





REGET, v. 27, e84667, 2023 • https://doi.org/10.5902/2236117084667 Submitted: 04/08/2023 • Accepted: 22/10/2023 • Published: 02/08/2024

Environmental Education

The School Garden as an interdisciplinary resource for teaching and learning in the early years

A Horta Escolar como um recurso interdisciplinar para o ensino e a aprendizagem nos anos iniciais

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ABSTRACT

This work aims to present the contributions of a vegetable garden in the school context of Elementary School - early years, providing the interdisciplinary teaching of Science, Mathematics, Arts, Physical Education, Religious Education, Geography, History, English Language, Portuguese language, and contemplating the general competences of the National Common Curricular Base. The study was developed with fifth grade students at an Elementary School in the city of Santa Maria (RS, Brazil). For its effectiveness, we sought to understand the National Common Curricular Base and its general competences about interdisciplinarity and the concepts worked in the different disciplines that go through the Initial Years of Elementary School. The dynamics of work were guided by a didactic sequence that guided the activities, namely: 1th) Investigation of previous knowledge of students; 2th) Recognition of physical space for the construction and management of the School Garden; 6th) Contribution of each curricular component in the School Garden; 7th) Impact of the interdisciplinary activity. The vegetable garden, which was planned and built together with teacher and students, presented itself as a concrete environment for the realization of practical activities by students, allowing them to relate theory and practice as well as the approach of concepts in an interdisciplinary way.

Keywords: National Common Curriculum Base; Elementary School; Didactic Sequence

RESUMO

Este trabalho tem como objetivo o de apresentar as contribuições de uma horta no contexto escolar do Ensino Fundamental – Anos Iniciais, oportunizando o ensino interdisciplinar de Ciências, Matemática,



Artes, Educação Física, Ensino Religioso, Geografia, História, Língua Inglesa, Língua Portuguesa, e contemplando as competências gerais da Base Nacional Comum Curricular. O estudo foi desenvolvido com alunos do quinto ano de uma Escola de Ensino Fundamental do município de Santa Maria (RS, Brasil). Para a sua efetivação, buscou-se o entendimento sobre a Base Nacional Comum Curricular e das suas competências gerais, sobre a interdisciplinaridade e os conceitos trabalhados nas diferentes disciplinas que perpassam os Anos Iniciais do Ensino Fundamental. A dinâmica de trabalho se deu por meio de uma sequência didática que norteou a realização das atividades, a saber: 1°) Investigação dos conhecimentos prévios dos alunos; 2°) Reconhecimento do espaço físico para a construção da horta; 3°) Pesquisa sobre as culturas; 4°) Planejamento da atividade interdisciplinar; 5°) Construção e manejo da Horta Escolar; 6°) Contribuição de cada componente curricular na Horta Escolar; 7°) Impacto da atividade interdisciplinar. A horta, que foi planejada e construída em conjunto com a professora e os alunos, apresentou-se como um ambiente concreto para a realização de atividades práticas dos alunos, permitindo relacionar a teoria e a prática, bem como a abordagem dos conceitos de forma interdisciplinar.

Palavras-chave: Base Nacional Comum Curricular; Ensino Fundamental; Sequência Didática

1 INTRODUCTION

The National Common Curriculum Base (NCCB) is a reference document for the construction of school curricula, which integrates the national policy of Basic Education and determines the essential knowledge that all students have the right to learn. The NCCB also highlights active learning from concrete situations and experiences of children's daily life and their knowledge, as a way to improve the quality of teaching throughout Brazil and promote educational equity (Brazil, 2017).

From these guidelines came the impetus for this study, which was to investigate the contributions of a school garden for interdisciplinary teaching in the early years of elementary school, in order to achieve the general competences of NCCB, from the skills and knowledge proposed and through an active and contextualized learning, valuing the experiences of children in a school on the outskirts of the city of Santa Maria (RS, Brazil).

In view of this purpose, we investigated the reality of the school, its physical characteristics and educational needs, as well as the reality of the students. Thus, it was realized that the construction of a vegetable garden in the school environment could be a didactic resource, appropriate to the physical conditions of the school, since this did not present a conventional space for a laboratory, that would present multiple possibilities to teach the contents of the different curricular

components proposed by NCCB, in addition to meeting the demand for school vegetables. For this to be effective, the study began with the idea of understanding how a garden could become an interdisciplinary learning space, what knowledge this space would provide to contribute to the teaching of different areas of knowledge, which sequence of activities would be possible to relate the theory addressed in the classroom with the practical activities and, also, what actions to form subjects capable of acting as transforming agents of the environment in which they live, the competence to make choices and interventions ethically committed to the values of the common good and sustainability.

2 THEORETICAL REVIEW

2.1 The general competences of the National Common Curricular Base

Figure 1 represents the General Competencies of the National Common Curriculum Base.

Figure 1 – Genera	competences of the National Common Curriculum Base

1- Knowledge	6- Self-management
2- Scientific, critical and creative	7- Digital culture
thinking	
3- Cultural repertoire	8- Self-knowledge and self-care
4- Communication	9- Empathy and cooperation
5- Argumentation	10- Autonomy and responsibility

Source: by the author

According to NCCB, recognizing oneself in its historical and cultural context, communicating, being creative, analytical-critical, participatory, open to the new, collaborative, resilient, productive and responsible requires much more than the accumulation of information. It requires the development of skills to learn to learn, to know how to deal with increasingly available information, to act with discernment and

responsibility in the contexts of digital cultures, to apply knowledge to solve, to have autonomy to make decisions, be proactive to identify the data of a situation and seek solutions, live and learn from differences and diversities (Brazil, 2017). Thus, teaching by skills favors interdisciplinarity, because the same competence can be worked by several curricular components.

2.2 Interdisciplinarity in the early years of elementary school

National Common Curriculum Base proposes to overcome the radically disciplinary fragmentation of knowledge, the stimulus to its application in reality, the importance of the context to give meaning to what is learned and the protagonism of the student in his learning and in the construction of his life project (Brazil, 2017).

Maingain and Dufour (2002) found that knowledge is global, based on multidimensions that are not necessarily restricted to disciplinary areas, however, a disciplinary field offers systematizations necessary for learning. The combination of multidimensions and systematizations builds representations of a situation of its own, understood as an interdisciplinary perspective. In the early years of elementary school, interdisciplinarity guides its own way of teaching, being a peculiarity of the unidocent classes from the first to the fifth year of the Initial Years of Elementary School (Caixeta, 2017). Thus, the interdisciplinary articulation of knowledge is favored in the Early Years, since unidocent practice can provide a coordinated action between disciplines. In this stage of teaching, all knowledge produced in a contextualized and articulated way is relevant to the process of reading, writing, problem solving, interpretation and understanding of the world (Ferreira; Tribeck, 2010).

According to Caixeta (2017), the unidocent teachers, when selecting and organizing the knowledge to teach, evaluating and questioning the impact of these on the formation of children, seek the sources of systematic knowledge and in the

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light of different areas of knowledge, the different perspectives and approaches of understanding the social world, enabling students to think critically about reality in its dynamic and contradictory character.

Interdisciplinarity can be understood as an exchange of reciprocity between disciplines or sciences, or rather, areas of knowledge. The prefix inter, among the various concepts that can be attributed to it, has the meaning of "exchange", "reciprocity" and "discipline", "teaching", "instruction", "science" (Ferreira, 2011, p. 22). In order for interdisciplinarity to be part of the daily school life, it is necessary that the various areas of knowledge are united from the same object. In addition, it is necessary to create a problem-situation in the sense of Freire (1974), in which the idea of project is born from common consciousness, the researchers' faith in the recognition of the complexity of the situation and in the availability of researchers to redefine the project to each question or to each response found. Thus, they should converge not towards a final answer, but towards the search for meaning of the initial problem-situation (Fazenda, 2008). In this perspective, always thinking the teacher as a researcher, we seek to know and relate contents, methods and theories, combining partial and specific knowledge in search of the totality of knowledge, reconstructing it through new questions, search for the integral development of the student.

2.3 The school garden as an interdisciplinary resource

A vegetable garden, inserted in the school environment, becomes a space of possibilities for the development of various pedagogical activities, uniting knowledge and doing. Silva et al. (2023) emphasize that the vegetable garden can be worked in schools as a didactic resource for the teaching of various disciplines, in addition to relating practical knowledge to the theoretical, promoting knowledge of food and environmental education, as well as family life in society.

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It is necessary that students seek to relate knowledge with reality, giving meaning to the learning of the concepts presented, as an important tool to understand the reality in which they live (Trentin; Pereira, 2014).

> teaching should be based on principles that lead the student not only to the knowledge of scientific contents, but that these create conceptions of responsibility, care for the environment, agent of transformative actions, characteristics necessary for life in society. (Trentin; Pereira, 2014)

Another factor is that the school garden allows differentiated and practical classes, enabling learning, which only occurs in four basic conditions: motivation, interest, the ability to share experiences and the ability to interact with different contexts (Santana et al., 2014). Oliveira and Messeder (2019) reinforce that the potential of the school garden is revealed in educational actions that integrate environmental issues, with a view to changing attitudes, cooperation, solidarity, respect and tolerance. Such aspects are intrinsically related to the humanistic aspects necessary for social coexistence.

With this, the proposal of a vegetable garden in the school space, used as a didactic resource, presents itself as an interdisciplinary environment that allows relating the theoretical with the practical, with concrete motivation for the student to build the necessary knowledge to able to understand and intervene in their reality, changing it consciously.

It is observed that the school garden, besides being a space in which the theory of the various curricular components is translated into practice, favoring the process of teaching and learning, as well as environment for environmental education activities and the acquisition of healthy habits, improving the physical and mental health of students, extending to that of the whole community.

3 METHODOLOGY

The study was conducted at the Castro Alves Municipal Elementary School, which was founded on June 27, 1954. The school is located in Vila Oliveira, Passo da Areia neighborhood, in the municipality of Santa Maria, and serves students from 1st to 9th grade of elementary school, in the morning and afternoon shifts.

The teaching strategy used was the Didactic Sequence (DS) which consists of a set of activities, strategies and interventions, planned, step by step by the teacher, so that the understanding of the content or theme proposed is achieved by the students (Kobashigawa et al., 2008). It is believed that the Didactic Sequence is a strategy that instigates scientific research and values the learning experienced by students in the various learning environments. In the course of the units of a Didactic Sequence, students have the opportunity to analyze situations, rethink and reorganize themselves, to, in the end, propose solutions. Figure 2 shows the stages related to this study.

Figure 2 – Stages of the Didactic Sequence General competences of the National Common Curriculum Base

Stage	Activity
1°	Investigation of students' prior knowledge.
2°	Recognition of physical space for interdisciplinary activity.
3°	Study on the cultures.
4°	Activity planning.
5°	Construction and management of the School Garden.
6°	Contribution of each curricular component in the School
	Garden.
7°	Impact of interdisciplinary activity.

Source: by the author

4 RESULTS AND DISCUSSION

After the implementation of each stage of DS in school, it was found that the proposed activities achieved the initial objectives of the work. Next, the discussion of each stage is presented.

a) 1st stage: Investigation of students' previous knowledge.

The first stage of the DS consisted of the investigation and diagnosis of previous knowledge that students had about the subject under study. One of the questions asked was What do you usually eat in your home? The foods indicated by the students as the most consumed were: rice (14 students), beans (13), bread (14), vegetables (11) and meat (13).

b) 2nd stage: Recognition of physical space for interdisciplinary activity.

In the second stage, the students, accompanied by the teacher, went to know the space in the school that would be intended for the implementation of the garden. At this time, it was possible to observe the solar incidence, the proximity of water for irrigation, the ventilation of space and the characteristics of the soil, such as color, porosity, permeability and texture.

To verify the permeability of the soil, an experiment was carried out. According to Bizzo (2002), science classes can be developed with experimental activities and, in general, do not require the sophistication of equipped laboratories, because few schools actually have.

This activity was carried out with great enthusiasm by the students. Exercising observation, investigating aspects of nature was challenging and innovative, since for many it was the first time they performed an experiment. Exercising intellectual curiosity and resorting to the science approach is one of the skills proposed by NCCB. c) 3rd stage: Study on crops.

In the third stage, a visit was organized to the Olericulture sector of the Federal University of Santa Maria (UFSM), to know techniques of organic cultivation of vegetables, such as the association of plants, for the alternative control of pests and pathogens, use of space and available resources, such as water, fertilization and even the sun.

It was also researched on permaculture, as a set of practices that aim to meet the needs of the human being from the sustainable use of natural resources, such as food, energy and water, without changing the natural life cycle (Legan, 2004).

d) 4th stage: Activity planning.

This stage was the time to plan the garden, with an interdisciplinary bias, using the knowledge acquired in the previous stages. The first task was to check the dimensions of the space for the garden. For this, it was studied in class the content referring to the units of measure of length, exploring the relationship between 1 meter and 100 centimeters. With tape measure, notebook and pen, the students went to the garden and checked the measurements of the space. Back in the classroom, it was reduced in checkerboard paper, the area of the garden using the scale of 1 meter equal to 10 comics of the mesh. On the same grid paper, the students drew the sketch of the garden with the flower beds in geometric shapes. Thus, they applied the mathematical knowledge about the flat geometric figures and the reduction of polygonal figures in grid. This work was carried out in cooperation, students who finished first helped colleagues who were having some difficulty in making the sketch.

It can be observed that students were able to perform the established activity. They reduced the figures with the aid of a grid, developing one of the skills proposed by BNCC for 5th grade Mathematics.

e) 5th stage: Construction and management of the school garden.

With the soil unpacked and fertilized, with the help of a student's father, some students were available to make the beds in geometric shapes, the others helped in the measurements of the beds, according to the sketch chosen to better enjoy the garden space.

To demarcate the beds, the students needed to carry out the opposite process to the one they used to draw the sketch of the garden, that is, they had to expand the drawings of the geometric figures of the sketch to the concrete space of the garden, employing the scale of a comic equal to ten centimeters or ten comics equal to one meter. The activity was performed by pairs of students after the analysis of the sketch.

There was concern about how to build the beds, since this activity requires physical effort, but some students soon volunteered to do it, arguing that they had physical conditions to turn the soil and build the beds. The hoe and shovel used in the execution were disputed by several students who also wanted to participate in the construction of the garden.

Lettuce seedlings of different varieties, cabbage, cauliflower, broccoli, beetroot, eggplant, spinach, parsley, chives and tomato were planted.

They were also cultivated, close to vegetables, aromatic medicinal herbs, as a way to repel insects that caused damage to plants. To organize the planting of vegetables, groups of students were formed who alternately carried out the cultivation with the guidance of the teacher. While one group participated in the planting, others stayed in the classroom with activities. This was possible because the class was composed of only 16 students willing to collaborate with the construction of the garden.

However, before the students planted the seedlings, the teacher demonstrated how they should do fixing the roots to the ground and leaving the leaves out. The students used disposable gloves provided by the teacher as a form of hand protection. The garden management was carried out by groups of three

and four students, organized in scale, who daily went to the garden to water, observe the growth of the plants and the incidence of some harmful insect and put tutors on the plants they needed. When watering the plants, we used the knowledge of volume measurements, previously seen in the classroom. In this process, some students questioned the time to water the plants, because their parents had told them that if they watered them at times when the temperatures were high due to the Sun, they would die. To prove or refute this hypothesis, an experiment was conducted. At noon, two plants that were in full sun were irrigated, one had its leaves wet and in another only the soil was watered to its surroundings. The next day, he returned to the garden to check on the plants. They realized that they were alive, but that the plant whose leaves were irrigated had some aphids. It was believed that moisture and heat favored the incidence of the weed insect. To combat them, a survey was conducted on the Internet, in the School's computer laboratory, to know which method was least harmful to the environment.

However, in a conversation circle, students were asked about the relationship between temperature and evaporation. Another practical activity was carried out when the soil of the garden was irrigated at times with different temperatures. The students understood that irrigating the garden with high temperatures accelerated evaporation and increased the amount of water used for irrigation, going against the principles of sustainability. After, a textual production describing the practical activity was performed. Exercising intellectual curiosity and resorting to the proper approach to science is one of NCCB's competences.

g) 6th stage: Contribution of each curricular component in the school garden. Figure 3 describes the curricular components contemplated in the interdisciplinary activity, as well as the contribution of each component in the proposal. It is emphasized that all stages of the Didactic Sequence have an interdisciplinary bias.

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Component	Contribution
Curricular	
Art	Sketch of the school garden.
Science	Irrigation.
	Soil and water quality.
	Hydrological cycle.
	Movement of the Earth.
	The phases of the Moon.
	Healthy eating.
	Integration between Digestory, respiratory and circulatory systems. Physical properties of materials.
	Conscious consumption.
	Diversity of plants.
	Relationship of plants with the environment.
Physical	Maintenance of body health.
education	
Religious	Ecology.
education	Parable of the Sower.
Geography	Cardinal points.
	The agricultural regions of Rio Grande do Sul.
History	The importance of agriculture in human history.
	The history of Rio Grande do Sul associated with agriculture.
English	Vocabulary.
language	
Portuguese	Reading, textual production and orality.
language	
Mathematics	Geometric shapes.
	Fractions.
	Units of measure.
	Mathematical operations.

Figure 3 – Contributions of Curricular Components in the interdisciplinary activity

Source: by the author

To contemplate the curricular component Art, this study developed the sketch of the school garden and the cover of the field diary with the theme of vegetables grown in the garden.

In the Sciences, we worked with the preparation of the soil for planting, analyzing it for permeability, texture and color. The seasons were studied so that vegetables could be defined and, when planting them, their parts were recognized. A survey was conducted in the form of an interview with family members about the popular knowledge of the influence of the phases of the Moon in the planting of vegetables. From the irrigation of the garden, the hydrological cycle and the importance of vegetation cover for soil preservation were studied. The need for water for the maintenance of life was understood. The temperature of the environment was related to the physical states of the water, through a practical activity when it was observed evaporation when irrigating the garden at times with different temperatures (early morning, noon). It was observed the incidence of the Sun in the garden space and its importance for the development of plants was studied. After cultivation, the vegetables were harvested, and the students could recognize the nutrients present in the plant according to their color and their functions. Thus, a balanced menu was organized, recognizing its importance for the maintenance of the body's health, thus introducing the study of the integrated Digestive, Circulatory and Respiratory Systems. Healthy foods were prepared in the school cafeteria with vegetables planted in the garden. Students were able to understand the importance of conscious consumption through readings and discussions in the group.

The need to have healthy habits, such as practicing physical activities, having a healthy diet with higher consumption of vegetables, having contact with nature and living in a group, was addressed in the curricular component of Physical Education.

In Religious Education, students answered a Quiz to understand that plants are part of a complex and harmonious system and reflect on what can be learned from plants to reproduce in society. Then they made a word cloud with the word cooperation. The Parable of the Sower was also read, relating it to the garden and reflecting on the teachings for life.

In the curricular component of Geography, the cardinal points were located from the garden. The construction of vegetable gardens was recognized as a possibility to contribute to the improvement of the environment and quality of life in the community where the school is located. The population dynamics was analyzed and the construction of urban gardens was related as a possibility to solve

a possible lack of food caused by the population increase. The agricultural regions of Rio Grande do Sul were identified.

The importance of the emergence of agriculture in humanity was studied in the curricular component of History. Thus, it was seen that nomadic peoples, who fed on hunting, fishing and collecting plant products, when they dominated agriculture and began to plant, became sedentary, giving rise to the first cities. We also studied aspects related to the importance of vegetables, which began to be valued at the time of the Great Navigations, because the ship's crew had a diet based on bread and salted meat, without vegetables, being poor in vitamins and causing diseases, like scurvy. Thus, it turned out that consuming raw vegetables was essential to prevent these diseases. It was researched, still in History, the origin, in Rio Grande do Sul, of the main agricultural products.

In the curricular component English Language, the names of foods in English were known, especially healthy ones, such as vegetables.

Readings and interpretations of texts related to the vegetable garden were one of the activities proposed in the curricular component Portuguese Language. The production of texts of various genres, such as letters, reports, interviews, poems and posters, was also part of this curricular component. In the study of grammatical classes, informative texts on vegetable gardens were used.

The activities of the curricular component Mathematics were essential in the construction of the school garden, from the verification of the measurements of the space using until the units of Grandeur from which was stimulated the ability to reduce and expand figures; the construction of beds from the knowledge in geometry to the calculation of the number of seedlings planted in the garden. When irrigating the garden, the knowledge of the units of volume measures was applied. The garden beds divided into equal parts favored the understanding of the fractions. At the end, when the students prepared the carrot cake, they contemplated the directly proportional object of knowledge.

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h) 7th stage: Impact of interdisciplinary activity.

The vegetable garden, in the school environment, enabled the understanding of abstract knowledge, seen in the classroom, through practical activities, favoring the teaching articulated among the curricular components; promoted the reflection and analysis of encouraged research in the search for solutions to problems that arose during its implementation and valued group work. Through group work, students interacted, developed a sense of cooperation and experienced the construction of knowledge.

From the beginning, when the garden proposal was presented, the students were interested in participating in the project, the possibility of learning in an environment outside the classroom generated many expectations in the students. But as the construction of the garden was coming to fruition, greater was the understanding, interest and commitment, everyone in one way or another wanted to participate. And so it happened. While some students measured the length of the garden, others checked if it was correct and still others noted the measurements in the notebook. The cooperation was important when drawing the sketch, who was easier helped those who had difficulty to perform the activity. To make the beds in the garden according to the chosen sketch, there was also the participation of all, as well as in all activities during the project.

The fulfillment of the scale of the work in the garden was checked by the whole class, and when a student missed class, everyone wanted to replace him. Another aspect in which the construction of the garden positively impacted was the attendance of the students, it was observed that the number of school absences decreased after the implementation of the school garden.

The visit to the Federal University of Santa Maria, when they knew new places and knowledge, strengthened the enthusiasm of the students to participate in the project and the interaction in the group, with the feeling of belonging and respect for the other.

In the days following the cultivation of vegetables, there was a precipitation that disrupted the garden beds, damaging the vegetables. However, students were encouraged not to give up, look for solutions to the problem and replant the vegetables. It was proposed by the students that the new beds be delimited with bricks, as they had seen in UFSM, so that the rain did not destroy them. A commercial establishment donated the bricks to the School and it was defined that an adult would help put them around the beds. But the group of students who were on the work scale on the day they delivered the bricks to the school, when carrying out the care of the garden, took time to return to the classroom. When the teacher went to check the reason for the delay, she found them laying the bricks around the beds on her own initiative.

This episode demonstrated one of the positive impacts of the construction of the garden in the school environment, because it was possible to verify the development of skills, such as resilience, protagonism and autonomy.

Regarding the quantitative aspect, there was an evolution in learning during the school year, but it was during the third quarter, when the garden was built, that there was a more significant progress. In order to build a graph with the quantitative evolution, the evaluation by concepts was transformed into grades and was calculated the average of the grades of the class per quarter.

It can be said that there was a growth in the qualitative aspect of the students participating in the project. Empathy, commitment, cooperation, enthusiasm, interest and interaction were constant during the development of the project, making students more participative, autonomous and confident. The results, obtained here, corroborate with those of Oliveira and Messender (2019), in a research with school garden in the municipality of Caxias (Rio de Janeiro), which indicate that children have an attentive and critical look at social issues that relate to the development of science and technology and that the work of the teacher should insert the child in decision-making processes sharing responsibilities and exercising training for citizenship.

One can observe the progress of the students' school performance, through the average grades of the class. In the first quarter, the average class grade was 7, in the second quarter was 7.4 and in the third was 8.2. It was also noticed that the difference between the first and second quarters was 0.4 and the difference from the second to the third quarters was 0.8, which showed a greater progress in average grades from the construction of the garden in the third quarter. Silva et al. (2023), in similar work carried out in Mossoró (Rio Grande do Norte), also found that the students showed interest in cultivation practices and the school garden contributed to the development of interdisciplinary and contextualized teaching, knowledge of different disciplines.

Therefore, it was found that the possibility of using the knowledge seen in the classroom, in concrete activities in a different environment, combined with factors such as affection, group work, research, the research and the visit to cultural spaces had a positive impact on the students' school performance.

5 CONCLUSION

At the end of this study it can be seen that a garden inserted in the school environment, as an interdisciplinary didactic resource, was a resource that favored the process of teaching and learning, activities that relate to the knowledge of the various areas and seen in the classroom.

To build the garden, the students used mathematical knowledge; they planted and cared for the vegetables from the knowledge in Science. In addition, they understood the need to have a healthy diet, used communication and information technologies, investigated hypotheses originated in common sense, learned to work in groups, had a closer look at the environment, experiences and systematized scientific knowledge from their experiences. As challenges arose, students faced them with resilience, autonomy and creativity. In this context, teacher and students learned together.

Thus, the construction of the school garden provided several activities that provided knowledge and skills in cognitive, social and personal aspects and met the needs, possibilities and interests of students, development of skills recommended by NCCB.

It was found that, even in a small space, the school garden reproduced concrete everyday situations, which were the starting point for the systematization of scientific knowledge in school, where it is still considered a teaching strategy for all disciplines. As the activities were developed, there were more possibilities to produce other knowledge.

With this, it is expected that the experiences and experiences acquired in the construction of the school garden are reproduced and strengthened throughout the life of students, so that they are conscious citizens, questioners, able to position themselves and take the leading role in their decisions, always based on knowledge.

To conclude this study, an Educational Product was developed, in the form of video, to disseminate the trajectory traveled, the strategies used and the results obtained, to inspire teachers in their pedagogical practices. The video is available on the EDUCAPES educational objects portal at the following link: http://educapes.capes.gov.br/handle/capes/601093.

REFERÊNCIAS

BIZZO, N. **Ciências:** fácil ou difícil. São Paulo: Ática, 2002.

BRASIL. Secretaria de Educação Básica. Diretoria de Apoio à Gestão Educacional Ministério da Educação. Secretaria de Educação Fundamental. **Base Nacional Comum Curricular** (BNCC). Brasília, DF: SEB, 2017.

BRASIL. Ministério de Educação e Cultura. **LDB** - Lei nº 9394/96, de 20 de dezembro de 1996. Estabelece as Diretrizes e Bases da Educação Nacional. Brasília: MEC, 1996.

CAIXETA, S. da S. **Unidocência**: uma análise do trabalho de professores dos anos iniciais do ensino fundamental. 2017. 134 f. Dissertação (Mestrado em Educação) – Universidade Federal de Uberlândia, Uberlândia, 2017. Disponível em: https://repositorio.ufu.br/handle/123456789/20691. Acesso em: 31 jul. 2023.

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FAZENDA, I. C. A. **Interdisciplinaridade-transdisciplinaridade**: Visões culturais e epistemológicas. In: Fazenda, I. (org.). O que é interdisciplinaridade? São Paulo: Cortez, 2008.

FERREIRA, M. E. de M. P. Prólogo: perceber-se interdisciplinar. In: FAZENDA, I. C. A. (org.). **Práticas interdisciplinares na escola**. São Paulo: Cortez, 2011, p. 11-12.

FERREIRA, S. M. S., TRIBECK, P. M. de A. A tessitura unidocente na construção do conhecimento científico nos anos iniciais. In: II SIMPÓSIO NACIONAL DE ENSINO DE CIÊNCIA E TECNOLOGIA. 2010, Ponta Grossa. **Anais** [...]. Ponta Grossa: UTFPR, 2010. Disponível em: www.sinect.com.br/anais2010/artigos/ECSI/143.pdf. Acesso em: 29 jul. 2023.

FREIRE, P. **Pedagogia da autonomia**. Rio de Janeiro: Paz e Terra, 1974.

KOBASHIGAWA, A. H. et al. **Estação ciência**: formação de educadores para o ensino de ciências nas séries iniciais do ensino fundamental, 2008. São Paulo: ABC, 2008. p. 212-217. Disponível em: https://www.researchgate.net/publication/242566943_ESTACAO_CIENCIA_FORMACAO_DE _EDUCADORES_PARA_O_ENSINO_DE_CIENCIAS_NAS_SERIES_INICIAIS_DO_ENSINO_FUNDA MENTAL. Acesso em: 25 jul. 2023.

LEGAN, L. **Escola sustentável-eco-alfabetizando pelo ambiente**. São Paulo: Imprensa Oficial do Estado de São Paulo, 2004.

MAINGAIN, A.; DUFOUR, B. **Abordagens didáticas da interdisciplinaridade**. Lisboa: Instituto Piaget, 2002.

OLIVEIRA, D. A. dos S.; MESSEDER, J. C. Horta escolar: ampliando o contexto das questões sociocientíficas nos anos iniciais do Ensino Fundamental. **R. Bras. Ens. Ci. Tecnol.**, v. 12, n. 1, p. 240-271, jan./abr. 2019

SANTANA, L. M. S. et al. Horta Escolar como Recurso no Ensino de Ciências na Perspectiva da Aprendizagem Significativa. **Revista de Ciências Exatas e Tecnologia**, v. 9, n. 9, 2014.

SILVA, M.R.F. da; SILVA, C.A.F. da; SILVA, M.C.F. da; DUTRA, G.; SOARES, Y.T.S. Hortas escolares e interdisciplinaridade nos anos iniciais do ensino fundamental. **Revista de Matemática**, **Ensino e Cultura-REMATEC**, n. 45, e2023010, 2023.

TRENTIN, E. S.; PEREIRA, L. B. C. Escola do Campo: Ensinando e Aprendendo no Contexto daHorta Métrica. In: ENCONTRO PARANAENSE DE EDUCAÇÃO MATEMÁTICA, 2014, CampoMourão. Anais [...]. Campo Mourão: Universidade Tecnológica Federal do Paraná, 2014. p. 1-13.Disponívelbisponívelem:

http://sbemparana.com.br/arquivos/anais/epremxii/ARQUIVOS/COMUNICACOES/CCAutor/CC A026.PDF. Acesso em: 25 jul. 2023.

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How to quote this article

Peixoto S. C., Serafim S. D., & Dorow T. S. C. The School Garden as an interdisciplinary resource for teaching and learning in the early years. **Revista de Gestão, Educação e Tecnologia ambiental**, Santa Maria, v.28, e84667, p. 1-20, 2024. DOI 10.5902/2236499484667. Disponível em: https://doi.org/10.5902/2236499484667. Acesso em: Day, abbreviated month, year