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CHAPTER 15

Contributions of the Research Group in Management and Environmental Education to Interdisciplinary Dialogue and Socio-environmental Training in the Postgraduate Program in Agribusiness and Development

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INTRODUCTION

The relationship between society and nature, characterized by socio-environmental complexity, has been conflictual since the beginning of humanity, resulting in various sociocultural relationships and forms of knowledge that each society assumes as a stance towards nature (Morales, 2012). However, it was during the Industrial Revolution and its effects that the environmental crisis was established, marking the 20th century with socio-environmental emergency (Souza, 2022; Morales, 2012).

In this context, between the boundaries of modernity and post-modernity, through modern science, attention is directed to new forms of re-signification of the world, from the perspective of the construction, reconstruction, and integration of sciences that redefine interpretations of the relationship between society and nature, through the field of knowledge production, educational practices, management, and politics itself (Morales, 2012).

Thus, under the aspects of discussion of management and environmental education in the context of complexity, the Research Group in Management and Environmental Education (PGEA) was born in mid-2011 at the São Paulo State University “Júlio de Mesquita Filho” (UNESP)⁷, Tupã campus, with undergraduate students in Administration. And, in 2012, research was initiated aimed at the inclusion of environmental education in the processes of the Environmental Management System in agro-industries of the far west of São Paulo and the dialogues established with relevant public bodies. This research, funded by the National Council for Scientific and Technological Development (CNPq) - Universal Call - involved thematic areas of management, environmental education, and communication, from an interdisciplinary perspective. Since then, the PGEA has initiated its interdisciplinary movement through this scientific investigation from 2012 to 2014, which began to add different areas, enhancing interdisciplinarity. Also, as a result of an interdisciplinary dialogue, with an even broader group of teachers from various fields of

⁷ From the period of May/2011 to Dec/2022, the PGEA group was led by Prof. Angélica Gois Morales and Prof. Cristiane Hengler Corrêa Bernardo.

education and research interests, in 2014, the Postgraduate Program in Agribusiness and Development (PGAD) began at the same campus.

Based on Japiassú's (1976) perspective that three aspects: complex problems; urgency for a reorganization of research and concern with the economy, justify interdisciplinary work, the PGAD finds in the PGEA a great ally, in the sense of undertaking interdisciplinary dialogue, seeking solutions to socio-environmental problems that could not be resolved disciplinarily. This dialogue is carried out, mainly, from the interfaces between education, environmental management, and communication, and from these to various other areas that will be presented in this chapter from the master's theses defended at PGAD and which are the result of this dialogical relationship with the research group.

The PGAD is inserted in the interdisciplinary knowledge area of the Coordination for the Improvement of Higher Education Personnel (CAPES), which understands interdisciplinarity as a way of producing knowledge that encompasses theoretical and methodological exchanges, new methodological and conceptual discussions, seeking to meet the complexity and multiplicity of phenomena (CAPES, 2008).

It is precisely based on the characteristics of interdisciplinary research and teaching that the PGAD supports its objectives, which aim at the development of interdisciplinary research that addresses the demands of agribusiness, contributing to socio-economic and environmental development, providing analyses and solutions that promote local, regional, and national development (PGAD, 2023).

Divided into two research lines, one focused on the Competitiveness of Agro-industrial Systems and the other on Development and Environment (in which the PGEA group has more scientific research contributions), the PGAD has, specifically, over these ten years of existence, contributed to the advancement of interdisciplinary knowledge through research that reflects on: - the agro-industrial systems from the perspective of sustainable competitiveness; the heterogeneity of demands on resource use and management; - the formation of networks that can be important channels for the various social agents that act and/or are impacted by the sector,

and, finally, - the formation of professionals who work in interdisciplinary teams capable of solving complex problems in the area.

Given the contribution of the PGAD and the support of the PGEA in collaborative production and postgraduate training, this chapter aimed to present the contributions of the PGEA group to interdisciplinary dialogue in scientific knowledge production constituted in the master's and doctoral courses and the products derived from the PGAD and guided by the leading professors of the PGEA, from the interfaces of management, environmental education, and communication.

For the analyses undertaken in this chapter, the concept of interdisciplinarity conceived by Fazenda (2002) is adopted, which complements Japiassú's (1976) vision and sees interdisciplinarity much more as a personal attitude towards knowledge⁸. This conception understands this concept from a phenomenological perspective, as stated by Fazenda *et al.* (2010), since it is a vision focused on the subjectivity of the subjects, directed towards their experiences and practices; for dialogical action, in short, for an attitude that reaches the dimension of knowing-being.

It is also worth highlighting that this study was supported by a qualitative approach and exploratory and descriptive methods. For this purpose, a documentary survey was carried out in the Institutional Repository of Unesp⁹ to verify the theses and dissertations defended at PGAD and guided by the teachers and leaders of the PGEA, which implies demonstrating how the research group under study has contributed to the formation of systemic dialogue between different areas of knowledge in the Postgraduate Program.

The following section addresses the results, covering the trajectory of the PGEA group and its interdisciplinary dialogue with the PGAD, as well as presenting the selected publications and the correlation of the analyzed

⁸ According to Satolo *et al.* (2019, p.22), "the interdisciplinary attitude can be summarized as being willing to engage in dialogue; accepting opinions that diverge from the certainties of your field of knowledge; being open to constant learning; understanding your role in the process and that, when faced with a specific problem, you will be more or less demanded, therefore, there is no place for academic vanities."

⁹ The scientific productions can be consulted on the website <https://repositorio.unesp.br/>.

dissertations with the study interfaces and the Sustainable Development Goals (SDGs).

RELATIONS BETWEEN PGAD AND PGEA

The PGEA is linked to the Faculty of Sciences and Engineering (FCE), UNESP, Tupã campus, and interfaces directly with the PGAD through the Development and Environment Research Line, which is part of the interdisciplinary knowledge area of CAPES, offering master's and doctoral courses.

Created in mid-2011, the PGEA is a research group in constant dynamics and evolution, emerging from the interaction between various members of academia and civil society. Formed by people from various fields, it develops studies and research in socio-environmental management and education in both formal and non-formal contexts.

Since the group's formation and with the approval and start of the PGAD in 2014, the PGEA's work aims to expand the training of new researchers, as well as reflect on the process of socio-environmental management and education in various contexts, enabling connections, exchanges, planning, and execution of research and extension projects, which implies the (re)construction of knowledge and increases scientific production in the area. The PGEA group acts in three areas: - training and improvement, with study meetings, offering courses and participating in scientific events, - scientific production, which is more focused on developing research and publishing results, and – extension actions and projects, with scientific dissemination activities and others through the extension project Sala Verde Rede de Educação Ambiental da Alta Paulista (REAP), linked to FCE. Within its dynamics, the group holds biweekly meetings, where scientific articles and seminars are read, in addition to promoting a comprehensive analysis of the educational process aimed at environmental management and education, through an interdisciplinary approach divided into two research lines.

Research Line 1 involves the theoretical-methodological foundations and training in environmental education and is divided into the themes of Training in Environmental Education and Interdisciplinarity as a field of knowledge. Research Line 2 involves environmental management and education and is divided into the themes of social management analysis and socio-environmental education in organizations, environmental public policies, environmental communication, the relationship between agroecology and environmental education, and waste management, among other topics (FCE, 2023).

Therefore, this research group explores educational challenges in various spheres, and this perspective allows for the creation of numerous connections, encouraging the sharing of ideas and the development of research and extension projects, resulting in the continuous construction of knowledge, which, in turn, drives collaborative scientific production in various fields of knowledge (FCE, 2023). According to Lopez and Barbosa (2019), interdisciplinarity in higher education requires dialogue about the transformations of educational paradigms, which involve political and, mainly, methodological issues, making the PGEA and PGAD partners in this interdisciplinary endeavor.

Considering the necessary character of interdisciplinary work and the fact that knowledge cannot be produced alone, the research group has established different partnerships along its journey, strengthening ties with private and public institutions and projects, including the Rede de Educação Ambiental da Alta Paulista (REAP).

Through joint actions, the PGEA and REAP seek to promote, strengthen, and tighten relationships with civil society, Non-Governmental Organizations (NGOs), and public and private institutions in the Alta Paulista region, with the collaboration of undergraduate, master's, and doctoral students from FCE. The students involved in these actions represent different backgrounds and play a fundamental role in building interdisciplinary dialogues and reflections in the proposed approaches. This collaborative partnership is a commitment by the research group to translate scientific knowledge into concrete actions, strengthening the link between public universities and society.

During the journey of the PGEA group, other actions were included in the activities developed, such as Environment Week, Environmental Lecture Series, Research Integration, Career Fair, and Monthly Lives that disseminate socio-environmental research, tightening relationships with REAP and PGAD itself, based on the developed research. All these actions contribute to environmental education and scientific dissemination, taking the knowledge produced outside the university walls, collaborating with the formation of a scientific culture and decision-making based on evidence. It is worth noting that the highlighted actions are open to the public, both inside and outside academia.

ANALYSIS OF DISSERTATIONS GUIDED BY PGEA TEACHERS AND LEADERS: SELECTION OF DEFENDED DISSERTATIONS AND THEIR RELATION TO THE SDGs

The selected publications for analysis were defended between 2016 and 2023, as with the program starting in 2014, the first defenses occurred from 2016 onwards. During this period, the PGEA's leading teachers guided 21 (twenty-one) researchers, with 10 (ten) guided by Prof. Dr. Angélica Góis Morales and 11 (eleven) guided by Prof. Dr. Cristiane Hengler Corrêa Bernardo. It is important to note that the PGAD, which began its activities in 2014, with its first master's course, started its doctoral course in August 2019 (FCE, 2023). Therefore, being a recent course with a duration of four years, few theses have been defended until 2023, and none have been guided by the teachers until now.

The analysis of the documents was carried out through an initial reading of the abstracts, keywords, introduction, and final considerations of each dissertation. It sought to verify how this research relates to the interfaces of management, environmental education, and communication. Box 1 presents a summary of the analyzed documents and for which SDGs¹⁰ the dissertations contribute directly or indirectly.

¹⁰ ODS1 Eradication of poverty; ODS2 Zero hunger and sustainable agriculture; ODS3 Health and well-being; ODS4 Quality education; ODS5 Gender equality; ODS6 Drinking water and sanitation; ODS7 Clean and accessible energy; ODS8 Decent work and economic growth; ODS9 Industry, innovation, and infrastructure; ODS10 Reduction of inequalities; ODS11 Sustainable cities and communities;

Box 1 – Dissertations and Theses Covering the Interfaces of Management, Environmental Education, and Communication

Year	Author	Advisory Committee	Title	SDGs
2016	Caroline P. Manoel	Cristiane H. C. Bernardo; Ana Elisa B. S. Lourenzani and Angélica G. Morales	Technical course in agribusiness at Centro Paula Souza: an analysis of the curriculum structure.	04
2016	Silvia Cristina Vieira	Cristiane H. C. Bernardo; Ana Elisa B. S. Lourenzani and Eduardo G. Satolo	The role of the extension agent in the bilateral flow of information between agribusiness researchers and rural producers.	04; 12 and 17
2016	Vanessa P. X. Satolo	Cristiane H. C. Bernardo; Ana Elisa B. S. Lourenzani and Angélica G. Morales	Interdisciplinarity in two postgraduate programs in agribusiness	04
2016	Carla N. B. Flozi	Angélica G. Morales; Cristiane H. C. Bernardo and Sérgio S. Braga Júnior	Analysis of environmental education in an agro-industry: a case study in the municipality of Guararapes/SP.	04; 09; 12 and 13
2017	Fábio F. dos Santos	Angélica G. Morales; Cristiane H. C. Bernardo and Nelson R. de Moraes	Communication and environmental education: a content analysis of the magazine XXI Ciência para a Vida da Embrapa.	04; 09 and 17
2018	Juliana C. Bernardes	Cristiane H. C. Bernardo; Ana Elisa B. S. Lourenzani and Lorena C. Fleury	From city to countryside: analysis of the characteristics of the ruralized urban youth	11
2018	Luana F. Pires	Angélica G. Morales; Fernando F. Putti and Sandra Cristina. de Oliveira	Water Footprint as a management tool for water resources: analysis in cassava processing plants of the Rural Development Office of Assis.	12
2019	Cristina V. dos R. Fernandes	Angélica G. Morales; Ana Elisa B. S. Lourenzani and Manoel B. B da Costa	Narratives of family farmers: under an agroecological perspective.	02; 03 12 and 15

ODS12 Responsible consumption and production; ODS13 Action against global climate change; ODS14 Life below water; ODS15 Life on land; ODS16 Peace, justice, and effective institutions; and ODS17 Partnerships and means of implementation (UN, 2023).

Year	Author	Advisory Committee	Title	SDGs
2019	Omar Fernando de Carvalho Júnior	Cristiane H. C. Bernardo; Kássia Watanabe and Eduardo Kawasaki	The correlation between the principle of human dignity and the environment with a focus on sugarcane straw burning.	12
2020	Luiza R. Trisoglio	Cristiane H. C. Bernardo; Andrea R. Scalco and Timóteo R. Queiroz	Social networks as a marketing strategy in the Short Food Supply Chain (SFSC): a case study.	02 and 09
2020	Mara Sílvia R. Ramos	Cristiane H. C. Bernardo; João Guilherme de C. F. Machado and Timóteo R. Queiroz.	The potential of organized groups on social networks for the adoption of innovation in Brazilian livestock: the case of the Brazilian Livestock Group, GPB.	09 and 17
2020	Flávia Eliana de Melo Colucci	Angélica G. Morales; Sandra Cristina de Oliveira and Pedro Fernando Cataneo	The environmental theme in the undergraduate law course: a focus on curricular environmentalization.	04
2020	Josiane Tamires S. Silva	Angélica G. Morales; Dra. Sandra Cristina de Oliveira and Wanda D. Miotto	Bibliographic and documentary analysis of environmental education in early childhood education in the municipalities of Parapuá and Rinópolis-SP.	04
2021	José H. Ndambuca	Cristiane H. C. Bernardo; Ana Elisa B. S. Lourenzani and Roberto Bernardo	Crossed stories: rural extension in Brazil (from Oiapoque to Chuí) and in Angola (from Cabinda to Cunene).	17
2021	Júlio Martins J. Muhongo	Angélica G. Morales and Ana Elisa B. S. Lourenzani	Application of the IDEA Method for evaluating the sustainability of family farming establishments in the municipalities of Tupá/São Paulo and Ebo/Cuanza Sul.	02 and 12

Year	Author	Advisory Committee	Title	SDGs
2021	Valquiria Cristina Martins	Angélica G. Morales; Marília X. Cury and Nelson R. de Moraes	Knowledge and socio-environmental practices in the Vanuáre Indigenous Land: understanding the ethnoknowledge of the Kaingang and Krenak groups.	11 and 15
2022	Jéssica Dayane N. Pessoa	Cristiane H. C. Bernardo; João Guilherme de C. F. Machado and Ricardo C. G. Sant'Ana.	The scientific dissemination strategies of the Agricultural Research Institutes of the state of São Paulo aimed at the rural public.	09; 12 and 17
2022	Monique M. dos Santos	Angélica G. Morales and Roberto Bernardo	NBR ISO 14001:2015 Environmental Management System - analysis of the difficulties for maintenance in a food sector company.	04; 09; 12 and 13
2022	Karina A. Finati	Angélica G. Morales and Rodrigo L. Manzione	Environmental Education in the context of the Aguapeí and Peixe River Basin Committees.	04 and 06
2023	Evelin Aparecida F. P. Miyahara	Cristiane H. C. Bernardo; Roberto Bernardo and Angélica G. Morales	Analysis of the updates to ISO 14001:2015 compared to ISO 14001:2004 in environmental communication in a food and beverage industry.	04; 09, 12 and 13
2023	Luís Fernando P. Pereira	Cristiane H. C. Bernardo; Angélica G. Morales and Luciana F. Leal	The Discourse in "Torto Arado" and SDG 5: female voices enunciate the conflict between society and nature.	05

Source: Prepared by the authors (2023).

It is worth noting that the interdisciplinary research produced in PGAD demonstrates the importance of advisory committees with distinct areas and the relevance of dialogue and systemic reasoning in developing potential solutions for environmental issues (Satolo, 2016). Additionally, they express how organizations can benefit from the conscious management

of natural resources, using communication tools to disseminate their socio-environmental responsibility actions (Flozi, 2016; Santos, 2022). Therefore, developing research within the analyzed interfaces directly contributes to achieving the SDGs broadly.

ANALYSIS OF DISSERTATIONS GUIDED BY PGEA TEACHERS AND LEADERS: PROFILE OF GUIDED STUDENTS AND THEIR PRODUCTION

Over the ten-year history of the PGAD, numerous interdisciplinary studies and research have been developed. In this regard, this section highlights how the research guided by teachers Angélica Góis Morales and Cristiane Hengler Corrêa Bernardo is related to the interfaces of management, environmental education, and communication. Additionally, it demonstrates how the PGEA, directly or indirectly, has contributed to the interdisciplinary dialogue in the dissertations guided by both teachers, considering that most of the postgraduates mentioned here were or are active members of the PGEA.

The mission of the PGAD is to develop interdisciplinary research and train human resources for high-quality scientific research and teaching, capable of acting in public and private institutions, anticipating the demands and problems of agribusiness, contributing to socio-economic and environmental development, and providing analyses and solutions to enhance its competitiveness and regional and national development (PGAD, 2023). Thus, concerning studies on agribusiness, it is worth noting that it is an interdisciplinary and fruitful field of investigation in the areas of education and environmental management, with communication as a tool for disseminating scientific knowledge and as a fundamental theoretical contribution to understanding how relationships between society and nature are established. It is also worth noting that in the PGAD, there is a mandatory course “Construction of Interdisciplinary Knowledge” in which the two teachers jointly teach, and two optional courses, “Society and Nature Relationship” and “Scientific Dissemination,” under the responsibility of Prof. Angélica and Cristiane, respectively, which permeate their areas of academic training and work in the PGEA and PGAD groups.

To identify the areas of knowledge that encompass the training of the graduates and students guided by the teachers and leaders of the PGEA, Figure 1 portrays the profile of postgraduate students.

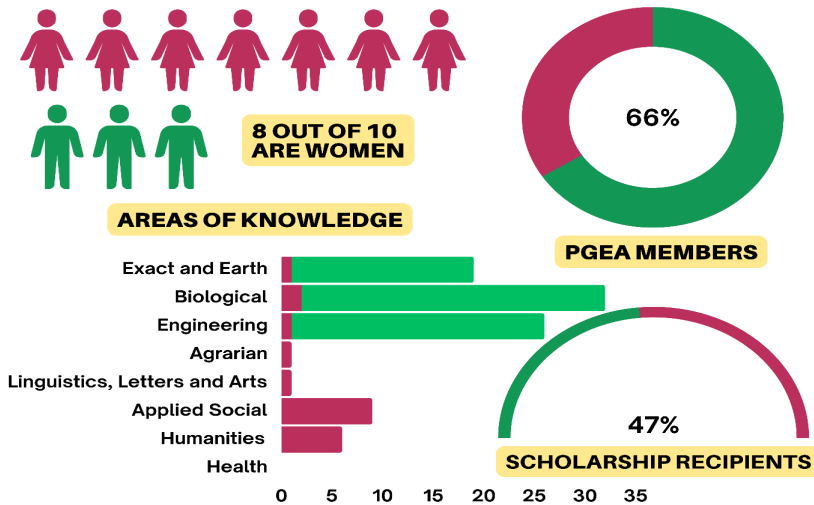
Of the 21 researched, 76% were conducted by women and 24% by men. Of this amount, 47% of postgraduate students received scholarships to develop their research. According to the United Nations Educational, Scientific and Cultural Organization (Unesco), in the fields of science and culture, there is a gender disparity; data show that women represent only 30% of scientists worldwide (Unesco, 2019). In this sense, it is possible to highlight that the PGEA has contributed to the inclusion of more women in research.

Another highlighted point is related to the areas of knowledge (figure 1), as there is heterogeneity in the students' training. Among the professional areas are training in veterinary medicine; environmental management; social communication/journalism; biology; environmental engineering; pedagogy; administration; law; philosophy; geography; architecture and urbanism, and literature. This heterogeneity occurs because the PGAD is an interdisciplinary program and, therefore, receives postgraduate students whose training is in the most varied areas of knowledge.

In this research, the active members of the PGEA were also verified. Of the 21 students and graduates guided by teachers Angélica Góis Morales and Cristiane Hengler Corrêa Bernardo, 66% were or are part of the PGEA. It is important to clarify that only members who are officially registered with the National Council for Scientific and Technological Development (CNPq) and had active participation in PGEA activities were considered. From the analysis of the keywords of the analyzed dissertations, the wide variety of themes studied in PGAD is perceived (Figure 2).

The mapping carried out refers to the themes used for the development of the 21 analyzed dissertations. As evidenced in Figure 2, the words environmental, education, rural, communication, and sustainability stand out. It is observed that the occurrences presented in the dissertations are very close. This fact corroborates the idea that the research is aligned with the interfaces of the PGEA. Thus, the following presents the categories of analysis of the productions, the dialogues established between them, and their interfaces with the SDGs.

Figure 1 – Profile of PGAD Students and Graduates Guided by PGEA Teachers and Leaders



Source: Prepared by the authors (2023).

Figure 2 – Word Cloud of Analyzed Dissertations



Source: Prepared by the authors (2023).

ENVIRONMENTAL MANAGEMENT (ISO 14001)

Environmental management comprises the guidelines and administrative activities carried out by an organization to achieve positive effects on the environment, to reduce, eliminate, or compensate for the environmental problems arising from its operations, and to prevent others from occurring in the future (Barbieri, 2016). Thus, among the works carried out, Flozi's (2016) research aimed to analyze how environmental education is embedded in the organizational structure of an agro-industry in the municipality of Guararapes/SP. The author highlights the development of actions such as training and lectures on environmental education developed by the management of the studied agro-industry and demonstrates a direct relationship between management and environmental education in the business context.

Furthermore, Flozi's (2016) work relates to the studies conducted by Santos (2022) and Miyahara (2023). With the objective of "analyzing the difficulties encountered by a food sector company in maintaining an Environmental Management System (EMS), according to the requirements of the ABNT NBR ISO 14001:2015 standard," Santos' (2022) research highlighted the challenges faced since the certification ABNT NBR ISO 14001:2015 implementation. The author highlighted various environmental management and education activities carried out by the studied company. Additionally, according to the research results, the challenges of maintaining EMS involve the three studied interfaces.

Moreover, Miyahara (2023, p. 15) investigated "how a food and beverage industry faced the update of the ABNT NBR ISO 14001:2015 certification compared to ISO 14001:2004, concerning environmental communication". The author highlighted the importance of organizational communication flow during the implementation of certification updates, involving management and environmental education strategies. Thus, the research contributes to the three interfaces under analysis.

ENVIRONMENTAL EDUCATION: SCIENTIFIC DISSEMINATION, TEACHING AND CURRICULUM, WATER RESOURCES, AND ETHNOCONKNOWLEDGE

Environmental education, conceived as a process of continuous and interdisciplinary training at all levels of education, is essential for building values, knowledge, and skills aimed at environmental conservation and promoting sustainability. The National Environmental Education Policy (PNEA), established by Law 9.795/99, and the National Environmental Education Program (ProNEA) emphasize the universality of this right, guaranteeing democratic access to environmental information (Brasil, 1999).

In the formal education context, various researchers highlight the importance of integrating Environmental Education interdisciplinarily in curricular subjects. The interconnection between communication and environmental education is explored by Santos (2017) in scientific dissemination, promoting awareness and social transformation. Silva (2020) focuses on early childhood education, Manoel (2016) on technical Agribusiness education, and Colucci (2020) on the undergraduate law course, emphasizing the need for interdisciplinary practices to develop critical thinking regarding environmental issues.

In the academic context, Satolo's (2016) research investigates postgraduate programs in Agribusiness, highlighting the importance of an interdisciplinary approach to understand the complexity of this field. Environmental education is addressed by Finati (2022) in river basin committees, emphasizing the relevance of a critical approach to participatory water resources management. Flozi's (2016) research analyzes the incorporation of Environmental Education in an agro-industry, evidencing practical application and internal training activities for awareness.

Finally, Martins' (2021) study portrays the ethnoknowledge of the indigenous Kaingang and Krenak groups, highlighting the importance of respecting traditional knowledge and preserving valuable socio-environmental practices.

In summary, the interdisciplinary approach to environmental education, supported by the PNEA and ProNEA, permeates various educational contexts and research practices. This approach is crucial for developing critical thinking, reflection, awareness, and sustainable actions concerning the environment, strengthening participatory management and promoting the appreciation of traditional knowledge.

COMMUNICATION AND ITS INTERFACES: SCIENTIFIC DISSEMINATION, RURAL EXTENSION, CULTURE, LAW, AND MARKETING

According to Vilalba (2006, p.05), communication is “a word derived from the Latin term *communicare*” and means “to make common”, or “to associate”. Thus, at first, we can say that communicating is the social action of making common”.

Due to its relevance, communication is the subject of many research studies, as it plays a determining role in the development of scientific research, directly influencing the object of study and problematization (Bernardo, 2014). Thus, among the analyzed researches in the field of communication, there are the studies of Vieira (2016), Santos (2017), Ramos (2020), Trisoglio (2020), and Pessôa (2022). Besides communication, the researchers share the development of the rural context as a backdrop.

However, the field of communication was also observed in the researches of Satolo (2016), Flozi (2016), Bernardes (2018), Martins (2021), Santos (2022), and Finati (2022). Communication occurs in interfaces with other areas of knowledge, providing specific knowledge, as highlighted by Braga (2004). An example is Finati's (2022) research, which had environmental education as a field of study, but also interfaced with the field of communication by addressing the importance of activity in the participatory governance of river basin committees. This articulation between areas occurs mainly in interdisciplinary research, providing new reflections and expanding scientific knowledge.

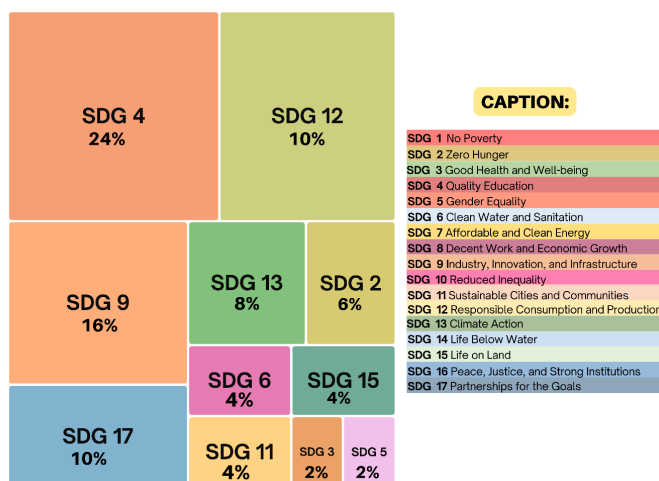
As presented in the previous topics, among the productions originating from PGAD, it is noteworthy that six (06) are related to the interface of

environmental management, twelve (12) to environmental education, and eleven (11) to communication. It is important to highlight that the studies interface with more than one of the investigated areas. Additionally, the studied themes demonstrate PGEA's connection with the development of interdisciplinary research in PGAD and contribute to the SDGs.

In recent years, the United Nations (UN), through the 2030 Agenda, proposed a global pact for sustainable development, aiming to ensure human development by meeting society's basic needs through a political, economic, and social process that respects the environment and sustainability (UN, 2015). Additionally, the 2030 Agenda encompasses 17 SDGs. Figure 3 demonstrates the established dialogues between dissertations and the SDGs.

According to the Times Higher Education (THE) International Research Institute, UNESP is part of the ranking that points to universities most aligned with the SDGs, and PGAD, together with PGEA, has greatly contributed to the development of research that collaborates to achieve the goals proposed by the 2030 Agenda (THE, 2020).

Figure 3 – Established Dialogues between Dissertations and SDGs



Source: Prepared by the authors (2023).

FINAL CONSIDERATIONS

This chapter, aimed at presenting the contributions of PGEA to interdisciplinary dialogue in scientific knowledge production, constituted in the master's and doctoral courses and products derived from PGAD and guided by PGEA's leading professors, provided an overview of the establishment of dialogical relationships, both in PGAD and within the PGEA group itself. Additionally, it sought to verify how these researches relate to the interfaces of management, environmental education, and communication.

This scenario allowed observing that the three interfaces were contemplated, sometimes between two perspectives and in some cases in all three. However, research was also observed that indirectly passes through one of the three interfaces and relates to other themes, including health, worker dignity, marketing, culture, rural appreciation, technical education, and postgraduate teaching and research.

It is worth highlighting that the research that interfaces between environmental management, education, and communication stems from an open space for interdisciplinary dialogue. A space where, besides the willingness for dialogue, there is also, inherently, the program itself located in CAPES' Interdisciplinary Chamber, and therefore, from the selection, it not only allows but encourages the admission of professionals from the most varied fields of knowledge. Additionally, the requirement for advisory committees also stimulates these interfaces to be possible.

Finally, it is concluded that the interaction between PGAD and PGEA offers the necessary resources and support for advanced research, allowing postgraduate students to deepen their understanding in various fields and contribute to the expansion of knowledge in a truly interdisciplinary manner. Through collaboration, students from different academic backgrounds create a fertile environment for exchanging ideas, perspectives, and approaches. They challenge traditional boundaries of disciplines, fostering innovation and solving complex problems that often transcend conventional knowledge barriers.

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