



Sustainable Strategies in Business Area Courses at UNIFAAT University Centre, Atibaia, São Paulo, Brasil

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This paper presents and analyses actions related to Sustainability and Sustainable Development Goals (SDGs), present in Business Area Courses, taken by UNIFAAT – University Centre, located in Atibaia, São Paulo, Brazil. This work also addresses the view of students on sustainability and their interest and involvement with these actions.

Study Design: Sustainability topics were gradually incorporated in different disciplines, themes of Completion of Course Works, Scientific Research, in a Research Centre in Sustainability and Culture, and in sustainable policies, implemented in the campus such as waste and water resources management and energy consumption and they are analysed in this paper.

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Place and Duration of Study: The study was realized at UNIFAAT – University Center between June 2021 to July 2023.

Methodology: The methodology adopted for the development of this work is characterized as qualitative and quantitative and involves bibliographical and documentary research, an analysis of actions implemented by UNIFAAT in the area of sustainability, and a survey through a self-administered questionnaire used as a technique for collecting information on sustainable strategies knowledge from UNIFAAT business courses students. A total of 426 questionnaires were applied.

Results: From the data, projects, and actions analysed, it was possible to observe an expansion in the sustainable approach in business area courses.

Conclusion: The results are related to the efforts of higher education institutions to make it possible to achieve the SDGs, in a perspective that goes beyond governance at the internal level, collaborating as an important source of knowledge and to sustainable strategies in an inclusive way and beyond the campus.

Keywords: Sustainability; management; universities; sustainable innovation; environmental education.

1. INTRODUCTION

The sustainability concept became widely known through the publication of the Brundtland Commission report, launched by the United Nations in the early 1980s. It emphasizes that Sustainable Development can only be achieved as long as each generation meets its essential needs but at the same time ensures that the next generation will also be able to meet its needs. This perspective demands that humanity should act collectively to ensure its long-term survival on planet Earth [1].

More recently the concept of sustainability has been operationalized in the 2030 Agenda for Sustainable Development, a global agenda that presents 17 Sustainable Development Goals (SDG), 168 targets and around 220 indicators. However, concrete measures should be implemented by each country [2].

Institutions of higher education (HEIs) are linked to sustainability issues in a variety of ways. According to [3] this is a great responsibility, as young people undergo profound changes in the course of their undergraduate years about their knowledge assumptions and their identity, and an examination of diverse sustainability issues offers students the opportunity to receive important impulses for their intellectual and identity development.

Daub et al. [3] also highlight that the concept of education for sustainable development (ESD) has been the subject of intense discussion in the last 20 years, but until now many universities still lack a systematic integration of sustainability issues into curricula, teaching, research, and operations at universities. However, corporate

responsibility increasingly calls for universities to incorporate sustainability ideas and practices into their structures, processes, and activities.

Sustainable campus initiatives can be seen as a reaction of universities to such demands and a direct benefit for a university campus can come from the fact that a sustainable project may contribute to measurable savings, for example, in resources. This is regularly the case when sustainable campus initiatives or campus greening programmes lead to energy savings and energy optimization or when a sustainability activity is linked to a regular teaching module, a research project, or a centre for sustainable studies. Another example could be the environmentally appropriate collection and final disposal of solid waste, with influences on the individual and collective behaviour of students, teachers and other individuals who transit through the campus.

Another point to consider is that the formation of leaders and managers aligned with the Sustainable Development perspectives is an effort that has involved several actors, among which stand out business schools and companies concerned with sustainability [4]. However, according to [5], the incorporation of sustainability subjects in the formal curriculum as a tool that encourages individuals to reflect and act on the challenges of sustainability has proved to be a complex task in many different fields of knowledge. However, results show that students recognize interdisciplinary practices as an important element in their training process, contributing to the development of professional skills compromised with environmental responsibility.

In this stance, this paper presents and analyses actions related to Sustainability and Sustainable Development Goals (SDGs) by UNIFAAT-University Centre in the different Business Courses that the institution has, including Administration, Accounting Sciences, Financial Management, Logistics Management, Marketing Management and Human Resources Management.

The sustainability topics were gradually incorporated into different disciplines, themes of completion of the course works, scientific research, in a Research Center in Sustainability and Culture, and sustainable policies, implemented on the campus, such as waste and water resources management and energy consumption, and will be presented and analysed in this work, that also addresses the view of students on sustainability and their interest and involvement in diverse existing actions.

2. METHODOLOGY

The methodology adopted for the development of this work is characterized as quali and quantitative [6] and it involves bibliographical and documentary research [7,8], in order to qualitatively verify what has been researched and published by the institution's teachers and students in relation to sustainability and the SDGs; research and analysis of actions implemented by UNIFAAT in the area of sustainability, mainly the Solid Waste Management Program (SWMP); and a survey through a self-administered questionnaire [7] used as a technique for collecting information on sustainable strategies knowledge from UNIFAAT business courses students.

Within the perspective of qualitative research, in the survey, a non-probabilistic sample of volunteers was chosen, which brings together, by invitation, people who agree to participate. In the context of the theme proposed in this work, Sustainable Strategies in Business Area Courses, this sampling model becomes very interesting, because those involved in the research need to have the characteristic of being volunteers, which emphasizes the involvement and participation, inherent to the actions that aim at sustainability in different realities.

The survey contains specific questions presented (Table 1), with the objectives for each one.

The questionnaire, formed by closed questions, was applied in real-time in the classroom using Google Forms as a platform. A total of 426 questionnaires were applied, 125 in the Business Administration course, 67 in Accounting, 71 in Financial Management, 44 in Logistics Management, 51 in Marketing Management and 68 in Human Resources Management. The presentation of the data obtained was performed in graphs, followed by analysis.

2.1 Study Institution

Located in Atibaia, São Paulo State, Brazil, FAAT - Faculdades Atibaia was created in 1999, and had courses in Business Administration, Law, Advertising, Journalism, Public Relations, Literature and Higher Normal. Its growth, accompanied by a very high performance in the official evaluations of the Ministry of Education and Culture (MEC), led to a process for the transformation of FAAT into a University Centre – UNIFAAT. The process began in 2015, the year in which the institution filed the request for accreditation as a University Centre, which occurred in March 2018, when the ordinance was published that made the transformation of FAAT into the UNIFAAT University Centre official.

UNIFAAT's mission is to promote quality higher education in its areas of education, maintaining itself as an institution dedicated to the development of employability and the expansion of the citizen's critical and environmental awareness. UNIFAAT provides a complete infrastructure to guarantee ideal conditions for the work of the faculty and the technical-administrative staff, and for the academics to learn.

The pedagogical projects contemplate aspects related to scientific research, which is developed in final works, and foreseen in the curricular matrices of the different courses. Research is also conducted through the Centre for Studies, Research and Extension (CSRE), which is organized into thematic centres, and has a centre focused on sustainability and culture, and is responsible for coordinating the Institution's research and scientific initiation initiatives.

Table 1. Questions and objectives of self-applied questionnaires to students of UNIFAAT business courses

Question	Objective
What is your course?	Identify responses by courses in the business area, thus establishing a profile of respondents.
Are you interested in issues related to the environment?	Check the interest of the interviewees in environmental issues to establish a comparative analysis with the actions conducted by UNIFAAT.
Have you ever been in contact with the theme: United Nations (UN) Sustainable Development Goals?	Find out if the interviewees have already had contact with the SDGs to establish a relationship between this data and the UNIFAAT proposals.
In your opinion, the solution to environmental problems depends on:	Analysing the interviewees' perception of their responsibility in the search for a solution to environmental problems.
What is the importance of environmental training in undergraduate courses, so that students know how to contribute to sustainability:	Identify whether respondents consider it important to address environmental issues during their graduation, comparing this perception with training in the business area.
In the classroom, how often issues related to the environment are approached?	Raise the perception of the students interviewed about proposals related to the environment and sustainability existing at UNIFAAT.
How do you evaluate UNIFAAT's performance in environmental issues?	Check if the students of the business area courses can verify the evolution of the environmental proposals developed at UNIFAAT.
Sustainability is formed by a tripod of major areas. In your opinion, these three components are	Analyse whether students in the business area can perceive that sustainability involves economic and social aspects, in addition to environmental ones.



Fig. 1. Atibaia Municipality location in São Paulo State, Brazil.

Source: [9]

In addition, at UNIFAAT, students are encouraged to seek integration with the community through activities and extension courses, which cover areas such as management, environment, health, accessibility, art, history, leisure, and sport, contributing to the process of development and improvement of the quality of life of the region's population.

Currently, UNIFAAT has a campus in the municipality of Atibaia and a unit in the municipality of Bragança Paulista (a town located in the northern region of Atibaia), both located in the northern part of São Paulo Metropolitan Region (Fig. 1). The institution currently has Undergraduate and Graduate courses in the Business area, the object of study in this work, and also in the areas of Health, Law, Engineering and Education.

The courses in the Business area involve Administration (8 semesters), Accounting (8 semesters), Financial Management (4 semesters), Logistics Management (4 semesters), Marketing Management (4 semesters) and Human Resources Management (4 semesters), and Management Courses are offered on both campus – Atibaia and Bragança Paulista.

3. RESULTS AND DISCUSSION

3.1 Documentary Research

UNIFAAT, as previously mentioned, has within its Centre for Studies, Research and Extension (CSRE), a nucleus focused on Sustainability and Culture (NSC) that has developed research projects focused on regional socioenvironmental issues, with the participation of students from business courses and other areas. It is possible to highlight studies on health issues related to Good Health and Well-Being (SDG 3), various actions in the area of Education related to Quality Education (SDG 4), studies on violence against women and girls related to Gender Equality (SDG 5), research work on Water Resources Management related to Clean Water and Sanitation (SDG 6), Socioenvironmental changes arising from Urban Expansion related to Sustainable Cities and Communities (SDG 11) and proper disposal of waste related to Responsible Consumption and Production (SDG 12).

These research activities have enabled several actions, including national and international publications, articles published in the UNIFAAT

scientific journal, *Revista Momentum*, which are directly related to the SDGs mentioned above. In addition to these publications, students in the business area have completed course completion work focused on SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production).

3.2 Solid Waste Management Program (SWMP)

Another action related to socioenvironmental issues and Sustainable Development Goals, in particular with Sustainable Cities and Communities (SDG 11) and Responsible Consumption and Production (SDG 12), is the Solid Waste Management Program (SWMP) which also involved and still involves business area students.

In 2014, the Solid Waste Management Program (SWMP) developed by UNIFAAT's Centre for Studies, Research and Extension (CEPE) came into effect. Its functioning counts with the college maintenance sector work, mainly regarding the program technical operation management [10].

The program creation and implementation occurred to meet a demand presented by the institution management, which emerged because of two main reasons. First, the pressure of the municipal public power, which asked the college to develop and implement a SWMP as soon as possible, considering the obligations presented by Law No. 12.305 of August 2, 2010 – National Solid Waste Policy (NSWP) [11]. According to the law, all the large waste generators must have their own SWMP and, through its guidelines, ensure adequate management and disposal of solid waste generated by their processes.

The second reason was due to the institution's management regarding a socio-environmental performance increase. Changes in UNIFAAT-University Center high management structure at that moment had brought new drivers that were tilting some decision-making processes in direction of sustainable practices.

Regarding its technical functioning, the program is essentially based on the segregation by waste groups – recyclable and non-recyclable, but also utilizes the multi-selective segregation logic, once that some specific type of waste are meant to be discarded separately in their own collectors – which are recyclable paper and cardboard.

The waste collectors of the recyclables group are meant to receive waste metal, plastic, glass, and

Tetra Brik, while the waste collectors of the non-recyclables group must receive food waste, non-recyclable paper, napkins, Styrofoam, and other materials whose recycling is economically unfeasible in the region.

The SWMP brought important results that last until the present day. As quoted by [10] “ratifying the relevance of the solid waste management plan to the goals that underpin the tripod of sustainability, about the economic dimension, it is possible to assess a significant reduction in the associated cost with the destination of solid waste from the University Centre” (Graph 1).

Also considering the social aspects, the constant increase in the amount of recyclable materials that are sent to a municipal cooperative,

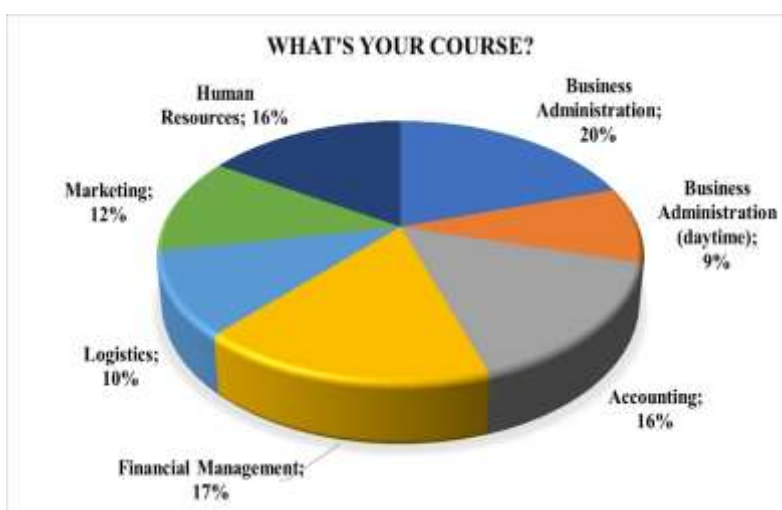
Cooperativa São José, in the Caetuba neighbourhood (Atibaia, state of São Paulo, Brazil), generates income for the members and their families, as well as the consequent reduction of waste volume that is sent to landfills, contributing to the extension of its useful life, and avoiding the pollution of the physical environment [10].

3.3 Perception Survey of Business Area Students about Sustainable Strategies

Data and analysis on the relationship, involvement, and knowledge of students in Business area courses on socioenvironmental issues and on the SDGs will be presented.



Graph 1. Solid waste disposal costs – US dollar per student
 (* SWMP-Solid Waste Management Plan)
 Source: [10], 2019.

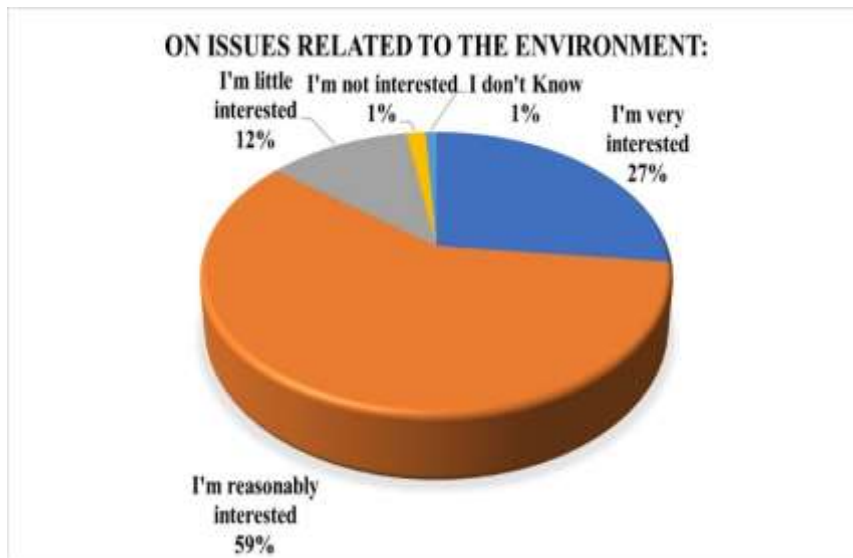


Graph 2. What is your course?
 Source: The authors, 2023

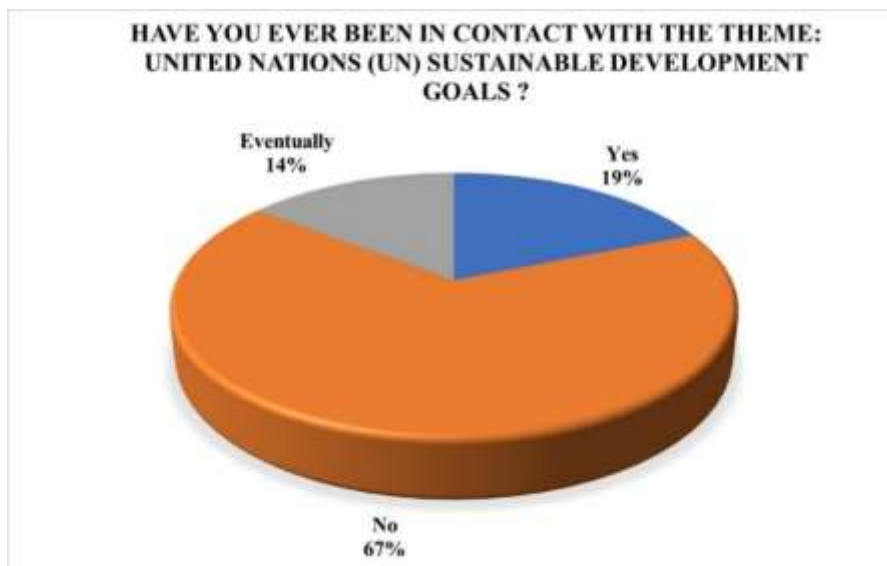
Graph 2 shows the percentage of participants in the answers to the applied questionnaires. It is observed that most respondents, from a total of 426 questionnaires applied, are students of the Business Administration course (29%), followed by students of the Financial Management course (17%), Accounting (16%) and Human Resources (16%), Marketing (12%) and Logistics (10%).

related to the environment and that 27% are very interested in this topic. Additionally, 13% have little or no interest in such issues. Although 27% of the students are very interested, it is noticed that even if the institution presents actions related to environmental issues, a significant portion shows a reasonable interest in this topic, a fact that should be considered to improve such activities with a view to the involvement of the students and the understanding of the meaning of the business area for the promotion of sustainability.

Observing Graph 3, it can be seen that 59% of students are reasonably interested in topics



Graph 3. On issues related to the environment, are you interested?
 Source: The authors, 2023



Graph 4. Have you ever been in contact with the theme United Nations (UN) Sustainable Development Goals?
 Source: The authors, 2023

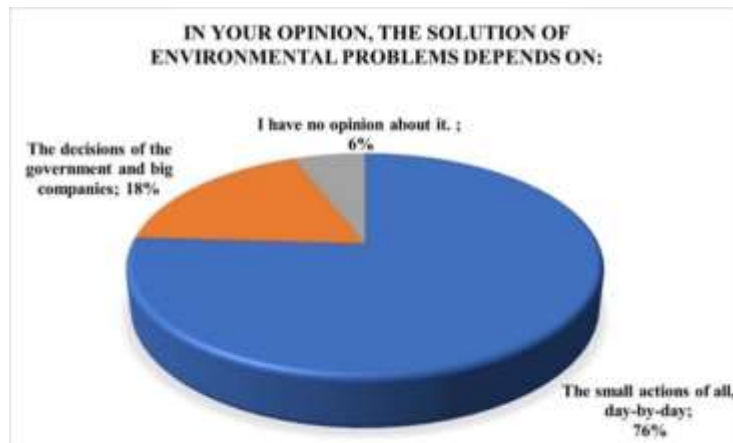
Graph 4 shows that 67% of students in business courses at UNIFAAT have not had contact with the United Nations (UN) Sustainable Development Goals. Given this data, it is worth highlighting and addressing SDG 4 – “education for sustainable development”, within which one should reflect on the role of the university in promoting sustainability. In this context, the fact that most students have not had contact with the SDGs highlights two main points. The first refers to the student’s perception of this topic and how the university is an essential instrument for the teaching process that has environmental issues as one of its basis, considering several areas of knowledge, among which the business area. The second refers to an important assessment by the university on how and if it has played this role. Thus, the data show that it is necessary and urgent for UNIFAAT to improve this approach in its actions, going beyond the implementation of the SDGs from the point of view of institutional management, but placing itself, as mentioned by [12], as a “source of knowledge and experimentation, in which interaction can contribute to the production and dissemination of knowledge as a basis for action”.

Regarding the solution to environmental problems, it is interesting to note that most students (76%) consider that small actions in everyday life are essential to solving such problems (Graph 5). Only 18% “outsource” this responsibility to government decisions and large companies. Universities train people with professional and personal skills and abilities, so students with the perception that the solution to environmental problems depends on their actions enhance the idea that to achieve the SDGs, everyone’s contribution is necessary. Thus, “[...] universities must ensure that they are training current and future leaders, decision-makers, faculty, innovators, entrepreneurs and citizens with the knowledge, skills, and motivation they need that will help them contribute to the achievement of the SDGs” [13]. On the other hand, recognizing the role of the government and of large corporations in solving environmental problems is indispensable, since public environmental policies have directed actions aimed at environmental conservation in several countries, with more or less intensity, while large corporations are, for the most part, the main generators of environmental impacts today, so they must assume their role in remediating/minimizing the various problems caused in this scenario.

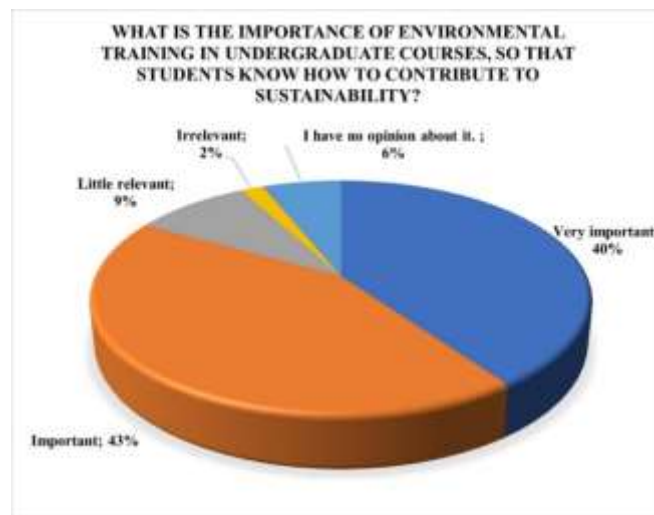
The vast majority of students in the business area understand training in the environmental area as important - 43% or very important - 40%. Considering UNIFAAT’s proposal for environmental issues (Graph 6), this data is relevant and demonstrates that the institution, although it needs to improve its approach in some points, as shown in Graphs 3 and 4, has achieved good results in the student’s training process.

Graph 7 shows that for 29% of the interviewees, in the classroom, themes related to the environment occur in specific subjects; 15% as mandatory subjects; 13% in events and other academic projects; 11% in elective discipline and 3% in all subjects. It is possible to notice that the students of the business courses mention actions that UNIFAAT conducts to foment and promote the sustainability of the campus, as presented in the course of this work. It is still possible to relate this analysis with the data obtained in Graph 4 on responsibility in solving environmental problems and, in Graph 5, addresses the importance of environmental training, which demonstrates positive results in terms of the student’s perception and the activities conducted on the institution’s campus. On the other hand, 29% of the students have no opinion about the frequency with which the environmental theme is addressed in the classroom, thus reinforcing that the institution needs to improve communication and the socio-environmental actions promoted on campus and with students in the business area.

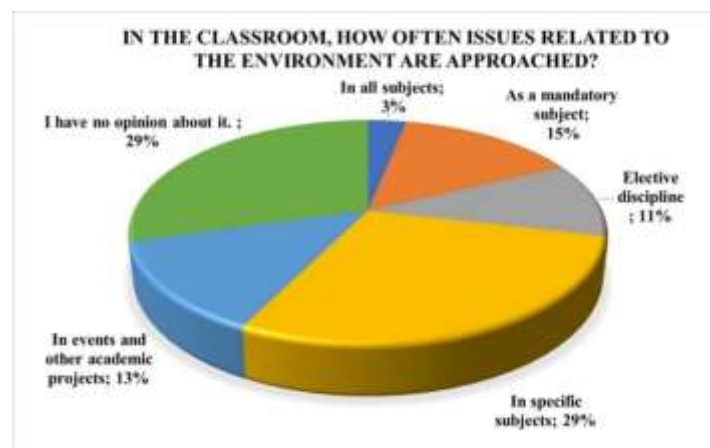
Considering UNIFAAT’s performance in environmental issues (Graph 8), it is noted that more than half of the interviewees evaluated this issue positively – 42% good and 10% excellent. However, a significant number, 40%, evaluate this evolution regularly, since this does not necessarily mean a negative point, but emphasizes the need for actions related to sustainability on the campus to be expanded and updated. According to studies involving the different aspects of environmental issues advance, higher education institutions need to continuously assess their role and performance in the training of professionals and in the community with a view to collaborate with the achievement of the SDGs, because, as stated by [14]: “Higher education institutions are not only educating future generations to be decision-makers, such institutions play an important role in the path towards a more sustainable global future” (p. 28).



Graph 5. In your opinion, the solution of environmental problems depends on
 Source: The authors, 2023



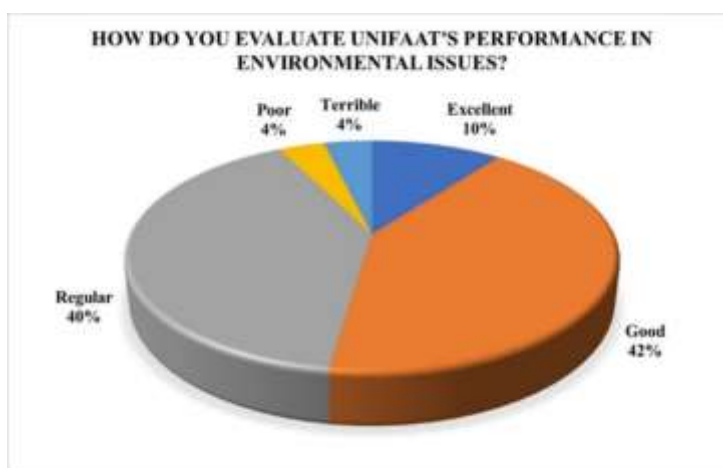
Graph 6. What is the importance of environmental training in undergraduate courses, so that students know how to contribute to sustainability?
 Source: The authors, 2023



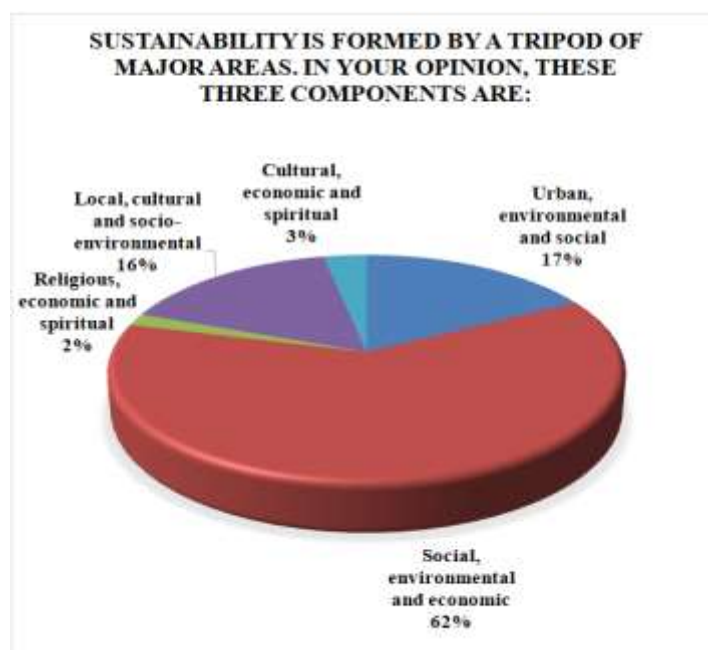
Graph 7. In the classroom, how often issues related to the environment are approached?
 Source: The authors, 2023

Emphasizing this need, it is worth mentioning that 4% of the students evaluate UNIFAAT's performance as poor in environmental issues and 4% as terrible on information, which is relevant to the self-assessment process on campus and the implementation of improvements in existing environmental proposals. In this context, [15] also mention that universities are institutions capable of causing major environmental impacts, influencing local and regional communities, in addition to forming citizens with interdisciplinary knowledge.

Analysing Graph 9, it can be seen that the majority of business students interviewed (62%) understand that the tripod of sustainability is made up of social and economic aspects, in addition to environmental ones. This view is extremely relevant when, among other aspects, one considers the performance of these future professionals in terms of more sustainable practices in organizations. It also reveals a great challenge for UNIFAAT, so that the understanding of sustainability in the business area is really promoted as an essential tool for



Graph 8. How do you evaluate UNIFAAT's performance in environmental issues?
 Source: The authors, 2023



Graph 9. Sustainability is formed by a tripod of major areas. In your opinion, these three components are
 Source: The authors, 2023

decision-making and socioenvironmental responsibility and not just as a reactive way for organizations to comply with legislation, for example.

For [16] higher education institutions prepare most of the professionals who develop, lead, direct, teach, work and influence society's institutions, thus carrying a deep responsibility for the awareness, knowledge, skills, and values necessary to create a just and sustainable future.

4. CONCLUSION

As mentioned before, from the data, projects, and actions analysed, it is possible to observe an expansion in the sustainable approach at UNIFAAT University Center campus and also in business area courses. It is noted that the interventions, research, and proposals for actions conducted on campus have been reflected in the student's perception of environmental issues and how these are related to their academic life, future professional practice, and role as citizens in the search for a more fair and environmentally balanced society.

It is also possible to note that there is a need for the campus to expand its practical actions related to the promotion of sustainability, environmental education, and communication with students in the business area and with the community. Considering this note, it is worth mentioning that at the moment a project to generate energy using photovoltaic panels is in the final stages of implementation and will enable 100% of the campus to be served by this source of renewable electricity. In addition, a system of faucets with automatic closure has been implemented, which has enabled the reduction of water waste and the more rational use of this resource. Finally, still in this area, possible actions to intensify a more appropriate use of water is being studied and aim to involve students in the business area in the survey and analysis of the best alternatives.

These actions, as a whole, are related to socio-environmental, internal, and external efforts and policies, so that the Sustainable Development Goals are present in an increasingly effective way in the institution's various areas of activity, involving courses in the area of businesses, as well as other areas, and collaborating for actions that are effectively sustainable in an inclusive way and that have a wide area of action.

This work allows us to verify, once again, the importance of Higher Education Institutions being effectively involved in proposals that allow the implementation of sustainable strategies and that consider the relevance of the Sustainable Development Goals. As highlighted by [17], "training citizens and future decision-makers with values compatible with sustainable development is a premise that must be present at all levels of education, but above all in higher education" (p. 1).

In this sense, it is important to emphasize that UNIFAAT University Center has an important challenge, so that its actions are not restricted to programs aimed at the educational area, and adequate environmental management on the campus (campus greening), focusing, for example, on programs for the efficient use of energy and water and proper disposal of solid waste are also relevant. This means that such initiatives are fundamental, but it is also necessary to consider the educational institution as a facilitator and promoter of proposals that go beyond the reality of the campus, contacting, involving, and including the community in a process that values dialogue between the different types of knowledge and new sustainable experiences. Thus, seeking to achieve the Sustainable Development Goals also means constant exercise of evaluating and rethinking the role of universities in the pursuit of sustainability.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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