


## Accessibility through science, sustainability and technology as a tool for inclusion in early childhood education

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### ABSTRACT

The theme of science, technology and sustainability are increasingly part of the contents of the curricula to be worked on in education according to the reality of each school unit. It is of great importance for the development of students' skills that the School Units work on themes related to nature, promoting sustainable activities in Early Childhood Education. Access to technology can provide knowledge to the themes developed through experiences lived from an early age. In this sense, the present study sought to reflect on the teacher's observations in her pedagogical practice applied in the context of Inclusive Education. An inclusive education can be understood as a comprehensive and conscious education, in which technology offers possibilities for a more accessible education. In this way, Early Childhood Education students can acquire knowledge and awareness about topics related to the environment, adopting daily attitudes of respect for the environment and sustainable practices. Thus, the objective of this work is to discuss technology and sustainability in the stage of early childhood education linked to playfulness as a pedagogical practice in which technology can and should contribute to the preservation of the environment, to the conscious use of natural resources and to sustainable practices in the process of developing students' skills in regular classes with inclusion.

**Keywords:** Sustainability, Technology, Environment, Early Childhood Education, Inclusion.

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## INTRODUCTION

The objective of this study is to ratify that the proposals of activities applied by the teacher in a Child Development Space (EDI), in the Municipality of Rio de Janeiro, achieved excellent results in the analysis of participant observation carried out with Special Education students who attend regular classes of early childhood education.

The research intends to propose activities aligned with the BNCC that arouse students' interest and curiosity about teaching/learning, with pedagogical proposals having playfulness as an effective method of learning, as well as inclusion through affective bonds that allow the integration and socialization of students in the school space. The justification of the theme was based on the teacher's experience as an observer of her practice for the present research, in including in her pedagogical proposals the themes related to the environment, sustainability and technology. Seeking to insert the target audience of Special Education with their needs and deficiencies to be supplied in the realization of the proposals of activities, to express themselves and create in the experiences lived.

According to Kishimoto (1999), if children do not have the freedom to express themselves and use creativity, they will hardly be able to develop their autonomy and their own personality, as they will be bound by rules and exceptions, which will limit their ability to create. For the author, "[...] bearer of a specificity that is expressed through the playful act, childhood carries with it the games that are perpetuated and renewed with each generation" (KISHIMOTO, 1999, p. 11).

The child in this age group: 6 months to 5 years and 11 months of Early Childhood Education has a lot of energy and vitality, for this reason it is difficult for him to pay attention or concentrate for some time on a school activity, so it is necessary to use playful materials such as toys, games and games that are attractive and stimulating for the child, during the development of activities that explore both the previous knowledge and the systematized contents related to their level of learning, which are built from the teacher-student and student-student mediation.

Despite the challenges faced, there is a great motivation to improve studies and knowledge to apply them in teaching practice, with the aim of meeting the needs and needs of Special Education students and promoting effective and meaningful quality inclusion. The intention is for Special Education students to feel integrated into the Early Childhood Education class, welcomed and embraced through playful and educational activities that involve topics such as sustainability, environment and technology.

And within this context, innovative environments in education emerge with their technological pillars, driving the student to increasingly act as the protagonist of this learning process. However, always respecting the time, experiences, skills and abilities of each child.



## METHODOLOGY

This study was developed through the participant observation method carried out during the year 2022, by the Basic Education teacher of the City of Rio de Janeiro. It is known that observation is very effective in the field of education, as it seeks to explain the problem, analyzing and presenting the interferences and conclusions in its purpose, by providing the opportunity for "prolonged experience with the population under study" (FELDMAN-BIANCO, 1987, p. 15).

As a teacher working in Early Childhood Education in regular classes with inclusion, I use proposals for activities with nature and technology that increase the appreciation of the potential for building these new learning environments. These environments are very rich in the exchange of learning, of knowledge, and they are not only based on technologies, applications, social networks, platforms, which are very important, because they are part of the experience of these children. However, this construction of new places needs to be grounded in the student's social context – such as the environment in which they live their experiences and what they bring to the classroom – in order to make concrete sense for their experience and knowledge.

Occupying different spaces during class time, especially to motivate and encourage students to live new experiences, is very important for their development and favors the knowledge of new learning. In addition to classroom practices, this study uses bibliographic research with the support of books, Rioeduca notebook, Rioeduca on TV, Rioeduca at home application, sources of theoretical research through the Google database, Google scholar, articles, theses, monographs. Such researches helped in the knowledge and development of the present work.

## THEORETICAL FRAMEWORK

### SPECIAL EDUCATION IN BRAZIL: ACCESSIBILITY IN INCLUSION

Early childhood education is called by the Law of Guidelines and Bases of Education (BRASIL/LDBEN/9394, 1996) as the first phase of basic education with the design of the integral development of the child from 0 to 5 years and 11 months, in its physical, psychological, intellectual and social aspects.

Article 4 of the National Curriculum Guidelines for Early Childhood Education (DCNEI, CNE/CEB Resolution No. 5/2010) defines a child as:

Historical subject and of rights, who, in the daily interactions, relationships and practices he experiences, constructs his personal and collective identity, plays, imagines, fantasizes, desires, learns, observes, experiments, narrates, questions and constructs meanings about nature and society, producing culture (BRASIL, 2010 p.12).



The inclusion of children, young people and adults with special educational needs within the regular education system is the central issue on which the Salamanca Declaration<sup>2</sup> (1994):

Principles, Policies and Practices in the Area of Special Educational Needs. In the introduction, the Declaration addresses Human Rights and the World Declaration on Education for All and points out the principles of special education and child-centred pedagogy.

It can be said that the set of recommendations and proposals of the Salamanca Declaration is guided by the following principles: Inclusion of students with autism spectrum disorder; Regardless of individual differences, education is everyone's right; Any child who has a learning disability can be considered to have special educational needs; The school must adapt to the specificities of the pupils, and not the pupils to the specificities of the school; Teaching should be diversified and carried out in a common space for all children (Salamanca, 1994, p. 12).

The fundamental principle of inclusive schooling is that all children should learn together, regardless of any difficulties or differences they may have. Inclusive schools must recognize and respond to the diverse needs of their students, accommodating both different learning styles and paces, and ensuring quality education for all through appropriate curriculum, organizational modifications, teaching strategies, use of resources, and community partnerships. Within inclusive schools, children with special educational needs should receive any extra support they may need to ensure an effective education (Salamanca Declaration, 1994, p. 15).

According to the Operational Guidelines of Special Education for Specialized Educational Service in Basic Education, Special Education is a teaching modality that crosses all levels, stages and modalities, provides specialized educational care, provides resources and services and provides guidance on their use in the teaching and learning process in regular education classes. (Brasil, 2008, p. 1). Special Education should cover individuals: a) Students with disabilities: those who have long-term impairments, of a physical, mental, intellectual or sensory nature, who, in interaction with various barriers, may have restricted their full and effective participation in school and society. b) Students with Pervasive Developmental Disorders - the medical nomenclature was changed to Autism Spectrum Disorder (APA, 2013): they are those who present qualitative alterations in reciprocal social interactions and communication, a restricted, stereotyped and repetitive repertoire of interests and activities. This group includes students with autism, autism spectrum syndromes, and childhood psychosis.

In a world with scarcity of natural resources and environmental degradation, sustainability at school is an increasingly important subject. The Common National Basis

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<sup>2</sup>The Salamanca Declaration is a United Nations resolution that deals with the principles, policy, and practice in special education. Adopted by the General Assembly, it presents the United Nations Standard Procedures for the Equalization of Opportunities for Persons with Disabilities.



Curricular Curriculum (BNCC) places the theme as one of the skills that should be developed by students. With this, each educational institution can define the best way to include the subject, taking into account the context and reality of each location. The National Common Curriculum Base seeks to strengthen methodologies in which the student is active in the pedagogical process.

The BNCC describes the Rights of Learning and Development in Early Childhood Education:

- Living with other children and adults, in small and large groups, using different languages, expanding knowledge of oneself and others, respect for culture and differences between people.
- Play daily in different ways, in different spaces and times, with different partners (children and adults), expanding and diversifying their access to cultural productions, their knowledge, their imagination, their creativity, their emotional, bodily, sensory, expressive, cognitive, social and relational experiences.
- Actively participate, with adults and other children, both in the planning of the school management and the activities proposed by the educator and in the performance of activities of daily life, such as the choice of games, materials and environments, developing different languages and elaborating knowledge, deciding and taking a stand.
- Explore movements, gestures, sounds, shapes, textures, colors, words, emotions, transformations, relationships, stories, objects, elements of nature, at school and outside of it, expanding their knowledge about culture, in its various modalities: arts, writing, science and technology.
- To express, as a dialogical, creative and sensitive subject, their needs, emotions, feelings, doubts, hypotheses, discoveries, opinions, questions, through different languages.
- To know oneself and build one's personal, social and cultural identity, constituting a positive image of oneself and one's groups of belonging, in the various experiences of care, interactions, games and languages lived in the school institution and in its family and community context. (BNCC, p.38).

From this perspective, it is very attractive to create teaching environments such as thematic corners, green space and reading spaces to enhance learning with activities that include energy, water, waste and biodiversity. Promote various stimuli provided by these environments to allow the child to develop better skills of their preferences. Keeping students seated in chairs, especially at this stage of early childhood education, goes against the purpose of strengthening new learning environments.

The teaching-learning process happens through stimuli with mediation and not through control. Each child acquires knowledge in a different way, in his or her own time and according to his or her particularity. What is needed is that the learning objectives are known and from there the environments must be aligned with the proposal of enabling them to develop their skills with moving the earth, playing with their imagination in make-believe in nature with the use of leaves, pans, little things, etc. As well as offering games, educational videos that arouse curiosity, mainly through active methodologies, doing, performing, preparing these spaces of new digital technologies aimed at the improvement and development of learning.

In this sense, technological resources have become indispensable elements in the application and valorization of these new environments for the acquisition of knowledge, due to their mechanisms and equipment that work as complementary resources in teaching and learning in early childhood education: videos and resources of alternative communication for the target audience of



Special Education. According to França (2018), with technology, teachers have access to materials that enable a diversity of content, knowing how to use these resources and how to apply them can improve student learning and the teacher's routine. The educational directions given for an effective inclusion point to Alternative Communication as an instrument that can transit between the thought and language of the child who does not speak, modifying a reality by allowing child development to be supported by communication that interacts with his social life (VON TETZCHNER, 2005). Alternative Communication is one of the areas of Assisted Technology (AT) that aims to promote skills of people with functional limitations resulting from different disabilities.

Clearly, it can be seen that Special Education is not just another specific task to which the school must dedicate itself, but a horizon in which the school needs to be effectively inserted. That is, the school needs to transform itself in order to become fully inclusive. More than that, everyone involved – managers, teachers, parents, staff in the school context – needs to raise awareness and embrace a school for all.

## RESULTS AND DISCUSSION

The place where the present study was carried out was the Child Development Space in question, which is ten years old and is located in the West Zone of Rio de Janeiro, coordinated by the 9th CRE – Organ of the Municipal Department of Education / SME. It is managed by the General and Deputy Director, articulating teacher, Early Childhood Education teachers, agents and employees of the Municipal Education Network, whose objective is to develop teaching-learning in students of Early Childhood Education of Basic Education, in a public school network in regular classes with inclusion.

Regarding the pedagogical actions that guided this research, the teacher carried out playful activities using proposals that involve the student and the environment, which show the importance of planting a tree, saving water, disposing of garbage correctly, this is done by taking the student out of the classroom, planting trees around the school, offering seedlings for the student to plant at home, in the care of the vegetable garden, made with the collaboration of the students, showing that even when watering plants and vegetables, care must be taken with the waste of water, identify that each trash can has its function in the storage and disposal of garbage. The student must learn that he is directly connected with nature, and all this transformation will have a direct impact on him and his family future. As well as, through explanatory videos on the theme with images and music, making the themes more expository and attractive for this age group. The children's interest and curiosity were aroused during the proposed activities, resulting in new discoveries for the whole class, including regular students and those with special needs. The objectives outlined for the execution of



the themes discussed in this article were successfully achieved, and this was noticed by the teachers during the activities.

## **FINAL THOUGHTS**

Debating sustainability in educational institutions/EDI and in the family environment is of paramount importance for the awareness and preservation of the environment. It is by planting the "little seed" of knowledge in this age group of Early Childhood Education, with learning through play, that everything becomes more pleasurable. The use of technology through electronic games in conjunction with actions such as turning off the tap while brushing your teeth, turning off the lights when you leave the room, turning off the electronic device when you finish using it, is already propagated in the explanation of our children in their homes with the family and so, each one taking care of the "little world" a little bit we are developing good attitudes in taking care of our Planet correctly.

Finally, it is concluded that working on elements that contribute to a significant inclusion, through proposals with educational intentionality in contribution to the social and natural environment, favor the development of the concept that we are part of nature and must preserve it. Enabling experiences outside the classroom strengthens this bond with the environment and enriches pedagogical practice.



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