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Itinerant caravan of Science & Technology of Alagoas: trajectory of scientific diffusion and professional training

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ABSTRACT

This article presents the results of a research conducted in order to identify the potential of the performance model of the Itinerant Caravan of Science and Technology of Alagoas, as a strategy for professional training, developed under a university extension project. A qualitative approach research was carried out, characterized as a case study, through the experience report. The reports of the 15 editions of the project (2005 to 2019), field diary entries, responses to the evaluation questionnaires applied to the participants, as well as personal historical files of the coordination. All reports were approved by the project's partner institutions and funders. For the organization and analysis of the data, the document analysis technique was used. The selected documents were systematized from the perspective of content analysis, in the thematic modality aiming to identify the importance of itinerancy for university extension and the scope of the action for professional training. The results show the trajectory of the S&T Caravan and the importance of itinerancy for university extension and professional training. The performance model favors the inseparability of teaching, research and extension by promoting scientific dissemination activities taking the knowledge produced at the university to communities with less access to education and more distant from urban centers. The action-reflection-action movement carried out by the members of the group "caravaneiros" benefits the professional formation, by developing skills and competences necessary to disseminate the knowledge produced. The extension experiences provide an opportunity to capture talents for science, favoring professional training, and the conversion of their participation into academic credits is salutary. The movement also stimulates scientific dissemination, contributing for the population to know and reflect about the relevance of science, technology, their applications and social, environmental and ethical implications, empowering participants to build their own knowledge.

KEYWORDS: Scientific Communication and Diffusion. Community-Institutional Relations. Professional Training.

INTRODUCTION

Itinerant Caravan of Science and Technology of Alagoas (S&T Caravan) is a project of scientific dissemination that happens since 2005. Its creation was encouraged by the educational scenario in Alagoas and by the public policy for social inclusion established by the Ministry of Science, Technology and Innovation (MSTI) that established in 2004 the National Week of Science and Technology (NWST), stimulating the promotion of science and technology actions. This function is to mobilize the population, especially children and young people, around S&T themes and dissemination activities that value creativity, scientific attitude and innovation. It intends to show the importance of S&T to people's lives and to the country's development, allowing the population to know and reflect about the relevance of science, technology, their applications and social, environmental, and ethical implications, empowering participants to build their own knowledge (AUSTRILINO, 2016).

In the mobile science style, the project is carried out in an itinerant format, favoring more targeted interventions for access to various locations, being fundamental to promote the democratization of scientific knowledge and broaden the debate on relevant issues of science and technology, enabling greater capillarity of actions, avoiding that the reflections on S&T are restricted to the university environment and large urban centers.

The itinerancy enhances the action coverage, allowing a larger number of people to have access to the event. The route chosen for the S&T Caravan takes into account pre-established criteria, prioritizing the HDI of the cities and the regions of the state where the actions have not been carried out yet, including indigenous communities and quilombolas, because they are more excluded. According to Norberto Rocha and Marandino (2020, p. 3):

> The itinerancy was a strategy adopted by several institutions in the search for bringing society and the scientific universe closer together, with the intention of broadening the access of several layers of the population to the actions of scientific dissemination and science teaching.

Currently, Alagoas is a Brazilian state with approximately three million inhabitants, data from the Atlas of Human Development in Brazil reveal that, in the state, the percentage of the population vulnerable to poverty and without complete elementary education is 49.86% for the population of the rural area and 24.82% for the urban area (Brazil, 2010). Figures that show the need and relevance of educational investments that enhance the approach of scientific dissemination with the population.

The S&T Caravan is an initiative of a group of professionals interested in scientific dissemination, in partnership with several educational institutions and public and private funding. The Usina Ciência, a university extension organ of the Federal University of Alagoas (UFAL), the Astronomical Studies Center of Alagoas (CEAAL) and the Medical School of UFAL are the partners that compose the coordinating core of the action. The project is integrated in the university extension actions aiming at the inseparability of teaching, research and extension. For Gonçalves (2015), "the indissociability may represent a response of universities

to social demands, dialoguing with the most different sectors of society, in a constant and active way, aiming at the formation and production of knowledge".

The interdisciplinary group, composed of professors, technicians, and university and basic education students, is responsible for organizing the entire S&T Caravan process, from the planning, execution and evaluation of the activities carried out (AUSTRILINO & MENEZES, 2007). Adhesion to the project is voluntary, and participants from all areas of knowledge who experience the proposed activities in practice, with the external public, are part of the group. These take place in the format of courses, events, workshops, service provision, among other types of activities. The approximation with the world of work, the need to improve and/or build one's own professional practice and the opportunity to interact with the community in general are reasons that encourage participation in the group. The activities are agreed upon with the municipal education secretariats, and take place preferably in a school environment, favoring the broad participation of students, teachers, family members, and members of the communities near the institutions. In some editions, they also took place in urban laser areas, squares, seashore, and indigenous communities.

In the context of university extension projects, partnerships are articulated to give the necessary support to the action, helping with fundraising, selecting the groups that make up the technical team, collaborating in the registration and dissemination of the experience, thus contributing to increase the number of activities carried out and the dissemination in the press.

Aiming to expand the possibilities of reaching a larger audience and establish links in the cities it passes through, the technical team promotes the creation of Science Dissemination Centers, favoring the continuity of the actions that have been built with the training of multipliers for the dissemination of science (AUSTRILINO et al, 2016).

The S&T Caravan, as a professional training strategy, aims to generate cognitive growth, from the action-reflection-action movement required in the planning, development, presentation and evaluation of science dissemination activities. These should be in line with the themes established each year for the NWST (MEDEIROS et. al, 2020). The themes lead to the discussion of social, environmental, ethical, and political issues requiring an interdisciplinary approach, creating contexts that favor significant learning and the acquisition of skills, abilities, and attitudes necessary for action.

After its 15th edition, it is necessary to evaluate and deepen the knowledge about the Caravan's implementation process in order to obtain subsidies for decision making, regarding the continuity and adjustments in the project aiming its "insertion as curricular credits required for graduation in university extension programs and projects" (FORPROEX, 2012, p. 30). From this perspective, we question: What are the contributions of the performance model of the S&T Caravan to professional training, from the perspective of inseparability teaching, research, extension?

The objective of this work is to present the potentialities of the scientific dissemination model carried out by the S&T Caravan as a strategy for professional and scientific education, developed within the scope of an itinerant university extension project, since the resulting reflections will serve as support for planning

new actions and inserting participation as curricular credits required in graduation, as well as showing the impacts on education of this pedagogical practice.

METHODOLOGICAL PATH

This research was conducted within the qualitative approach, characterized as a case study, through an experience report. For the organization and analysis of the data, the document analysis technique was used. This technique allows us to organize information that is dispersed, giving it importance as a source of consultation. By document we mean written, numerical or statistical material, TV programs, iconography, among other supports that have not yet received analytical treatment (PRODANOV; FREITAS, 2013). Their use in research should be valued, due to the wealth of information that can be extracted from them (SÁ-SILVA, ALMEIDA AND GUINDANI, 2009).

The documents consulted were the reports of the 15 editions of the project, records in field diaries, answers to the evaluation questionnaires applied to the participants, as well as personal files of the coordinator. All the reports analyzed, from 2005 to 2019, were approved by the funding agencies and partners in the action.

The selected documents were systematized from the perspective of content analysis, in the thematic modality, which consists of a methodological instrument that can be applied to various discourses and all forms of communication, whatever the nature of the support. This technique, according to Bardin (1997), is focused on the objective and systematic description of the content and allows the understanding of the messages of the documents, classifying them into representative categories of the meanings of the communications encompassing the three phases: pre-analysis, exploration of the material and treatment of the results.

The pre-analysis involves "floating reading", the first contact with the documents that will be analyzed, their selection and the elaboration of indicators that will guide the interpretation. Guided by the theoretical framework and with the definition of the procedures to be followed, the exploration phase begins with the organization of the indicators and the choice of categories. The exploration of the material and treatment of the results finalize the data analysis with the reorganization of the categories, choosing those that reflect more consistency with the purpose of the research in order to produce or rework knowledge, present new ways of understanding the facts and provide knowledge of how they have been developed.

The analysis was carried out from the perspective of the pedagogical approach and its relationship with professional training and the inseparability of teaching, research, and extension. In addition, the following indicators were observed to evaluate the performance of the action: number of participants, social profile and qualification of the technical team. The data show the trajectory of the S&T Caravan in its 15 years of existence and the importance of itinerancy for university extension and professional training.

RESULTS AND DISCUSSION

University extension, professional training and itinerancy

Integrated by university extension projects from public and private educational institutions, the S&T Caravan provides opportunities for training experiences based on the progressive perspective (FREITAS AND QUEIRÓS, 2019) that considers the subject responsible for his or her own development, capable of questioning his or her performance in an autonomous, critical, creative and participatory way, in a permanent dialogue between theory and practice in the perspective of bringing university-society closer together.

University extension is the action of an educational institution with the community, where teachers, students and professionals experience in practice, elements of their areas of expertise, socializing and democratizing knowledge with the external public. It takes place in the format of courses, events, workshops, service provision, among other activities, and aims to articulate the inseparability of teaching, research and extension, stimulating the university-society relationship (FORPROEX, 2015).

According to Gatti (2008) training processes aim to contribute to the acquisition of skills and professional performance and can be carried out in the context of university extension or post-graduation lato and/or stricto senso, these processes aim to contribute to the acquisition of skills and professional performance. Basic education does not provide an adequate basis for professional performance. Therefore, training should be encouraged, whether for updating or for the need to renew knowledge. In this perspective, Gardin and Alcará (2019) highlight Delors' (1998) conception that education should be organized around four fundamental lifelong learning: learning to know, learning to do, learning to live together, and learning to be.

For Perrenoud (2000), the training process aims to develop and improve professional skills. These include managing their own training, working in groups, knowing how to deal with problem situations and heterogeneity, knowing how to communicate, explaining their own practices, and facing the duties and ethical dilemmas of the profession. Although the competencies outlined by Perrenoud (2000) were proposed with teaching in mind, other training initiatives involving different areas of knowledge may occur based on these premises.

Considering that initial training lasts less time than professional activity and that knowledge is changing, it becomes necessary to think of strategies to train people with knowledge, skills, competencies, and attitudes that favor learning over time. Science popularization environments such as the one provided by the S&T Caravan actions enable the interaction between people with different backgrounds, requiring different skills to organize and conduct the work, formulating procedures to be incorporated into the teaching-learning process, aiming to find ways to implement innovative and effective practices necessary for the itinerancy.

It is important to consider that itinerancy favors the recognition of the diverse educational contexts that exist, contributing to broaden the knowledge about the social demands of the reality experienced in the places visited. Thus, itinerancy

strengthens the public educational system, promotes the interaction between science and society, democratizing and popularizing science for those who have less access to these resources.

Itinerancy requires a work system aimed at making the project operational, which happens according to the guidelines drawn up together with the work teams. For this, responsibilities are defined in two dimensions: the organizational and the pedagogical. The organizational dimension demands planning and a systematic preparation for the arrival and stay of the S&T Caravan.

At this stage, it is necessary: to visit the chosen cities based on previous criteria; to establish partnerships; to prospect, checking the access conditions; to mobilize the community to participate in the actions; to select the physical space that meets the specific characteristics of the activities to be carried out (e.g. capacity to house the inflatable planetarium) and to identify adequate accommodations for the lodging and meals of the group members, who are called " caravanners". Plotting the travel route in advance is important to minimize costs and travel time, giving more agility to the action.

The S&T Caravan visits follow the previously scheduled route, usually spending one day in each city. Arriving in the morning, the physical space where the activities will take place and the public attendance is organized according to the schedule made by the local organizing committee. The working hours are from 10am to 10pm, with a one hour break for lunch and dinner at the school. This systematic is repeated every day during the week. Chart 1 shows the route taken in the 15 editions, in the order of the cities visited. Emphasis on the years 2010 and 2014, in which the actions went beyond the state of Alagoas, reaching Canindé do São Francisco and São Pedro Island, an indigenous village of the Xocó tribe, in the municipality of Porto da Folha, both in Sergipe.

Chart 1 – Route of the S&T Caravan 2005 to 2019

YEAR	ROUTE
2005	Maceió, Palmeira dos Índios, Delmiro Gouveia e Arapiraca
2006	Maceió, Palmeira do Índios, Santana do Ipanema, Delmiro Gouveia, Arapiraca and Viçosa
2007	Maceió, Viçosa, Santana do Ipanema, Água Branca, Arapiraca, Piaçabuçu
2008	Maceió, Matriz de Camaragibe, União dos Palmares, Pilar, Teotônio Vilela, Santana do Ipanema
2009	Maceió, Barra de Santo Antônio, Viçosa, São Miguel dos Campos, Santana do Ipanema and Piaçabuçu
2010	Maceió, Igreja Nova, Penedo, Pão de Açúcar, Piranhas, Canindé do São Francisco (Se)
2011	Maceió, Penedo, Pão de Açúcar, Piranhas, Delmiro Gouveia
2012	Maceió nos bairros: Farol, Vergel do Lago, Selma Bandeira, Benedito Bentes II and Jacintinho
2013	Rio Largo, Arapiraca, Delmiro Gouveia, Dois Riachos, Matriz do Camaragibe
2014	Maceió, Porto Real do Colégio, Traipu, Aldeia Xocó and Ilha de São Pedro (Se)
2015	Maceió, União dos Palmares, Santana do Ipanema and Delmiro Gouveia
2016	Maceió, São Luiz do Quitunde, Branquinha, Rio Largo and Palmeira dos Índios
2017	Belo Monte, Palestina, Batalha and Maceió
2018	Pariconha (aldeia Jiripancó), Mata Grande, Inhapi and Água Branca
2019	Capela, Cajueiro, Pilar, Atalaia

Source: Own authorship (2021).

In the pedagogical dimension, the caravanners are stimulated to propose and carry out playful and interactive activities using methodologies that awaken creativity, experimentation, and interdisciplinarity, aiming to generate inquiry and interest in science, seen as a way to transform the quality of life and relationships among people. The activities must also alert to the social repercussions of the scientific fact, contemplating the formation of citizens capable of making decisions, favoring the socialization of knowledge in a relationship that transforms reality, as well as, promoting the articulation between various areas of knowledge, propitiating innovation, arousing research and instigating the search for knowledge (AUSTRILINO et al, 2018).

Itinerancy, as a way to replicate the same event in diversified contexts, plays an important role in the development of professional skills, as well as in the production of knowledge. Performing the same activity in different physical spaces and for different audiences favors the action-reflection-action movement (SCHON, 1999) contributing to the development of critical attitudes that point to ways to overcome the challenges of education, with regard to scientific dissemination and ways to organize and conduct the teaching learning process. In this way, the itinerancy is an important strategy for the dissemination of science and professional training, by bringing scientific knowledge closer to the community in general.

Pedagogical approaches and their unfoldings

Moita and Andrade (2009, p. 269), state that the inseparability of teaching, research, and extension "[...] is a principle that, if put into action, prevents the reductionisms that occur in university practice: either the production of new knowledge is emphasized, or the intervention in social processes, or even the transmission of knowledge in professional training".

In the area of science education, some works highlight the importance of training for the exercise of citizenship. To this end, it is necessary to go beyond the scientific content, incorporating the discussion of technological, political, economic, social, environmental, and ethical dimensions (SANTOS AND MORTIMER, 2000, AUSTRILINO, 2000). According to Luz, Araújo-Queiroz and Prudêncio (2019) "in the context of science education there are two denominations to characterize the field that studies the interrelationships between science, technology and society: the STS and STSA perspective".

The term Science, Technology and Society (STS) is used when it refers to the study of the scientific fact, addressing the social and ethical implications related to the use of science and technology, while, STSA refers to the relationship between science, technology, their applications and social and environmental implications. The STS/STSA approaches allow the development of knowledge, which is fundamental to enable students to make decisions and discuss issues they experience in their daily lives (LUZ, ARAÚJO-QUEIROZ AND PRUDÊNCIO, 2019).

To instigate a critical understanding of reality, aiming to make the STS/STSA approaches viable in science teaching, from a Freirean perspective, the thematic approach is a teaching strategy in which the contents to be worked on are chosen based on a theme, as in the Freirean Thematic Approach (DELIZOICOV, ANGOTTI

and PERNAMBUCO, 2002). Being essential for an emancipating education, the theme is chosen according to the relevance and emergency they have in the context, from there the scientific content is integrated, enabling problematization and contextualized analysis, fostering reflection on science, technology, their implications and social, environmental and ethical applications.

Born within the scope of these discussions, the NWST presents each year, a theme to be worked on. They were themes focused on various issues that favor, according to Fonseca et al. (2018), the formation of a new consciousness, that during the teaching-learning process, educators and students in cooperative work, find ways to overcome problems arising from reality.

The theme adopted and pre-established by MSTI gives rise to the proposals of activities to be carried out. The proponents plan, organize and execute the activities, always trying to link the scientific concepts to the theme and to imprint the interdisciplinary, playful and interactive character to the actions. In addition, the activities should last around 50 minutes and promote discussions from a STS/STSA perspective. The students are supervised by teachers who accompany them in the planning and elaboration. Health students are accompanied by medical tutors. Chart 2 presents the themes worked by the S&T Caravan in the analyzed period.

Chart 2 – List of themes of the 15 editions of the S&T Caravan

YEAR	THEME OF THE 15 EDITIONS 2005 – 2019
2005	Brazil, look at the water
2006	Creativity and innovation
2007	Earth
2008	Evolution and Diversity
2009	Science in Brasil
2010	Science for Sustainable Development
2011	Climate change, natural disasters and risk prevention
2012	Green economy, sustainability and poverty eradication
2013	Science, Health and Sport
2014	Science and technology for sustainable development
2015	Light, Science, and Life
2016	Science feeding Brazil
2017	Math is in everything
2018	Science for the reduction of inequalities
2019	Bioeconomy: diversity and wealth for sustainable development

Source: Own authorship (2021).

For the caravaners, the itinerancy is an opportunity to learn and develop skills and to improve and/or build their own professional practice. The approximation with the world of work, the opportunity to interact with the community in general, are reasons that encourage participation in the group. Besides this, proposing, planning, developing and executing activities, facing unforeseen and unknown situations, provide opportunities to exercise protagonism, "deconditioning oneself from the attitude of mere content receiver, effectively searching for knowledge relevant to the problems and learning objectives" (MITRE et al., 2008, p. 2137).

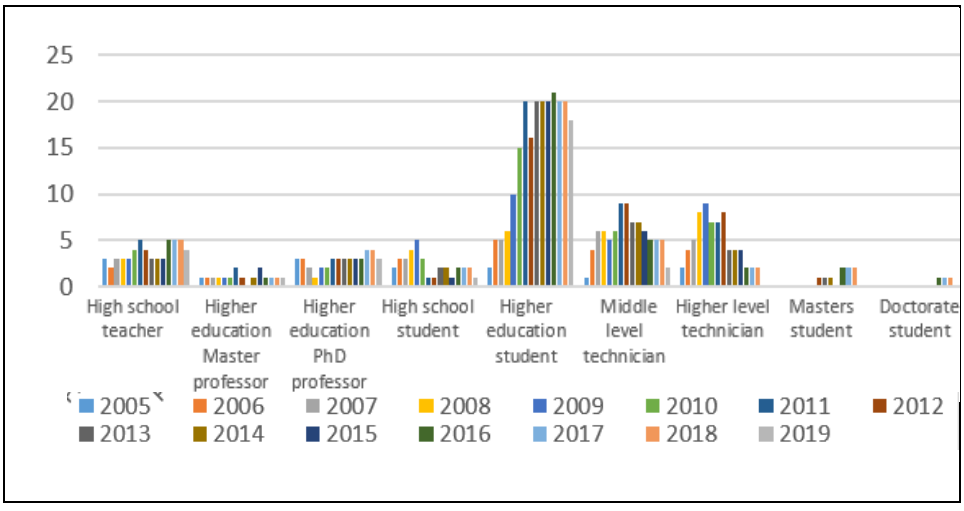
On average, 78 activities are held per year, in various formats involving themes related to physics, chemistry, biology, mathematics, environment, health,

literature, humanities and physical education. Of the activities, 64% are workshops with various contents related to the theme, 16% in the show format, covering physics, chemistry and biology, 8% exhibitions, 5% activities related to astronomy, planetarium sessions, observing the sky with a telescope, rocket launching, 4% lectures and 3% video screenings.

In addition to these activities, there are records of technical visits to hydroelectric plants, historical sites, exploration of the São Francisco River and riverside towns, health service provision, visits to indigenous and *quilombola* communities, showing of scientific films, science fairs, scientific journalism workshops, and courses for the dissemination of science. Thematic exhibitions such as: literature and its connections with the arts and science, cosmic landscapes, everyday scenes from the São Francisco River, and about the lives of scientists such as Marie Curie and Einstein. Lectures and debates about the themes of each year, theatrical presentations, activities about astronomical ephemerides, such as the events during the lunar eclipse and the transit of mercury through the Sun were held.

The group of caravanners is made up of volunteers from different areas and with different academic backgrounds. They are elementary, high school and college teachers, high school, college and post-graduate students - masters and doctorate -, high school and college technicians from public and private institutions, who participate in the whole process, from diagnosis, planning, execution and evaluation of the scientific activities carried out (AUSTRILINO & MENEZES, 2007). Graph 1 shows the distribution of the technical team's qualifications by year of activity. It is noteworthy that there are members who began their activities as high school students and accompany the group, currently as a doctoral professor.

Graph 1 – Qualification of caravanners from 2005 to 2019



Source: Own authorship (2021).

The articulation of teaching, research, extension results in knowledge production registered in national and international publications, with participation in events outside the state and the country. In 2008, the S&T Caravan received the 1st place in the MST Brazilian Talent Award 2008/ On-line Category, at the 12th

Inventor's Salon, held in Vitória, Espírito Santo. Chart 3, presents a list of published works by participants of the group.

Chart 3 – Published works resulting from the action

YEAR	PUBLICATION
2007	AUSTRILINO, L Semana Nacional de Ciência e Tecnologia de Alagoas: A Caravana itinerante de C&T de Alagoas. X Reunión de La Red de Popularización de la Ciencia y la, Tecnología en Caribe (RED POP-UNESCO). San José, Costa Rica 2007
2009	AUSTRILINO, L Semana Nacional de Ciência e Tecnologia de Alagoas: 6 anos Caravana itinerante de C&T de Alagoas. Maceió, AL: SECTI, 2009
2010	AUSTRILINO, L. BRANDÃO, I. Ciência em Alagoas: conexões com as artes e a literatura. Maceió, Al: SECTI, 2010
2013	CRUZ, J. A. S.; LESSA, V. J. C.; ALVES, P. M. P.; VITAL, S. M.; SANTOS, D. A. M.; MACHADO, F. F. N, Avaliação do conhecimento sobre diabetes em população usuária do Sistema Único de Saúde (SUS) durante campanha do dia mundial do diabetes em Maceió; Arquivos brasileiros de Endocrinologia e Metabologia, Vol. 57, Suplemento 04, junho 2013. ISSN 2446-5429
2013	FREIRE E. F.; COUTO, M. L.; MENDES, R. L. F.; BARROS, B. C. C.; SANTOS, D. A. M.; SILVA, J. A. Avaliação antropométrica e dos fatores de risco cardiovasculares em amostra populacional de usuários do SUS durante campanha no dia mundial do diabetes em 2012 em Maceió, AL Arquivos brasileiros de Endocrinologia e Metabologia, Vol. 57, Suplemento 04, junho 2013. ISSN 2446-5429.
2014	AUSTRILINO, L. Semana Nacional de Ciência e Tecnologia de Alagoas: 10 anos Caravana itinerante de C&T de Alagoas. Maceió, AL: SECTI, 2014
2014	AL. NASCIMENTO, JOYCE S; RICARDO, GUSTAVO P; BARROS, BRENDA C C; SANTOS, DIEGO AM; MACHADO NETTO, FRANCISCO F; SILVA, JOSÉ. A Relação entre o padrão androide de distribuição da gordura corporal em mulheres climatéricas participantes da semana nacional de ciência e tecnologia 2013, em Maceió. Arquivos Brasileiros de Endocrinologia & Metabologia. ISSN 0004-2730. Vol. 58, Suplemento 04, junho 2014
2016	MACHADO NETTO, FRANCISCO F; RICARDO, GUSTAVO P; SANTOS, DIEGO AM; VITAL, KELVYN M; SILVA, JOSE A Avaliação da ingestão dietética de cálcio em uma amostra populacional participante de um evento de educação em saúde em Maceió/AL. Arquivos Brasileiros de Endocrinologia & Metabologia. ISSN 0004-2730. Vol. 58, Suplemento 04, junho 2014
2016	AUSTRILINO, L. JESUS, J. C. 11ª Caravana itinerante de C&T de Alagoas. Atas Congresso Internacional Avance de las Mujeres em las ciências, México: UAM, 2016.
2018	ARAUJO, C. S et al. Atuação discente e docente de Medicina no Programa de promoção da segurança nas escolas em cidades às margens do Rio São Francisco. In SAMPAIO, J F et al. (Org). Extensão universitária e promoção da saúde. Maceió/Alagoas. EDUFAL, 2018
2019	AUSTRILINO, L. VILELA, ROSANA Q. B.; PASSOS, FRANCISCO JOSÉ S.; LIMA FILHO. ANTÔNIO PASSOS; LAMENHA, MÉRCIA M.; JESUS, JANE CLEIDE de Caravana de Ciência &Tecnologia: uma experiência de formação no contexto da extensão universitária. Atas Investigação qualitativa em Educação, CIAIQ, 2019, p. 620-625.
2020	MEDEIROS, M. L., LIMA FILHO, A. P., AUSTRILINO, L., COSTA, A. D. P. V., SOARES F. J. P. Promoção da Saúde e a Prevenção da Obesidade. In: SANTOS, A. A. dos, (org.). Educação em saúde: trabalhando com produtos educacionais. Alagoas: Editora Hawking, 2020, v. 2, 405f. ISBN 978-65-88220-03-0 DOI 10.29327/522658 1

YEAR	PUBLICATION
2020	MEDEIROS, M. L.; AUSTRILINO, L.; COSTA, A. D. P. V.; SOARES, F.J. P. Do Rio São Francisco ao Sertão na Caravana Alagoana de Ciência e Tecnologia. In: NUNES DA SILVA, A. J. (org.) Educação: agregando, incluindo e almejando oportunidades. Ponta Grossa, PR: Atena, 2020. DOI 10.22533/at.ed.1842025097
2021	AUSTRILINO, L.; PASSOS, F. J. S., MEDEIROS L. M.; JESUS, J. C. Protagonismo feminino na Caravana de Ciência e Tecnologia de Alagoas. VII Congresso Internacional Avances de las Mujeres en las Ciencias, las humanidades y todas as disciplinas, México, 2021.

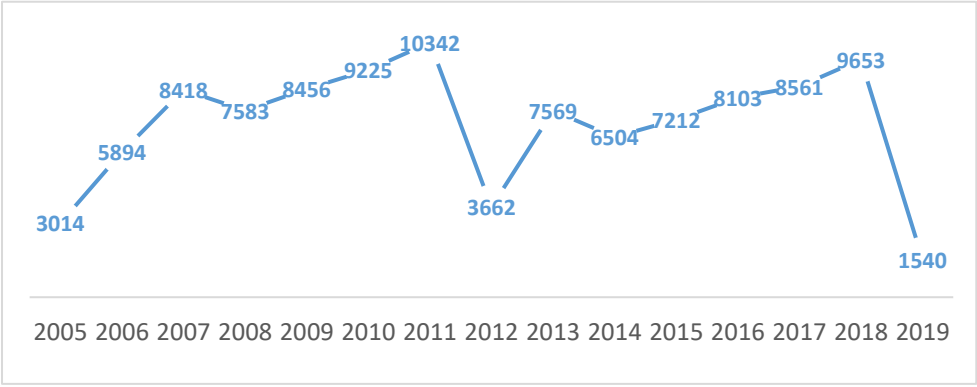
Source: Own authorship (2021).

The diversity of education, the interdisciplinary perspective, and the stimulus to the principle of inseparability of teaching, research, and extension, provide an opportunity for the diffusion and transfer of knowledge produced in the scope of the project. We highlight the importance of itinerancy for the collection of research data. Replicating the activities in different situations favors the evaluation of the pedagogical material produced. Exhibitions and educational games are improved and validated by the participating public.

The use of diversified strategies to present scientific knowledge, provides an opportunity for greater adhesion of the public to participate in the activities, broadening the interest in science, as well as contributing to capture talents for scientific work and favoring reflection in a critical perspective.

The activities take place according to the schedule, in the morning, afternoon and evening shifts (including EJA - Education for Young People and Adults). The experiments are replicated every hour, during the whole working day. This system gives the chance to attend a larger number of people and the public present can choose the sequence of activities they want to participate in. Graph 2 shows the number of visitors per year.

Graph 2 – Number of visitors per year



Source: Own authorship (2021).

It is worth noting that the activities in 2019 were not carried out in their entirety, since the resources requested from the funding agency were not released in a timely manner. The continuity of the action in 2020 did not happen due to the Covid-19 pandemic and the non-authorization of the use of resources, decreasing the number of activities, participants, and cities served in the 15th edition.

Projects of this nature should be encouraged, since "we still have many students graduating from public universities without even considering or experiencing research activities or the production of knowledge, nor elements inherent to extension" (GONÇALVES, 2015, p. 1231).

The data presented show the potential of the S&T Caravan as a project of scientific dissemination, itinerancy and university extension. The activities provide opportunities for critical reflection on the knowledge produced, a condition for achieving meaningful learning. By experiencing extension activities, formulated in the perspective of problematization, articulating with teaching and research, they promote the inseparability of teaching, research, extension.

FINAL CONSIDERATION

The analysis of the 15 editions of the itinerant project of university extension and scientific dissemination, points to some answers to the question: what are the contributions of the S&T Caravan performance model for professional education in the perspective of inseparability of teaching, research and extension? The analysis made it possible to understand the implications of the model for the pedagogical practice, providing subsidies for the planning of new actions and decision making, regarding the inclusion of participation as credits in the graduation.

The results show that the work systematics of the S&T Caravan favors, in particular, the following aspects: production and dissemination of knowledge; encouragement of the inseparability of teaching, research and extension; development of skills inherent to scientific work and professional performance; opportunity to attract talent for science; sensitization to the dissemination of science; possibility of getting to know other realities and work strategies, obtained through itinerancy and the exchange of experiences among participants.

Regarding the opportunity to produce and disseminate knowledge, the publications demonstrate the potential of the model, which seeks, based on pre-established themes, to encourage and articulate research groups, with systematized and planned interventions aimed at bringing university and society closer together, and it is in this movement that inseparability takes place.

The itinerancy promotes the possibility of replicating the same activity for different audiences, this strategy provides opportunities for the exchange of experiences and knowledge, favoring the development of skills inherent to the scientific work and professional performance. Provoked by the problematization of the themes, at each interaction with the visiting public, new reflections and questions arise, promoting the strengthening and the understanding of the relationship between science and real problems. Those who persist in this quest for new knowledge are talents to be captured for the continuity of scientific work.

To contextualize the performance of the S&T Caravan presenting systematized information about the number of members, qualification of the technical team, number of participants is important to sediment data and subsidize the scope of the project. Explain that the indicators presented were obtained due to the collective work of the group based on respect for diversity, considering ethical

aspects and the skills and abilities required for the professional and personal development of those involved.

Regarding the insertion of participation in the project as curricular credits required for graduation, we conclude that the S&T Caravan plays a key role in the articulation between interprofessional education and university extension. By understanding the dynamics of the methodology that involves teaching, research and extension, favoring the production of knowledge, the interaction between university and society, and following the legislation that aims to curricularize the extension, the managers of Higher Education Institutions have the opportunity to give more support to this project. Thus, it is possible to foresee some challenges to include credits in the undergraduate curriculum, arising from the participation in the S&T Caravan, such as establishing the workload, due to the diversity of planned activities to be fulfilled, securing financial resources and expansion to other areas of science.

This extension experience is a powerful tool for promoting educational activities with the purpose of stimulating the formation of critical, reflective professionals, able to identify and propose solution alternatives, scientifically contextualized, for real problems.

Caravana itinerante de ciência e tecnologia de Alagoas: trajetória de divulgação científica, extensão e formação profissional

RESUMO

Este trabalho apresenta os resultados de uma pesquisa realizada com o objetivo de identificar as potencialidades do modelo de atuação da Caravana itinerante de Ciência e Tecnologia de Alagoas, como estratégia de formação profissional, desenvolvida no âmbito de um projeto de extensão universitária. Foi realizada uma pesquisa de abordagem qualitativa, caracterizada como estudo de caso, através do relato de experiência. Foram consultados os relatórios das 15 edições do projeto (2005 a 2019), registro em diários de campo, respostas aos questionários de avaliação aplicados aos participantes, além de arquivos históricos pessoais da coordenação. Todos os relatórios foram aprovados pelas instituições parceiras e financiadoras do projeto. Para a organização e análise dos dados, foi utilizada a técnica de análise documental. Os documentos selecionados, foram sistematizados na perspectiva da análise de conteúdo, na modalidade temática visando identificar a importância de itinerância para extensão universitária e a abrangência da ação para a formação profissional. Os resultados mostram a trajetória da Caravana C&T e a importância da itinerância para a extensão universitária e formação profissional. O modelo de atuação favorece a indissociabilidade ensino, pesquisa e extensão ao promover atividades de divulgação científica levando o conhecimento produzido na universidade para comunidades com menos acesso à educação e mais afastadas dos centros urbanos. O movimento ação-reflexão-ação realizado pelos integrantes do grupo “caravaneiros” beneficia a formação profissional, por desenvolver habilidades e competências necessárias à divulgação do conhecimento produzido. As vivências de extensão oportunizam a captação de talentos para a ciência, favorecendo a formação profissional, sendo salutar a conversão da participação destes em créditos acadêmicos. O movimento também estimula a divulgação cientifica, contribuindo para que a população conheça e reflita sobre a relevância da ciência, da tecnologia, suas aplicações e implicações sociais, ambientais e éticas, empoderando os participantes para a construção de seus próprios conhecimentos.

PALAVRAS-CHAVE: Comunicação e divulgação da ciência. Extensão comunitária. Formação profissional.

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