamentais empreendedoras; práticas de ensino inovadoras; educação empreendedora; universidade pública.

Introduction

Entrepreneurial education is related to the innovative mode of pedagogical practices used in knowledge transfer, helping in the development of differentiated skills and knowledge (Ogbari et al., 2019).

Moreover, this theme is becoming increasingly focused, leading different researchers to study entrepreneurship education in different contexts such as: real project-based learning models, reputation of higher education institutions, project-based learning as a tool for the formation and development of entrepreneurial skills of students, as well as to analyze the moderating role of entrepreneurial education in the analytical thinking of emotional competences and its influence, in particular, on the formation of entrepreneurial intentions of college students (Fernández Pérez et al., 2019; Ogbari et al., 2019).

Another form of entrepreneurial education influencing behavior is related to the identification of entrepreneurial characteristics. Knowing them to improve them becomes an efficient way to develop the individual, stimulating him to a behavior similar to others, in which Stanković they have already achieved success in their activities (Filion, 1999).



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In this sense, it is understood that entrepreneurial behavior is linked to the way in which individuals perform their activities, understanding that entrepreneurial education can contribute to the development of this behavior (Awais Ahmad Tipu, & Manzoor Arain, 2011; Bhat, & Singh, 2018; Feng et al., 2018).

Thus, the search for the development of entrepreneurial behavior has led to research on different ways of working towards this theme. This is based on studies by Hendieh et al. (2019) that shed light on "students' attitudes toward entrepreneurial behavior and the importance of university education [for] their future ... career, ... exploring and analyzing the factors that [may] influence the behaviors and attitudes of [college] students (p. 1).

In this bias, it is understood that the development of entrepreneurial education should be taken into account including it in the context of universities, as different studies have elucidated, since higher education institutions have a fundamental part in the development of knowledge, stimulating economic progress. from a country (Singh et al., 2012).

Thus, this article seeks to contribute with literature on the proposition of pedagogical methods that induce undertaken attitudes-didactic activities employed by teachers that enable the development of entrepreneurial behavioral characteristics of undergraduate students. It served as a suggestion of tools for instrumentalization of professionals working in the field of education, providing didactic activities aiming the bias of entrepreneurial education. To this end, the following research question was formulated: What do entrepreneurial education activities influence the entrepreneurial behavioral characteristics of undergraduate students at a federal higher education institution?

Therefore, the objective of the present study was to identify the activities developed by the teachers of a Brazilian public higher education institution by analyzing the influence of these activities on the Entrepreneurial Behavioral Characteristics (EBC's) of undergraduate students. The research was justified by the contribution of relevant information about entrepreneurial education and the influence of the activities performed by teachers in the context of the classroom that in fact provides positive effects on the entrepreneurial behavior of students.

Theoretical reference

Entrepreneurial Education

Entrepreneurial education as well as entrepreneurship has been a focus over time, given its importance for the development of both students and economic environment in which they reported themselves and also the education itself (Saiymova et al., 2019).

In addition, due to this strong promotion, different ways of providing access to entrepreneurial education have been put into practice, such as the study by Schumann (2019), who proposed a methodology for using a library of audio tapes. with a series of guest speakers

in a virtual way, providing greater diversification and contact of students with entrepreneurs, assisting them in building knowledge aiming entrepreneurship.

In this bias, different studies in different contexts have shown the concern to generate entrepreneurial education in universities and schools, this fact is based on the researchers conducted by [Abdramanova et al. \(2019\)](#), [Wang et al. \(2019\)](#), where the first verified methods for improving the quality of entrepreneurial education for higher education in the Republic of Kazakhstan. In the second study, the authors sought different insights from foreign universities that are a reference in entrepreneurial education, to find ways to improve the quality of this theme in Chinese universities, since as they mentioned, China is still in the exploratory phase regarding entrepreneurial education.

In this sense, it is perceived in different studies over time, the space conquered by entrepreneurial education, where more and more research has been helping to make this theme more consistent, contributing to the social, economic and personal development of students, as well as the practices related teaching ([Fernández Pérez et al., 2019](#); [Helms et al., 2014](#); [Jussibaliyeva et al., 2019](#); [Jónsdóttir, & Macdonald, 2019](#); [Kusmintarti et al., 2016](#); [Panfilova et al., 2019](#)). Thus, entrepreneurial education can play a relevant role in the development of entrepreneurial behavior, contributing to the improvement of entrepreneurial behavioral characteristics.

Entrepreneurial Behavior

Behavior can be defined as an individual's way of acting, however when referring to entrepreneurial behavior, it is defined as a set of activities that entrepreneurs perform ([Awais Ahmad Tipu, & Manzoor Arain, 2011](#)).

Given the inherent aspects related to entrepreneurial behavior, different studies have shown its importance for the performance of organizations as well as in development and innovation ([Kallmuenzer et al., 2019](#); [Nitu-Antonie et al., 2017](#); [Tang et al., 2019](#)).

Moreover, [Kirkley \(2016\)](#) brings a relationship between entrepreneurial behavior and deep beliefs, stating that these influence behaviors, also emphasizing that independence, creativity, ambition and boldness are critical factors to motivate entrepreneurial behavior.

[Yaseen et al. \(2018\)](#) bring their study a relevant reflection, which covers the question of how farmers perceived and exploit business opportunities for promoting entrepreneurship in agriculture in developing countries, pointing out that Intentions driven through convenience, viability, and optimism can make it a predictor of opportunity recognition and being an entrepreneur.

It can be seen from different studies that entrepreneurial behavior can assist in economic development ([Farooq, 2018](#)), in the formation of new business and with different concepts ([Gillin et al., 2019](#)), as well as in education ([Fayolle et al., 2006](#); [Kirkley, 2017](#); [Higgins et al., 2019](#)).



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According to [Suedekum, & Miller \(2018\)](#), entrepreneurship is an access key to identify opportunities, invest resources, leverage changes capable of generating positive impact. The fact is that the actors in this process are visionary, questioning, and risk-taking individuals with special characteristics. For this reason, authors such as [Silva et al. \(2019\)](#) highlighted that such characteristics deserve to be studied. So, the next topic is about entrepreneurial behavioral characteristics.

Entrepreneurial Behavioral Characteristics

Studies on behavioral characteristics of entrepreneurs emerged in the behavioral era, followed the evolution of entrepreneurship, and developed over the years by studying the profile of successful individuals to identify what makes them so different. One of the most cited authors who worked hard on the topic was David McClelland ([Clemente, & de Almeida, 2013](#); [Filion, 1999](#)).

There have been numerous studies on entrepreneurial behavioral characteristics over the last few years, identifying which characteristics would require further encouragement, especially in undergraduate students, pointing to the urgency of active classroom methodologies. Such studies demonstrated the reaffirmation in the literature about the effectiveness of this tool, indicating to each organization, which conducts research in situ, the possibility of stimulating the potential of its own, whether they have low potential but still have the intention or even improve those that are already entrepreneurs and deserve encouragement ([Clemente, & de Almeida, 2013](#); [Filion, 1999](#); [Iizuka, & de Moraes, 2014](#)).

[Filion \(2000\)](#) believes that studying successful individuals is an appropriate activity to encourage those who do not have natural characteristics. By making comparisons, it is possible to infer assessments of the urgency of development, in which the students themselves evaluate their potentialities or weaknesses by correcting them when necessary, equating them and improving them to successful individuals.

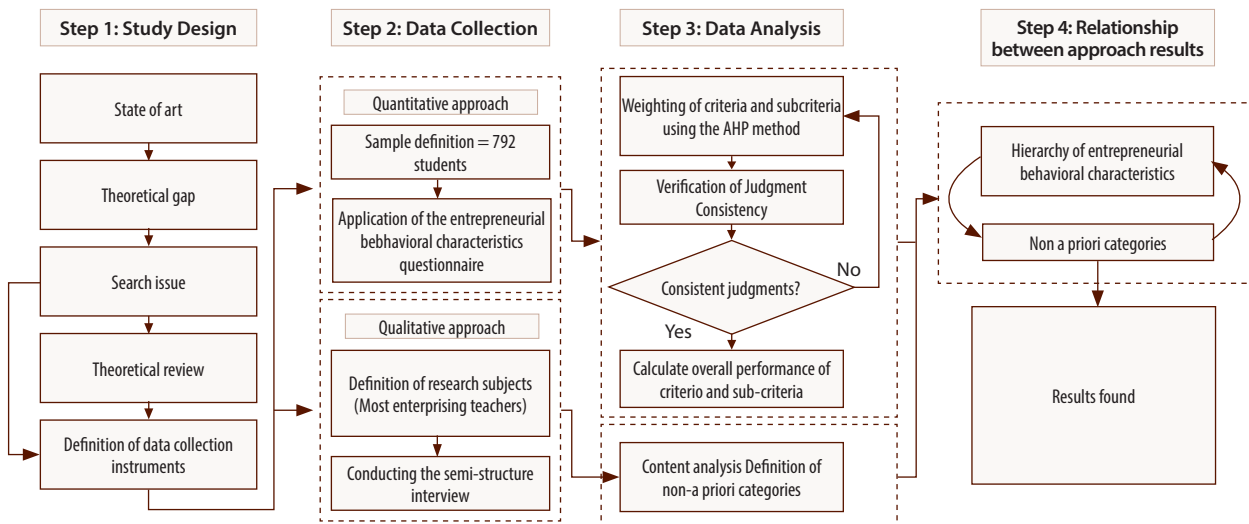
[McClelland's \(1972\)](#) orientation on characteristics is based on the Theory of Needs; ie, it related the entrepreneur to the need for success, recognition and the desire for power and control, defining the "need for fulfillment" as a human will to achieve overcome and differentiate, encompassing a set of psychological and behavioral characteristics such as initiative and the desire to be recognized ([Balconi, & Minello, 2018](#)).

The ten characteristics referred to by [McClelland \(1972\)](#) are subdivided into three categories: Planning, which included search for opportunities and initiative, persistence, commitment, quality and efficiency requirement, taking calculated risks; achievement covering systematic goal setting, information seeking, planning and monitoring; and power, which included Persuasion and Networking, and Independence and Self-Confidence ([McClelland, 1972](#)). From these dimensions it is possible to measure individuals and establish a degree of relationship with the entrepreneurial profile indicating potential aspects for development in a specific way.

Method

The research was developed using the mixed methods approach, characterized by the collection of qualitative and quantitative data, applied nature based on empirical research. For the purpose of this research - to identify the activities developed by the professors of a Brazilian public higher education institution by analyzing the influence of these activities on the Entrepreneurial Behavioral Characteristics (EBC's) of undergraduate students, the methodological flow was designed with the study design and the definition of the instruments. Afterwards, quantitative data collection from the measurement instrument (Mansfield et al., 1987) and qualitative from the semi-structured interviews. From this, the analysis of all the data was carried out, where the quantitative data were analyzed by the AHP method and the interviews by the content analysis. And, for the analysis the results, the relationship between both results was carried out, in which the activities that are capable of influencing certain characteristics were identified. The methodological flow presented in Figure 1 was drawn.

Figure1: Methodological flow



Note: Prepared by the authors.

The instrument is able to measure entrepreneurial behavior through the characteristics of the individual, based on 55 statements. Composed by the following dimensions: search for opportunities and initiative; persistence; commitment; quality and efficiency requirement; take calculated risks; setting goals; information search; systematic planning and monitoring; persuasion and networking; independence and self-confidence, using a five-point Likert scale under the gradation: 1- never, 2- rarely, 3- sometimes, 4- usually and 5- always.

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For this research population, 845 undergraduate students regularly enrolled in the study's focus institution - the student population - were excluded from the internship situation because they were not physically in the institution during the semester of collection. According to the guidance of Araújo et al. (2012), prior to performing multivariate analysis, data need to be examined for better predictive power and the quality of the results generated. In this case we examined the presence of atypical observations (Outliers) and missing data (Missing values), so, in the end, worked with 792 valid questionnaires, 93.72% of Campus students. Statistically, the author Hair et al. (2009) states that the minimum sample size should be five to ten times larger than the number of variables to be analyzed. If we considered the number of variables in the questionnaire used, 55 assertions, the size of the statistical sample would be 550. Therefore, the sample collected from 792 exceeded the statistical sample.

The data analysis of the quantitative approach was used the method of hierarchical process analysis (AHP), proposed by Saaty (1980), evaluated the priorities of the criteria and alternatives. The AHP method consisted in prioritizing, through expert evaluation, criteria, sub-criteria and alternatives seeking to assist in decision making, being used in different studies, from the most varied areas of knowledge (Rafiee, & Abbasian-Naghnah, 2019; Stanković et al., 2019). Table 1 shows the scale formulated by Saaty presenting the data and their respective levels of importance.

Table 1: Scale developed by Saaty

Intensity of importance	Definition	Explanation
1	Same importance	Two criteria contribute equally to the objective.
3	weak importance of one over the other	Experience and judgment slightly favor one criterion over another.
5	Essential or strong importance	Experience and judgment strongly favor one criterion over the other.
7	Very strong or demonstrated importance	One criterion is very strongly favored over the other, its importance is demonstrated in practice.
9	Absolute importance	The evidence favoring one criterion over another is of the highest order possible.
2; 4; 6; 8	Intermediate values between adjacent scale values	When looking for a condition between two definitions. Reasonable designation.

Reciprocal values above zero = If element "j" receives one of the values above when compared to element "i", then "j" has reciprocal value of "i".

Rationale: Ratios resulting from the scale; If consistency has to be forced to get numeric values n, to complete the matrix.

Note: Adapted from Saaty (2004).



After peer evaluation using the values shown in [Table 1](#), the consistency of the information collected is analyzed using the calculations of consistency ratio (RC), consistency index (CI) and random index (RI). according to [Equation 1](#).

$$RC = \frac{CI}{RI} \tag{1}$$

Moreover, for the development of the calculation, it is necessary to stipulate the CI, made by [Equation 2](#), where the λ_{max} is result of multiplying the sum of the columns of the comparison matrix and the priority vector.

$$CI = \frac{\lambda_{max} - n}{(n - 1)} \tag{2}$$

Regarding the random index, it was stipulated by Saaty, and the value to be considered is that which concerns the size of the evaluation matrix, as shown in [Table 2](#).

Table 2: Random Index

Matrix Dimension	1	2	3	4	5	6	7	8	9	10	11	12	13
Random inconsistency	0	0	0,58	0,9	1,12	1,24	1,32	1,14	1,45	1,49	1,51	1,48	1,56

Note: Adapted from [Saaty \(2008\)](#).

According to the methodological flow, the consistency of the judgments is verified, if the steps are consistent, otherwise the weights are evaluated again with the decision makers.

Qualitative research was used because it enables the researcher to observe in more detail the phenomenon and understand it in the context in which it occurs and is part ([Godoy, 1995](#)). While the quantitative approach, for the quality of being used in studies of large data clusters and demographic sets, starting from a context to be discovered and built from a social phenomenon ([Hernández Sampieri et al., 2006; Minayo, & Sanches, 1993](#)).

For the qualitative data survey, a semi-structured interview technique was performed, with a script of open and closed questions, aiming to raise complementary data, such as gender, age, vocational training, teaching time, and other 31 open-ended questions. in four blocks: about life history, professional career, teaching activities and entrepreneurial characteristics and attitudes. According to protocol, all interviews were recorded and only necessary interruption were performed by the researcher.

The definition of the research subjects used in the qualitative approach was performed through a secondary data collection, which collected information from the students to know

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which were the most “distinct” teachers in the classroom. Thus, after counting by frequency, the five (5) most distinct and differentiated teachers were defined in the students’ perception to perform the interview. According to Eisenhardt, & Graebner (2007), qualitative studies that applied the interview technique may be considered technically appropriate when defining from 4 to 10 individuals to be interviewed.

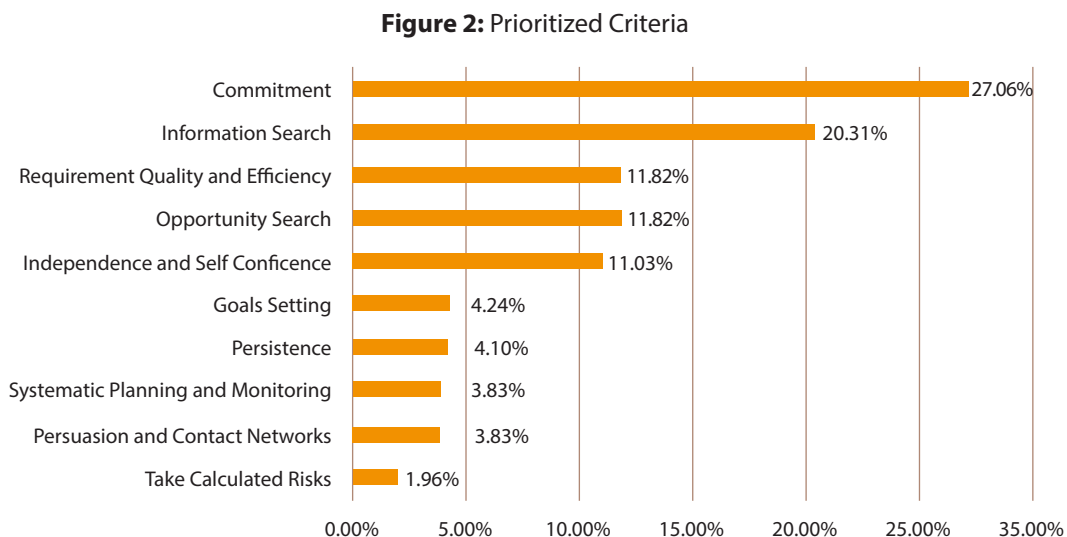
The analysis of the data regarding the qualitative approach used the technique of content analysis, in which, after the fluctuating reading of the data and the creation of the interview protocol, the categories were not defined a priori, as they presented similarity in each other. statements of the teachers interviewed.

After analysis of both approaches, the data were related for purposes of verification of relationship and association of results, according to step 4 of the methodological flow (Figure 1).

Results analysis and discussion

Data analysis was carried out in two moments, quantitative analysis of students’ characteristics (EBC’s) and qualitative analysis of teachers’ activities.

The first moment, with the application of the questionnaires and the use of the AHP method, the most important constructs were obtained, that is, the entrepreneurial behavioral characteristics that most characterized the students during that research period, according Figure 2.



Note: Research data.



When performing the pairwise comparison, as shown in [Figure 2](#), the commitment was the criterion that obtained the highest priority, obtaining 27.06% in its overall weight, which indicated that this construct represents the greatest relevance from the perspective of the survey respondents - the students.

Commitment, according to the characteristics defined by [McClelland \(1972\)](#), is inserted in the Realization dimension and brings aspects of the individual's responsibility to the task and the team, such as worrying about the deadlines of the tasks under their responsibility; be faithful to the promises you make to others; Feel fulfilled by the satisfaction of the other, by performing the task under their responsibility.

Followed by the information search feature, which obtained 20.31% of global weight with the second highest relevance for students. According to [McClelland \(1972\)](#), this characteristic encourages the student to personally look for information that is available in their context, even seeking the help of specialists to obtain technical or commercial advice, and in the case of students, direct contact with professors.

Regarding the lowest scores, we have the characteristic of taking calculated risks, with only 1.96% of the global weight. This characteristic is directly related to analyzing risks cautiously, putting oneself in situations of moderate challenges and always evaluating the chances of success or failure, according to [McClelland \(1972\)](#). Entrepreneurs by nature, take high calculated risks and this characteristics with low weights among students, suggests that they still feel insecure even by the projections of the next steps after university, which usually tend to be doubtful and therefore developing this characteristic would increase their confidence levels to undertake in the future.

We also analyzed the questions of each construct, listing which were the most prioritized by them when answering the questionnaire. At this point it was possible to observe which questions the students prioritize regarding the entrepreneurial characteristic's context, more specifically what really matters to him when considering the ten dimensions specified by [McClelland \(1972\)](#). Importantly, all judgments had a consistency ratio below 10%, which indicated that the analyzes performed are consistent; and therefore, the results are valid ([Abastante et al., 2019; Saaty, 1977; Saaty, & Ozdemir, 2003](#)).

Thus, [Table 3](#) shows, in general, the priorities found with the application of the AHP method, as well as the respective questions (sub-criteria). Although with a lot of information, it is believed to be important to present it for information purposes to those who wish to improve the development of students at that university, pointing out the specific items with urgency for improvement.



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Table 3: Prioritized Constructs

Criteria	Overall weight	Subcriteria	Overall weight	Priority order
Opportunity Search	11,82%	1. I strive to do the things that must be done.	36,38%	1°
		12. I do the things that must be done without others having to ask me.	15,88%	2°
		23. I like challenges and new opportunities.	36,38%	1°
		34. Prefix to perform tasks that I master perfectly and feel safe	3,83%	4°
		45. I venture to do new and different things than I have done in the past.	7,53%	3°
Persistence	4,10%	2. When I encounter a difficult problem, it takes me a long time to find the solution.	5,37%	4°
		13. I insist several times to get other people to do what I want.	5,37%	4°
		24. When something gets in the way of what I am trying to do, I persist in my task.	51,01%	1°
		35. When I encounter serious difficulties, I quickly move on to other activities.	12,30%	3°
Commitment	27,06%	46. I have different ways of overcoming obstacles to achieve my goals.	25,94%	2°
		3. I finish my job / activity on time.	17,31%	3°
		14. I am faithful to the promises I make.	33,47%	2 ^a
		25. If necessary, I do not mind doing the work of others to meet a deadline.	8,50%	4°
		36. When I am doing work for someone else, I make a special effort to be satisfied with the work.	37,07%	1°
Requirement Quality and efficiency	11,82%	47. My family and personal life are more important to me than my self-determined work delivery dates.	3,65%	5°
		4. I get bored when things are not done properly.	37,96%	1°
		15. My income at work / activities is better than other people I work with.	4,74%	5°
		26. I get bored when I waste time.	35,49%	2°
		37. I am never really satisfied with how things are laid out; I always think there is a better way to do them.	12,01%	3°
		48. I find the fastest way to finish work, both at home and at work / college.	9,79%	4°

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Criteria	Overall weight	Subcriteria	Overall weight	Priority order
Take Calculated Risks	1,96%	5. I prefer situations where I can control the end result as much as possible.	46,87%	1º
		16. I engage in something new only after I have done my best to ensure its success.	20,46%	2º
		27. I consider my chances of success or failure before I start acting.	20,46%	2º
		38. I perform risky tasks.	5,28%	4º
		49. I do things that other people consider risky.	6,93%	3º
Goals Setting	4,24%	6. I like to think about the future.	51,86%	1º
		17. I find it a waste of time to worry about what I will do with my life.	3,71%	5º
		28. The more specific my expectations for what I want to achieve in life, the greater my chances of success.	26,83%	2º
		39. I have a clear plan of life.	8,06%	4º
Information Search	20,31%	7. When I start a new task or project, I collect as much information as I can before proceeding with it.	11,42%	3º
		18. I seek advice from people who are experts in the industry I am working in.	24,44%	2º
		29. I make decisions without wasting time seeking information.	4,06%	5º
		40. When I run a project for someone, I ask a lot of questions to make sure I understand what they want.	49,77%	1º
		51. I rely on various sources of information as I seek help in completing tasks and projects.	10,31%	4º
Systematic Planning and Monitoring	3,83%	8. I plan a large project by breaking it down into simpler tasks.	10,38%	3º
		19. I Carefully consider the advantages and disadvantages of different alternatives before undertaking a task.	24,61%	2º
		30. I try to take into account all the problems that may arise and anticipate what I would do if they succeed.	10,38%	3º
		41. I face problems as they arise rather than wasting time anticipating them.	4,53%	4º
		52. If one method of dealing with one problem fails, I turn to another.	50,11%	1º

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Criteria	Overall weight	Subcriteria	Overall weight	Priority order
Persuasion and Contact Networks	3,83%	9. I can support others in my recommendations.	22,32%	2°
		20. I don't waste much time thinking about how I can influence other people.	6,16%	4°
		31. I count on influential people to reach my goals.	20,16%	3°
		42. To achieve my goals, I look for solutions that benefit all people involved in a problem.	46,16%	1°
		53. I can get people with firm beliefs and opinions to change their thinking.	5,20%	5°
Independence and Self Confidence	11,03%	10. I am confident that I can be successful in any activity I propose to perform.	20,33%	2°
		21. I change the way I think if others strongly disagree with my views.	4,21%	4°
		32. When I am doing something difficult and challenging, I have confidence in my success.	46,56%	1°
		43. The work I do is excellent.	8,57%	3°
		54. I stand firm in my decisions, even when other people are strongly opposed.	20,33%	2°

Note: Research data.

When analyzing the commitment factor that had the highest weight, question “36” was a priority with 37.07% of global weight, referring to its commitment to third parties. In the same way, with the second factor with the best weight, search for information, in which question 40 had the highest global weight, and also involves the relationship between the student and other people, ensuring compliance with the commitment made between them. Therefore, it can be inferred that students are oriented to fulfill their commitments taking into account the responsibilities assumed with other people.

And on the aspects that most need attention and development are related to encouraging students to perform risky tasks, to trace new paths and relinquish full control over all processes. Question 53, which had lower weights within the Persuasion and Contact Networks factor, also with a lower overall weight, shows the lack of conviction and security that is very present in the characteristics of the students and, therefore, could be a better work. As in question 41, with the same scoring characteristics, which suggests a degree of anxiety among young people, anticipating problems, when they could focus more on strategic planning on facts.

The analysis of the data from the interview with the teachers, it was possible to identify the activities performed by the teachers, considered “distinct” in the classroom, in the students’ perception. The generated categories were: Didactic Activities Method, Teacher-Student Interaction and Entrepreneurial Learning, as shown in [Table 4](#).



Table 4. Categories and respective activities performed by teachers

Categories	Subcategory	Atividade do docente em sala de aula
Teaching Activities Method	Practice activities	<ul style="list-style-type: none"> - use of tools available on the web; - experience the content; - drawings or analogies and videos; - to instigate new solutions based on case studies.
	Correlations between subjects	<ul style="list-style-type: none"> - multiple experiences; - work with examples; - create situations; - thinking about problems from different angles;
	Student autonomy	<ul style="list-style-type: none"> - association the student's trajectory with the validation knowledge; - free discussions; - to stimulate the understanding of the contexts and their authors.
Teacher-Student Interaction	Interactive participation	<ul style="list-style-type: none"> - activities for extra points; - different classes; - high level of demand to reveal talents and stimulate others.
	Dialogue and interaction	<ul style="list-style-type: none"> - breaking of paradigms about historically difficult disciplines; - activities that challenge prior knowledge.
	Favorable environment	<ul style="list-style-type: none"> - dynamics; - pleasant environment; - switch between theory and practice; - integration.
Entrepreneurial Learning	Direction to reality	<ul style="list-style-type: none"> - problematize reality; - link content to professional practice; - interdisciplinarity;
	Learning by experience	<ul style="list-style-type: none"> - teacher act with humility; - resilience; - deal with the pressures of everyday life.

Note: Research data.

From the data, it is observed that teachers use teaching methods and practices different from traditional education and appropriate to entrepreneurial education, because they perform practical activities and stimulate correlations between subjects, student autonomy, group interaction and interdisciplinarity. According to [Silva, & Pena \(2017\)](#) entrepreneurial education combines theoretical classes and practical activities, in order to stimulate innovation, creativity, reflections and actions that develop critical, social and leadership skills in students.

Thus, by observing the information, from reading the research data and confronting them with the theory, it was possible to infer a direct relationship of the activities performed by teachers on entrepreneurial behavioral characteristics, as shown in [Table 5](#).

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Table 5: Relationship between activities performed by teachers and entrepreneurial behavioral characteristics

Categories	Subcategories	Professor activity in theW classroom	Developed Features	Definition MacClelland
Teaching Activities Method	Practice applicattion activities	- use of tools available on the web; - experience the content; - drawings or analogies and videos; - to instigate new solutions based on case studies.	Requirements quality and efficiency	Look for new ways to do things better, to do it faster or cheaper; does things in a way that exceeds standards of excellence; ensures that your work will be done in time and with quality combined.
		- multiple experiences; - work with examples; - create situations; - thinking about problems from different angles;	Independence and self sonfidence	It seeks autonomy over the rules and controls of others; even in the face of adverse results, he maintains his point of view; shows confidence in your own ability.
	Correlations between subjects	- association the student's trajectory with the validation knowledge; - free discussions; - to stimulate the understanding of the contexts and their authors.	Commitment	He sacrifices himself and makes any effort to complete a task; he is always collaborating with employees to get the job done;
		- activities for extra points; - different classes; - high level of demand to reveal talents and stimulate others.	Information search	He personally seeks all possible information about the environment in which he is inserted; seeks help from specialists to obtain technical or commercial advice.
	Activity aimed at student autonomy	- breaking of paradigms about historically difficult disciplines; - activities that challenge prior knowledge.	Opportunity search	The individual does things before being asked, or before being forced by circumstances; expands business to new areas of activity; really takes advantage of the opportunities that arise.
	Teacher-Student Interaction	Interactive group participation	- dynamics; - pleasant environment; - switch between theory and practice; - integration.	Goals setting
Dialogue and interaction		- problematize reality; - link content to professional practice; - interdisciplinarity;	Take calculated risk	Evaluates and discusses the alternatives; always seeks to maintain control of the situation to reduce risks; gets involved in moderate risk situations.
Favorable environment creation		- teacher act with humility; - resilience; - deal with the pressures of everyday life.	Systematic planning and monitoring	Divides large tasks into subtasks with defined deadlines; he is always reviewing his plans, observing the various variables that may influence him; makes use of financial records for decision making.
Entrepreneurial Learning	Direction to reality	- use of tools available on the web; - experience the content; - drawings or analogies and videos; - to instigate new solutions based on case studies.	Persuasion and contact network	Discuss strategies in advance to influence and persuade others;
	Learning by experiece	- multiple experiences; - work with examples; - create situations; - thinking about problems from different angles;	Persistence	Face the challenges in the most varied ways and as many times as necessary to overcome the obstacles.

Note: Research results.



From [Table 5](#) it can be seen that the subcategory Application of Practical Activities is able to influence the characteristic Quality and efficiency requirement at the moment that makes the student experience the classroom content in practice, allowing him to test new ways to do it and find their own method of applying the theoretical subject in practice, favoring to develop more efficiency in the execution and thus achieving more quality in the final result. In the same way it will exercise its independence and self-confidence in the subject worked in the classroom by testing it in simulated practice, as many times as necessary, gaining its autonomy by taking possession of theoretical and practical knowledge.

The subcategory Correlations between Subjects, is able to stimulate the characteristic Commitment at the moment that proposes to the academic engagement by creating solutions to problems proposed by the teacher, striving to complete the task. At the same time, it contributed to the development of the Information Search feature, when it is up to the academic to search for content and / or expert to assist him in solving the issue.

For the subcategory Activity Oriented for Student Autonomy, the teacher's mediation in stimulating free discussions, enables the academic to expose about his knowledge acquired throughout his life in which he can make the correlations on the theoretical subjects and their reality, giving opportunity new perspectives and different perspectives on its reality, thus stimulating the intuition and spontaneous attitude attributes of the Opportunity Search and Initiative characteristic.

In the interactive group participation subcategory, the teacher stimulating activities of extra points induced the student to work on goal setting characteristics, as they are challenging and have their own immediate benefit. While the Dialogue and Interaction subcategory brings academics closer together, dialogue becomes critical to receiving student feedback on activities and tracking development in more challenging disciplines, giving academics a voice instead of strengthening them to deal with difficult situations, encouraging control over risk situations, such as possible disapproval; are attributes of the characteristic Calculated risks.

The subcategory favorable environment creation, by including dynamics and interspersing theory and practice, is able to encourage the scholar to better follow the dynamics of content, partitioning more easily for understanding, which are attributes of the characteristic planning and systematic monitoring.

For the subcategory direction for reality, in an activity that problematizes the content in the professional practical application, it enables the academic to discuss different strategies for the execution, anticipating him / her in advance of the difficulties he will find in the professional market, expanding his know-how in order to establish better persuasion as a professional later.

And the subcategory learning by experiences, when the teacher occupies a posture of humility, exposing his experience and trajectory, his overcoming shares attributes of the



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characteristic Persistence, being able to arouse in the academic the empathy for overcoming their own difficulties during the academic career.

Thus, it is possible to verify that the didactic activities performed by teachers are representative for the efficiency of entrepreneurial teaching at the moment that are convergent to the development of entrepreneurial behavioral characteristics. It is known that other variables, external and not analyzed, can also influence the characteristics of academics; however, this relationship is a strong indicator of the effectiveness of activities on characteristics when there is convergence between definitions.

In addition, the direct relationship between the activities performed by teachers on the entrepreneurial behavioral characteristics of students provides the literature to expand the development and propositions of pedagogical methods that induce an entrepreneurial attitude, generating indicators, information and subsidies capable of promoting the performance of teachers towards students, providing tools to develop entrepreneurial education activities scientifically recognized as a way to expand and reinforce the existing literature on the subject.

Final considerations

It is possible to conclude that the objective of this research - to identify the activities developed by the professors of a Brazilian public higher education institution and the influence of these activities on the Entrepreneurial Behavioral Characteristics (EBC's) of undergraduate students - was achieved, indicating that in the referred IES studied, students can be considered committed and that there are teachers who undertake entrepreneurial education activities; therefore, a promising scenario of entrepreneurial education.

It was possible to verify that the activities performed by the teachers are capable of influencing the entrepreneurial behavioral characteristics, because according to the analysis performed by the AHP method, the students present a satisfactory level of entrepreneurial behavioral characteristics, in which the commitment stands out among the ten. Understanding in this way that the activities are convergent to the development of students for an entrepreneurial attitude behavior.

Likewise, the existence of poorly prioritized characteristics such as goal setting, persistence, persuasion and networking, systematic planning and monitoring, and taking calculated risks, indicated that the activities performed by teachers are insufficient or not comprehensive enough to be effective, because with a significant sample of approximately 94% of the students, it is inferred the relevance of the information from these data and the urgency of stimuli, recycling or instrumentalization of other teachers in relation to these practices that elevate the characteristics and entrepreneurial attitude of the students.

Furthermore, the relationship between qualitative and quantitative data makes it possible to know which activities are currently carried out by professors considered different and in which characteristics they are more efficient. A way to guide other teachers to share the same activities, replicate in their classes and expand this movement of new methodologies in the classroom, in order to raise the level of entrepreneurial behavior among students.

The importance of emphasizing the reality is highlighted, by identifying the aspects that deserve greater attention, such as the less evident characteristics that need to be developed, but also to improve the developed activities and to value the outstanding professors within the institution, in order to strengthen themselves, serving as an example to others in the propagation of these activities as well as in the emergence of others.

For further research it is suggested, for further details and understanding of entrepreneurial education activities, to increase the number of teachers surveyed, since this research included one teacher per course, due to the complexity of the study, time and available resources.

Another consideration for future studies is to analyze entrepreneurial characteristics in a longitudinal study, comparing data collected at the beginning and end of graduation, as it is believed that the work developed by professors has better results if carried out during the entire graduation.

Declaración de contribuciones

Las personas autoras declaran que han contribuido en los siguientes roles: **S. B. B.** contribuyó con la escritura del artículo; la gestión del proceso investigativo; la obtención de fondos, recursos y apoyo tecnológico y el desarrollo de la investigación. **D. J. C. D. S.** contribuyó con la escritura del artículo; la gestión del proceso investigativo; la obtención de fondos, recursos y apoyo tecnológico y el desarrollo de la investigación. **I. F. M.** contribuyó con la gestión del proceso investigativo y el desarrollo de la investigación. **L. F. D. L.** contribuyó con el desarrollo de la investigación. **L. A.** contribuyó con la escritura del artículo; la obtención de fondos, recursos y apoyo tecnológico y el desarrollo de la investigación.

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