

ROLE OF LOCAL EDUCATION PROGRAMS FOR A SUSTAINABLE CITY IN SOUTHERN BRAZIL

O PAPEL DOS PROGRAMAS DE EDUCAÇÃO LOCAL PARA UMA CIDADES SUSTENTÁVELIS NO SUL DO BRASIL

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ABSTRACT

The sustainable city punctuates the improvement of the well-being of people in society, in a sharing in the ways of planning and managing the urban space. This research aimed to analyze the role of local education programs in Passo Fundo (Brazil) to develop sustainable cities. In this analysis, we sought to describe the management of public policies in the area of education in the city; identify the characteristics of a sustainable city; and propose a set of actions in the area of public education for the city, in the direction of the concept of sustainable cities. Initially, a theoretical approach was made, starting from articles and books that deal with the subject. A descriptive, exploratory, qualitative research was carried out, with semi-structured interviews with five municipal managers linked to the education area of the chosen city. Data were computed, analyzed, and interpreted using content analysis. The results show that the notion and recognition of education and the sustainable city are evidenced, with the importance of citizen participation and education as a formative agent for the effectiveness of sustainable city development. It can be verified concerning management practices in education the practices of events to condition a sustainable city, the International Folklore Festival, the Book Fair, and the Literary Journey, although the lack of continuity of the programs was evidenced when there is a change in management.

KEYWORDS:

Sustainable cities space; Education; Sustainability.

RESUMO

A cidade sustentável pontua a melhora do bem estar das pessoas em sociedade, em um compartilhamento nas formas de planejar e administrar o espaço urbano. Esta pesquisa teve como objetivo analisar o papel dos programas locais de educação em Passo Fundo (Brasil) para o desenvolvimento de cidades sustentáveis. Nesta análise, buscou-se descrever a gestão das políticas públicas na área da educação no município; identificar as características de uma cidade sustentável; e propor um conjunto de ações na área de educação pública para a cidade, na direção do conceito de cidades sustentáveis. Inicialmente, foi feita uma abordagem teórica, partindo de artigos e livros que tratam do assunto. Realizou-se uma pesquisa descritiva, exploratória, qualitativa, com entrevistas semiestruturadas com cinco gestores municipais vinculados à área de educação da cidade escolhida. Os dados foram computados, analisados e interpretados por meio da análise de conteúdo. Os resultados evidenciam a noção e o reconhecimento da educação e da cidade sustentável, com a importância da participação cidadã e da educação como agente formador para a efetividade do desenvolvimento da cidade sustentável. Pode-se verificar nas práticas de gestão na educação as práticas de eventos para condicionar uma cidade sustentável, o Festival Internacional de Folclore, a Feira do Livro e a Jornada Literária, porém evidenciou-se a ausência de continuidade dos programas quando há mudança de gestão.

PALAVRAS-CHAVE:

Espaços sustentáveis; Educação; Sustentabilidade.



1. INTRODUCTION

Cities can be seen as the platform where the social, economic, and environmental dimension is intensified, implying the understanding of smart cities and sustainable cities (ABDALA, 2014). Smart cities originate, initially, from an expression used in the 1990s, focusing on communicative and informational technologies to condition the concept of smart. Later, the concept extends to more circular, popular, connected, and sustainable cities (ALBINO; BERARDI; D'ANGELICO et al., 2015). The sustainable city concept includes economy, mobility, governance, environment, coexistence, and population (GEFFINGER; HAINDL, 2007).

The smart city is consolidated through an infrastructure with adaptations to mobility, being effective in saving energy, improving and caring for the quality of air and water, identifying problems, with quick solutions, which should happen when there is integration between sectors and systems (KANTER; LITOW, 2009).

In this way, the notion of a sustainable city is solidified based on principles that improve the well-being and lives of people in society, sharing the ways to plan and manage the urban space, considering the beneficial effects of ecological systems, with preservation and nutrition of such resources for future populations (SUZUKI et al., 2010).

Smart cities offer numerous effective solutions to urban problems, however the operation and maintenance of services in these cities are becoming increasingly important in the educational context (KIM, 2022).

Education is shown as a tool to prepare populations for a sustainable environment (LAUDER et al., 2006). In its transformation process, it can change paradigms that do not fit into proposals, and that can eliminate molds that are no longer sustainable for human development (GOTTLIEB et al., 2011),

In this line of thought, sustainable cities present themselves with their principles, according to Suzuki et al. (2010), to condition the well-being of people in their experience in society and that, according to Rai (2012), concerns adding economy, society, and the environment. In its sustainable proposal, cities must work in favor of equality and social inclusion, with an economy that values production, establishing actions that harmonize with nature, with a history that extends to all generations.

The research theme focuses on a sustainable city dimension under the aegis of education, in a new orientation, which implies practices from a new look and thinking of education, aiming to analyze the dimension of management practices in the area of education of the city of Passo Fundo, using the concept of sustainable cities. Identify the characteristics of a sustainable city present in Passo Fundo, and propose a set of actions in the area of public education programs for the city of Passo Fundo, in the direction of the concept of sustainable cities.

It is also important to mention that many smart cities were not able to maximize their potential during the pandemic, considering their technologically advanced infrastructure and the role of citizens in management (MULLICK; PATNAIK, 2022).

Several aspects can be considered crucial to fostering smart cities. We can mention here the opportunity to contribute to the UN Sustainable Development Goals (SDGs). The SDGs were launched in 2015 with the engagement of 193 UN member countries to commit to sustainable actions, taking into account 17 central themes for humanity such as poverty, health, education, water, among others (UN, 2015). This research sought to address SDG 4 (Ensure quality inclusive and equitable education, and promote lifelong learning opportunities for all) and SDG 11 (Making cities and human settlements inclusive, safe, resilient, and sustainable) through diagnoses that can help in making decisions for the development of a society.

The question to be investigated is what is the role of education, in its management practices, for the construction of a sustainable city? In this sense, the objective we sought to describe the management of public policies in the area of education in the city; identify the characteristics of a sustainable city and propose a set of actions in the area of public education for the city, in the direction of the concept of sustainable cities.

2. THEORETICAL BACKGROUND

2.1. Sustainable and smart cities

According to Anthopoulos (2015), the smart city has evolved since the late 1990s into a rapidly emerging domain, with government interest in transforming cities into sustainable spaces based on innovation.

A smart city is dimensioned in areas that are motivators of urban development, being indicative of a systematic, intelligent environment, which concerns actions and practices of self-determined citizens, showing independence and awareness (EUROPEAN PARLIAMENT, 2014) and promoting economic development and improves the well-being of its citizens (Souza et al., 2019).

Furthermore, Rai (2012) adds that it is important for a sustainable city to observe the involvement and sharing of the economy, society, and the environment, promoting equality and social inclusion and promoting production, following nature.

Studies by researchers reveal that this dimension opens the way to perceive cities under the aegis of economy, mobility, governance, people, life, and the environment (DURAN-SÁNCHEZ et al., 2016). These revelations focus on the urbanization of future generations, which is incorporated into the development of smart cities (WANG et al., 2016).

The Arnstein scale is still one of the most cited and

influential studies in the field of social participation (ANSELL; TORFING, 2016) and has been tested in the context of the smart-sustainable city in recent case studies in the cities of Rotterdam (MULDER, 2014), Amsterdam (CAPRA, 2016) and London (WILLEMS; VAN DEN BERGH; VIAENE, 2017).

In these challenges, education must show its real transforming role in its practices and teachings and be included in a daily routine that leads society to a fairer and more equal world through sustainable actions. It seeks to obtain and provide good quality education while using human resources efficiently to reach more sustainable cities (Tran; Battese; Villano, 2020).

2.2. Education and its sustainable proposal

The school has become increasingly relevant to the lives of entities in society in relationship network formats that involve students, families, teachers, and employees. Relationships and their effective quality can be considered when the school proves to be decisive in what students will be when they reach adulthood, interfering in the conception of life, in relevant values and actions that can change society (MOREIRA, 2012).

Therefore, education assumes a transforming role in people's lives with practices that enable a liberating bias with a broad vision. For this, the curriculum must be thought of in a broad and complex way. Its school projection is dimensioned in actions whose objective is to make a sustainable city for people to live similarly, whose rights must be guaranteed and considered for harmonious and equal coexistence.

The school, to value sustainable education, needs to share this action with the community. It is necessary to build a place of critical training, seeking to educate for networking, which involves the ability "to communicate and act in common, is to educate to produce cooperative forms of production and reproduction of human existence, to educate for self-determination" (GADOTTI, 2008).

The Ministry of Education in Brazil (MEC, 2013), in its educational proposals, indicates what it intends to achieve and how to achieve it. In composition, it structures the Pedagogical Political Project (PPP). From a sustainability perspective, the curriculum, which concerns knowledge and its practices, must include dealing with each community's differences, culture, and knowledge, based on a perception of respect. Educating involves democratic forms with incentives for dialogue and the collective.

The literature presents the need for approaches in research aimed at education and sustainable cities, one of these approaches is to think and act through futuristic visions about possible ways to achieve a more sustainable environment (ZIEGLER; PORTO-DE-OLIVEIRA, 2022).

In this direction, the school must establish its role in the face of cultural diversities through a redesign of the curriculum. The National Curriculum Parameters (PCNs)

expose that diversity concerns the ethnic and cultural factors of the various social groups. Concerning the sociocultural factor, the construction must take place from a social culture of the different, through the lives of people in their experiences and relationships in society (BRASIL, 1998).

2.3. Public documents and sustainable schools

The Sustainable Schools Manual expresses that the school measures its sustainable character in compliance with three factors: physical space, management, and curriculum. In its policies that motivate sustainable actions, the National Plan for Climate Change (PNMC) can be considered, which deals with climate change. As well as the execution of programs for educating sustainable spaces, which includes retrofitted school buildings, management, which includes teacher training and the inclusion of the subject of climate change in curricula and educational reports (BRASIL, 2008).

Propositions shared with policies in the sphere of the Ministry of Education, called the Mais Educação Program, regulated by Decree No. 7,083/2010, and the Sustainable Educators Municipalities Program (BRASIL, 2005).

Specifically, concerning the management of municipal schools in the municipality of Passo Fundo, this transfer of cultural values takes place from events that have been taking place for some time, and that have contributed to the implementation of sustainable practices.

The Passo Fundo City Hall, allied with the International Council for the Organization of Folklore Festivals (CIOFF), has held, since 1992, the Passo Fundo International Folklore Festival. This Festival, recognized for showing artistic spectacles from various countries, leads to cultural integration with the citizens of Passo Fundo. In addition to the presentations, the public spaces are the stage for exhibitions by the groups participating in the event, showing their culture and dances to the public, thus promoting moments of knowledge, joy, peace, and harmony.

Another event that municipal educational managers can mention is the Book Fair, which has been taking place since 1986, in order to provide the Passo Fundense and regional community with books in a more accessible way about values, as well as to show the cultural production of artists local and regional, promoting exchange between authors, publishers, and readers of multiple languages. This event is organized through a partnership between the City Hall and the University of Passo Fundo, including several supporters and booksellers from Passo Fundo.

In addition to this event, the Literary Conferences have been taking place for 36 years. This Conference is also being promoted in partnerships between the City Hall and the University of Passo Fundo, contributing to the reading stage to be increasingly extended to the city's residents and the region. This event involves *Jornadinha* in its programming; the International Seminar on Research

in Reading, Literature, and Languages; Book Fair; conferences; workshops; musical shows, and theatrical performances, among other actions.

Moreira (2012) refers that the school becomes a sustainable educational space when it breaks with the logic that shows a social dynamism until then characterized by the individual over the collective, by competition over collaboration, by the hierarchy over cooperative systems.

In the context, the lower rungs of the ladder, "Manipulation" and "Propaganda", describe the levels of "non-participation" implemented by some governments to replace genuine participation. Its real purpose is not to get people to participate in the planning or running programs but to allow those in power to "educate" or "induce" them. Steps 3 and 4, "Information" and "Consultation", advance to levels of pseudo participation that allow those who are never heard, have a voice, hear, and be heard. Nevertheless, under these conditions, they do not have the power to guarantee that those in power will hear their views.

When participation is restricted to these levels, there is no follow-up and no guarantee of changing the "status quo". Step 5, "Placation", is simply a higher degree of symbolic participation, because ultimately those in power will continue to have the right to decide. The last three rungs of the ladder reflect citizen power levels with an increasing degree of decision-making influence. "Partnership" that allows citizens to negotiate and engage in "trade-offs" with those who traditionally hold power. Moreover, finally, "Delegated power" and "Citizen control", stages in which ordinary citizens obtain the majority of decision-making seats or the full managerial power (ARNSTEIN, 1969).

Knowledge transfer encompasses activities such as lectures, seminars, advice from public and private organizations resulting in a link between university, society and the environment and more and more policymakers are setting ambitious goals for sustainability in the public sector (SHENDELL; SHAH, 2020).

3. METHOD

3.1. Research type

According to Zikmund (2000), the research is classified as exploratory, indicates situations, verifies alternatives, or seeks other ideas. This research was also characterized by being descriptive, which, in the view of Vergara (2011), points out the characteristics of a certain population or phenomenon, establishing its variables. According to Gupta and Awasthy (2005), a qualitative approach was carried out, focusing on understanding people's world and verifying subjective experiences and experiences.

3.2. Participants and research locus

The composition of subjects in this research

involved those responsible for the Municipal Department of Education (SME) sectors in the city of Passo Fundo which are related to the area of education both in administrative and pedagogical terms. Vergara (2011) stated that this access criterion selects elements without any statistical procedure due to the ease of access to the subjects.

Five participants were interviewed, responsible for the Municipal Department of Education (SME). Pedagogical Coordinator; Administrative and planning coordinator; Elementary School Coordinator; Administrative and projects coordinator; Support Elementary Education.

3.3. Data collection instrument

The semi-structured interview was used as an instrument, with questions organized in a script based on the proposed objectives. As analysis categories, Sustainability were approached; Education and sustainable cities; Schools managed by municipalities x sustainable practices; educational programs; difficulties. First, the subjects were asked about sustainability in a broader view to addressing sustainable cities and their concept and smart cities. As a follow-up, we sought to know about municipal management in the area of education in the city and its practices, its guiding axis, in its characteristics so that the city becomes sustainable.

Finally, through the practices listed by the interviewees aimed at contributing to the city becoming sustainable, it was intended to enumerate some proposals for actions via education programs to happen.

3.4. Data collection process

Data collection was carried out with interviews through communication, individually, observing a semi-structured script, with open questions about the perceptions of agents involved. In this script, the theoretical review was considered, carried out through bibliographical research, which will insert the requirements observed by the theme of sustainable cities under the dimension of education.

The interviews were conducted at the beginning of February 2020, in face-to-face meetings and previously scheduled, with the interviewees, who are part of the pedagogical and administrative area of education at the municipal level.

Due to the vacation period, it was decided to interview five representatives from that area who were present at the Municipal Education Department (SME).

Afterward, these interviews were organized, with the answers measured to analyze their content, guided by Bardin (2011). The anonymity of the interviewees was maintained, with their names being replaced by numbers from 1 to 5.

A document analysis was also carried out, which, according to Bardin (2011), condenses the information for consultation and storage, focusing on documents, their

classification, and purpose. In this study, documents made available on the city of Passo Fundo website were used, including educational plans related to elementary education. The Common National Curriculum Base (BNCC), More Education Program (PCNs), Sustainable Educating Municipalities Program (PMES), Sustainable Schools Manual, Commission for the Environment and Quality of Life at School (Com-Vida) can be listed.

3.5. Interview protocol

In this research, at first, the researched material was read, such as the literature review, as well as the documents that were part of the study instrument, such as the PCNs, More Education Program, regulated by Decree No. 7.083/2010 and the Sustainable Educating Municipalities Program, according to the availability of the Municipal Education Department of the city of Passo Fundo.

After reading, the objectives that guided reading the documents and subsequent analysis were set out, which demonstrated agreement with the study proposal. The material that served as a research instrument was also edited.

3.6. Data analysis and discussion

The analysis of the results was carried out through the content analysis proposed by Bardin (2011), taking into account three procedures, which include the pre-analysis, which is the well-defined organization process, starting, initially, from the verification of the documents being submitted to analysis, culminating with the interpretation and preparation of the material, from the interviews, so that the study can take shape.

As a follow-up regarding the material exploration, the choice of categories was chosen, classified and grouped, by subject, for analysis. Finally, concerning the treatment of results, for their inferences and interpretation, it was essential to be guided by the theoretical frameworks related to the investigation, as they provided a foundation for this study.

The chosen categories that reflected the reality of this study and that supported the analysis are a) sustainability; b) education x smart city; c) municipal education vs. sustainable practices; d) educational plans; e) difficulties.

4. RESULTS AND DISCUSSION

At this stage, the collected data from the interviews were presented and interpreted by grouping them into categories. The objectives proposed by the research guided the elaboration of the categories.

4.1. Sustainability

Regarding sustainability, respondents 1 and 2 have the same opinion and follow the line of the Brundtland Report when it comes to the use of natural resources, care and attention actions with thought for present and

future generations, optimizing practices that allow, even in the face of population technological development, different forms of economic growth, with less damage to populations.

Nunes (2006) corroborates this line of understanding when he states that man and nature must see a single direction in which sustainable development can be consolidated, in a healthy way, for current and future generations. Moreover, in its versions (1986 and 1992), Sachs includes solidarity with future generations and the preservation of natural resources.

| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 | Interviewee 5 |
|---|--|--|--|---|
| "[...] everything that can be used in a way conscious, avoiding impacts on society, being able to be reused, reused, striving for the care of everything and everyone." | "[...] good use and use of resources in order to optimize them, not generating waste, and thus ensuring the continuity of resources for future generations." | "[...] it is a wide range of actions, activities, initiatives, practices that guarantee, even if in a limited way (since not everything can reach the totality), the preservation and/or continuity of a natural resource, of an instrument to favor of life, of a social practice aimed at confronting living beings, of procedures for the removal and replacement of material and social-cultural goods." | "[...] consists of living day-to-day in such a way as to harm our environment as little as possible. It is important to emphasize that it involves the physical, financial, and social aspects." | "[...] it extends as a process of education, of returning to doing something good for a community, a city. Sustain, generate, make learning and producing about something." |

Table 1: Sustainability;
 Source: Preset study (2021).

Academics and business researchers play important roles in shaping people's behavior to global sustainability challenges while minimizing most needed barriers (GREENLAND, SALEEM, MISRA E MASON, 2022).

. On the notion of sustainability, Table 1 presents the opinions of the interviewees.

In the interviewees' comments (3, 4, and 5), the sustainability of social practices and physical and financial aspects also emerged, which can also be cited by Sachs (1992), who identifies these practices under a good prism of social homogeneity, with fair income distribution and full employment. Thus, variables such as quality of life and equal access to social resources and services are included. These variables are dimensioned from a holistic perception, which points out the valuation of people in their knowledge and customs, and that must follow paths, such as meeting basic needs; solidarity with future generations; participation of the population; preservation of the environment; elaboration of a social system that preserves employment, social security and, in particular, education programs.

In this journey, especially concerning education, Robinson (2004) goes further and promotes sustainability through mechanisms that cover concepts, areas, tools, disciplines, which are shown in various learning focuses, which, as he completes, Gallopin (2003) unveils itself in an open stage of effective interaction with the external world, which can lead to a dynamism that foresees changes.

As for the different forms listed by the interviewees, Cannon (2010) illustrates and states that there is no way to think about sustainability without reinventing thinking about working, consuming, and interacting among people who are part of society.

4.2. Education and sustainable city

In the interviewees' statements about education and the smart city, they all highlighted the importance and fundamentality of education as training agents so that actions for the effectiveness of a smart city can be implemented.

This understanding is in line with Antunes's (2002) observations when dimensioning the construction of the subject in practices that can associate production, environment, society, and development in a harmonious whole. This argument is supported by Morin (1997), who points out that education plays a transforming role in people's lives, and, according to Lyons (2016), many conditions contribute for government agents to design indicators to improve the quality of life of populations.

As for the smart city, the interviewees showed it as spaces designed and thought for the quality of life and the use of resources being managed to ensure sustainability, creating opportunities for the entire population.

These statements are confirmed in the statement by Lyons (2016) when referring to the smart city in a composition of factors that move governments to rethink the quality of life offered to populations, with innovations that address the social and environmental aspects.

Smart cities aim to improve their performance through digital technologies and social sustainability maximizes connections between people and places (SUGANDHA, FREESTONE E FAVARO, 2022).

Considering education to a sustainable city, Table 2 brings the considerations made by the interviewees, firstly about what they think about smart city and, after, the implications with education.

They also corroborate Rios Neto and Gimenez (2018) when they indicate a smart city as a space in which areas can be used, among others, so that people can enjoy a healthy quality of life and environment. This space, completes IBM (2014), can be designed into subsystems divided into planning and management, infrastructure, and human. Concerning planning and management, public safety, urban planning, and government and administrative bodies are evoked. The practices of water and energy supply, transport, and environmental elements must be considered about infrastructure. Furthermore, finally, in the human approach, education emerges, followed by care and medical and education.

Thus, Vaquero-Garcia et al. (2017), in their studies, confirm that smart cities play an essential role in the ways of developing economically. The perception of cities as a place to live adds to adaptations to the population's needs to

ensure a better quality of life. This, according to Suzuki et al. (2010), corroborates the understanding of the sustainability of cities based on the well-being of residents, which leads to the dismemberment of integrated planning and urban space to preserve ecological systems and resources for future generations.

| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 | Interviewee 5 |
|--|---|---|--|---|
| They are cities that take advantage of everything that can be used, spaces designed and thought for the quality of life for everyone, with the conscientious use of resources available" | "[...] are those urban areas that, based on data, studies, projects, seek to manage/administer resources efficiently and effectively. They use technology to improve infrastructure, urban mobility in order to ensure sustainability." | "I follow, as much as possible, the initiatives of managers, researchers, educators who deal with the concept. I know that a smart city is inclusive, accessible, democratic in its management, and active in creating opportunities for its entire population." | "These are aspects that favor a city to be able to facilitate the actions of people who live in this city. This concept of smart cities is also interconnected with a sustainable city." | "[...] is the one that transforms its projects into practices that benefit the population in a strategic and committed way." |
| Considering education: "to assist in the education of children and young people by providing projects that guide the understanding and importance of sustainability." | Considering education: "The role of education for a city to become sustainable is to contribute to the training/qualification of student awareness so that their practices/actions occur in this sense." | Considering education: "The role of education is fundamental, considering the access people have to it from early childhood. Its reach, in this sense, is wide-ranging in terms of building awareness of sustainability. Through it (education), the individual has the opportunity to practice the exercise of measures for the preservation, renewal, and maintenance of assets, also has the collective guarantee to discuss the best form of a sustainable initiative." | Considering education: " [...] aims to "form" people, in this sense, the school has a fundamental role in developing sustainability in the school community through concrete actions. Example of garbage disposal" | Considering education: "The role of education is fundamental in the sense of recovering values and awareness priorities for broad aspects such as health, basic sanitation, environment, spirituality, various areas of knowledge." |

Table 2: Education and sustainable city proposition; Source: present study (2021).

In this intelligent space of the city, education assumes its transforming role in the lives of entities, which can allow a liberating bias in a broader vision. Therefore, it is necessary to redesign the school curriculum, aimed at actions that seek to make a sustainable city for people to live similarly, with guaranteed rights to live in harmony. Gadotti (2008), in this line, contributes and highlights the importance of sharing these actions with the community in an effective construction of an environment of critical training, educating to live in a network, in cooperative ways.

Completes Morin (2000), stating that education involves the human condition in a broad view, which must occur in every society. The teachings added to people's experiences are supported by interaction practices between the entity and its surroundings. Along these lines, values and learning are built.

In addition, Jacobi (2003) points out that citizen education is redesigned in order to motivate people to change the different ways of sharing dynamic factors of society and the scope of the social command of what it is public. The redesign, thus, creates proposals to modify the general policy so that a new social proposal emerges, permeated by educating to be participatory, on a stage where actors can act without being supervised in decision-making processes, which is the responsibility of the public.

4.3. Schools managed by municipalities x sustainable practices

Regarding municipal education, in its sustainable

practices, the interviewees were unanimous in indicating the effectiveness of projects and partnerships to focus on sustainable actions. Among them, two are examples: Sustainable Schools and the Municipal Conference on the Environment. In addition, the involvement of students and teachers with the One Child, One Tree Program results in an affectionate look towards the environment and the schools equipped with TDTICS tools.

This focus on sustainable practices regarding information sharing is presented and confirmed in the versions by Lazzaretti et al. (2010) and Berst (2013), being necessary qualifications for the consolidation of a smart city.

Considering municipal education versus sustainable practices, Table 3 indicates the opinions of the interviewees.

| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 | Interviewee 5 |
|---|--|---|---|---|
| "Through training for teachers and students: partnerships with companies that are focused on this subject: care in schools by carrying out projects that are carried out together with the students." | "[...] there are several schools in the Municipal Education Network that develop projects and actions aimed at sustainability. Whether they are projects of the diversified part or in partnership with other institutions." | "[...] I understand that projects developed in schools contribute enormously. Among them, two are examples: Sustainable Schools and the Municipal Conference on the Environment. In addition, the involvement of students and teachers with the Uma Criança, Uma Árvore Program results in an affectionate look at the environment. The smart city is also technological. In this sense, schools are equipped with TDTICS tools." | "The constant awareness of the school community has made a difference in the construction of sustainable cities. The municipality of Passo Fundo has developed several projects, partnerships to contribute to these concepts." | "It is always proposed practices that develop awareness projects, and we have relevant in this context to develop citizenship." |

Table 3: Schools managed by municipalities x sustainable practices;
 Source: present study (2021).

The proposals set out in the Sustainable Public Management Guide (2013) prioritize the school curriculum in terms of knowledge and practices regarding knowing how to deal with the differences, culture, and knowledge of each community, in an education that is composed of democratic ways with incentives for dialogue and the collective. The dialogue can be achieved as the school passes the information on to students about the social and environmental issues to perceive the quality of education.

Antunes (2002) also highlights articulations in the school curriculum with themes that can be interdisciplinary, having the person in visualization as a participant in the world in its entirety. Morin (1997) follows with the premise that the curriculum needs to be thought of in a broad and complex way, scaling up in actions that can lead to a sustainable city for people to live on an equal level.

Sustainable cities are considered platforms of practices to achieve the UN SDGs through education and civil society involvement, thus being a set of promoters of

transformative actions (Ibrahim, 2022).

In this bias, the school management needs a contribution to materialize democratic participation, following the support inserted in the Commission's procedure for the Environment and Quality of Life at School, as noted by the Ministry of Education. Specifically, concerning the management of municipal schools in the municipality of Passo Fundo, events that are organized to implement sustainable practices can be mentioned. At this pace, the City Hall, allied with the International Council for the Organization of Folklore Festivals (CIOFF) since 1992, holds the Passo Fundo International Folklore Festival.

4.4. Educational programs

Most respondents indicated programs, partnerships, and projects coordinated and applied in the Municipal Education Network regarding educational programs.

The Ministry of Education (2013) agrees with the interviewees' considerations, referring that the school as a possibility of qualitative change in the educational stage and suggests the Pedagogical Political Project (PPP), based on a vision of sustainability. As a result, the National Curriculum Parameters (PCNs) also contribute with their proposals on diversity that relate to the ethnic and cultural factors of the various social groups.

Educational programs contribute to sustainability in a globalized world by offering job opportunities as well as quality education (Leenheer, 2022).

It is also worth mentioning the National Plan for Climate Change (PNMC), which focuses on ways to deal with climate change and the execution of programs for educational spaces that prove to be sustainable. This concerns retrofitted school buildings; management includes teacher training and topics that address climate change in curricula and didactic information. Regarding educational programs, Table 4 shows the interviewees' quotes.

| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 | Interviewee 5 |
|---|--|--|--|---|
| "We have schools that reuse rainwater - We have a solar-powered school - The schools have their gardens and are investing in the school's green spaces - Partnership with companies, example: Tetra Park, Transformação." | "One Child, One Tree Program - Adopt Green Program - Implementation of the Bike Path - Urban Planning and structuring of Green Areas." | "Teaching foreign languages - Computational thinking - Reading promotion - Relationship with the environment." | "Garbage project - Partnership with Tetra Park Sepé Tiarajú - Active methodologies - Conflict management Projects of each school." | "Projects at Schools Management Programs (Environment Department, Child Look, Cara Nova School, etc. Partnerships with companies for projects in the area of work. Partnership with Public Minister Sepé-Tiarajú Project" |

Table 4: Educational programs;
 Source: present study (2021).

Added to the PNMC, there are proposals shared with policies in the sphere of the Ministry of Education, which

is the More Education Program, regulated by Decree No. 7,083/2010, and the Sustainable Educators Municipalities Program. The Sustainable Schools Manual, published by the National Fund for the Development of Education (FNDE), as well as the Commission for the environment and Quality of Life at School (Com-Vida), being structuring in the organization of sustainable educational spaces and showing space for collective construction of the future that is desired and standardizes "Agenda 21" at school.

According to the Ministry of Education, this publication intends to be a political and pedagogical project organized by the school collective and highlights the school's objective of seeking sustainability. It is also worth mentioning the 2012 Resolution, which proposes the environmental dimension, articulated to the curriculum in its strategic proposals for the applicability of the National Curriculum Guidelines for Environmental Education.

4.5. Difficulties

Concerning difficulties, respondents mentioned the lack of involvement of teachers, lack of funding for salaries, and government changes, with programs interrupted.

It is evident that the applicability of the proposals that aim at a sustainable school, established by the importance of education to scale in practices that are sustained by physical space, management, and curriculum, faces obstacles of commitment, management, and resources.

It is important to emphasize that the school has an essential role in forming entities. Therefore, it needs to remain strengthened to pass on cultural values and knowledge production to observe the sustainable perspective. Corroborating this assertion, Moreira (2012), points out the school as a sustainable educational space is an incubator for change through a curriculum that encompasses sustainability issues. Table 5 shows the difficulties listed by the interviewees to follow the PCNs and Programs related to sustainable educators.

| Interviewee 1 | Interviewee 2 | Interviewee 3 | Interviewee 4 | Interviewee 5 |
|---|---|---|--|--|
| The PCNs are included in the study plans of the schools, where the teachers work on the themes. More education had changed, and few got involved due to the little importance of the MEC's moment. Need for more training in the sustainability issue." | "[...] as for the PCNs, there are no difficulties, as they are a methodological/n orthern document. About the More Education Program, there is a delay in the transfer of funds, the lack of HR, the low amount allocated to the payment of monitors, etc. As for the Sustainable Educators Municipalities Program, there is nothing to mention." | " -Human Resources -Financial resources (salaries and funds for teaching) -School space | "Programs have a limit. Public policies are lacking. When governments switch, programs are hampered or suspended. For example, the Mais Educação program was changed to the Novo Mais Educação program by the ordinance MEC no. 1144/2016" | "The continuity of public policies. The exchange of political administrations of government and not of the State." |

Table 5: Difficulties
Source: present study (2021).

It is worth mentioning that the Programa Dinheiro Direto na Escola (PDDE) Sustainable Schools Program

emerges in this context and makes available the use of resources, which unfold in practices to intend education under sustainability. The school can make use of one or more actions regarding physical space, management, or curriculum. In order to be successful, interventions must enable the school to carry out a demonstration to motivate pedagogical procedures that contemplate the promotion of a culture of sustainability.

The Sustainable Schools PDDE must make available operational formats established by the FNDE. This program implies a financial transfer, through the transfer of funding and capital resources, to advocate actions aimed at improving the quality of education and support public schools in municipal networks, among others, so that socio-environmental sustainability criteria can be adopted, leading taking into account the curriculum, management, and physical space, in order to consider them sustainable educational spaces.

In analyzing the results, this research managed to reach the proposed objectives. Initially, it managed to scale how management practices are carried out in the educational sphere in Passo Fundo, being very well delineated by the municipal pedagogical team. This initiative led to how these practices are present through countless projects, programs, and partnerships listed by the interviewees and directed towards educational action.

In this way, the equalization between the interests of different stakeholders must be sought through citizen participation (ARNSTEIN, 1969). This participation does not occur in binary form but steps and can present representation problems, with committees dominated by participants with private or corporate interests (IRVIN; STANSBURY, 2004). A proposal for a ladder for education programs to develop sustainable cities is presented in Figure 2.



Figure 2: Education Ladder for Sustainable Cities.
Source: Adapted from Arnstein's (1969) concept of participation ladder.

Levels of participation can aid analysis and are arranged in a ladder pattern with each rung corresponding to citizen interaction. In the lower rungs, the goal is not to allow people to participate in planning or running programs. On the subsequent steps, citizens can hear and be heard, but there is no guarantee that their views will

be heeded. On the steps above, they allow advice, but retain for those in power the continued right to decide. The highest rungs are made up of decision-making seats, or managerial positions (ARNSTEIN'S (1969).

Contributing to vision and expectations issues to promote education for sustainable cities, it is necessary practices, pedagogical and cultural policies, partnerships with public and private authorities, and associations and civil society. The population also needs to assume a central role, participating and seeking solutions, so that the citizens become a transforming agent, leading to changes in behavior as a key point in this process (Rocha et al., 2019).

As for the characterization of Passo Fundo as a sustainable city, the mention of projects developed in schools (such as Sustainable Schools and the Municipal Conference on the Environment), as well as the involvement of students and teachers with the *Uma Criança, Uma Árvore*, and, also, schools equipped with TDTICS tools demonstrate that there are characteristics of a sustainable city, especially in terms of education concerns.

Furthermore, given the difficulties that arise in the management practices of education listed by the interviewees, some actions could be composed that effectively contribute to the understanding and practice of a sustainable city. Figure 2 shows the development of the research taking up the problem, the objective, the collection instrument, the data analysis, and the contribution to the UN SDGs.

With the advancement of sustainable education, much has been developed, however, there are still difficulties in relation to the actions to be implemented, as well as the awareness of society (ZIEGLER; PORTO-DE-OLIVEIRA, 2022).

4.6. Proposal for actions

As a proposal for actions, it is possible to mention, after the investigation carried out, the need for a connection between the public and private sector to put into practice initiatives, as well as public policies as a contribution to a more sustainable future. Another factor is to make the population aware of the need for implementation thinking from the local to the global. Another important point is to create actions in schools to disseminate the reality of local and global problems and the need for collective initiatives to resolve them.

Thus, it is necessary to seek individual and collective awareness to work education, cities, and sustainability as a public policy and foster practical initiatives with the help of partnerships in the area.

5. FINAL REMARKS

This study found that the notion and recognition of education and the sustainable city are evidenced, with the importance of education as a formative agent for sustainable city implementation.

In the description of municipal management in the area of education, in Passo Fundo, educational plans, Programs, Partnerships, and Projects were being coordinated and applied in the Municipal Education Network, in line with the Ministry of Education. In this sense, the Political Pedagogical Project (PPP) is observed, in the perception of sustainability, added to the National Curriculum Parameters (PCNs), which include in their considerations the diversity that concerns the ethnic and cultural factors of the various social groups. The National Climate Change Plan (PNMC) was also nominated, which deals with ways to observe climate change and the execution of programs to educate sustainable spaces, including re-adapted school buildings, teacher training, and topics that score climate change in curricula.

Together with the PNMC, the More Education Program, and the Sustainable Educating Municipalities Program, the Sustainable Schools Manual is included from the National Fund for Education Development (FNDE) and the Commission for the Environment and Quality of Life at School. Concerning education programs, the International Folklore Festival, the Book Fair, and the Literary Journey were listed as event practices to condition a sustainable city.

Finally, difficulties in municipal education management in the city were also pointed out, including the lack of teacher involvement, the lack of funds for salaries, and government changes, when they do not follow the same line of work having programs interrupted. Furthermore, given the difficulties presented in the practices of education management listed by the interviewees, some effective contributions to the understanding and practice of a sustainable city could be composed.

Moreover, alongside all this, there are the UN SDGs, in which the research presents a connection with SDG 4 (Education) and SDG 11 (Sustainable Cities), presenting a diagnosis of management practices in the area of fundamental education in the city of Passo Fundo.

The theoretical contribution of the investigation is to present a local study that can serve as a contribution to other global studies, as well as to address a research gap on education and sustainable cities in medium-sized municipalities in southern Brazil.

Limitations such as the change of management teams during this research must be mentioned. When prioritizing new government programs, the incoming teams did not follow up on the projects previously designed. Thus, a more in-depth analysis regarding the execution and monitoring stages was compromised. Finally, limiting the number of interviewees is highlighted, although those chosen are representative for assessing the role of education in the development of a sustainable city.

This research is not exhaustive in itself and may be considered suggestions for future research on the vision of smart and sustainable cities from the participation of a

greater number of people involved with education in the city in focus, in this sense, the research could reach larger samples, as teachers, students, with their classroom experiences, as well as the surrounding community.

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