WATER AS A TRANSVERSAL AXIS OF LEARNING IN SCHOOL TEXTBOOKS FOR CHILEAN PRIMARY EDUCATION STUDENTS

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ABSTRACT

Objective: The objective of this study is to investigate the presence of water as a transversal learning axis in the activities of Natural Science textbooks in Chilean Basic Education.

Theoretical Framework: The theoretical framework is associated with the 2030 Agenda and the Sustainable Development Goals, the Chilean science curricular bases, as well as the didactic management associated with school textbooks.

Method: The mixed method is followed, through content analysis, the elaboration of a priori categories, supported by quantitative elements to describe and interpret the data obtained from the analysis of school textbooks.

Results and Discussion: The results obtained revealed the presence of activities, still insufficient, that deal with the topic of water in the texts. The highest frequencies of educational activities are found in the fifth and sixth grades. The skills promoted are intellectual capacities (operations to acquire, recover, solve problems and retain different types of knowledge); on the other hand, the skills that demand a process of practice (mastery of the technique or skill), attitudes and habits, such as ways of acting and behaving, are the least promoted.

Research Implications: The implications of the study are referred to the methodology of science teaching in Basic Education and the respective teacher training.

Originality/value: The results of the study contribute to filling a gap in the literature related to the teaching of water proposed in school textbooks. With this, guidelines are provided to improve the activities suggested in the textbooks, promoting awareness of water, its reuse and conservation.

Keywords: Water, Natural Sciences, Basic Education, School Textbooks.

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A ÁGUA COMO EIXO TRANSVERSAL DA APRENDIZAGEM NOS LIVROS ESCOLARES PARA ALUNOS DA EDUCAÇÃO FUNDAMENTAL CHILENA

RESUMO

Objetivo: O objetivo deste estudo é investigar a presença da água como um eixo transversal de aprendizagem nas atividades dos livros didáticos de Ciências Naturais na Educação Básica no Chile.

Referencial Teórico: O marco teórico está associado à Agenda 2030 e aos Objetivos de Desenvolvimento Sustentável, às bases curriculares de ciências chilenas, bem como à gestão didática associada aos livros didáticos escolares.

Método: O método misto é utilizado, por meio da análise de conteúdo, do desenvolvimento de categorias a priori, com o apoio de elementos quantitativos para descrever e interpretar os dados obtidos com a análise dos livros didáticos.

Resultados e Discussão: Os resultados obtidos revelaram a presença de atividades, ainda insuficientes, que tratam do tema água nos textos. As maiores frequências de atividades educacionais são encontradas na quinta e sextas séries. As habilidades promovidas são as capacidades intelectuais (operações para adquirir, recuperar, resolver problemas e reter diferentes tipos de conhecimento); por outro lado, as habilidades que exigem um processo de prática (domínio da técnica ou habilidade), atitudes, hábitos, como formas de agir e se comportar, são as menos promovidas.

Implicações da Pesquisa: As implicações do estudo referem-se à metodologia do ensino de ciências na Educação Básica e à respectiva formação de professores.

Originalidade/valor: Os resultados do estudo contribuem para preencher uma lacuna na literatura relacionada ao ensino da água proposto nos livros didáticos escolares. Com isso, são fornecidas orientações para aprimorar as atividades sugeridas nos livros didáticos, promovendo a conscientização sobre a água, sua reutilização e conservação.

Palavras-chave: Água, Ciências Naturais, Educação Básica, texto Escolar.

EL AGUA COMO EJE TRANSVERSAL DE APRENDIZAJES EN TEXTOS ESCOLARES PARA ESTUDIANTES DE EDUCACIÓN BÁSICA CHILENA

RESUMEN

Objetivo: El objetivo de este estudio es investigar la presencia del agua como eje de aprendizaje transversal en las actividades de los textos escolares de Ciencias Naturales en la Educación Básica de Chile.

Marco Teórico: El marco teórico se encuentra asociado a la Agenda 2030 y los Objetivos de Desarrollo Sostenible, las bases curriculares de Chile en ciencias, como también la gestión didáctica asociado a los textos escolares.

Método: Se sigue el método mixto, mediante el análisis de contenido, la elaboración de categorías apriorísticas, con apoyo de elementos cuantitativos para describir e interpretar los datos obtenidos del análisis de los textos escolares.

Resultados y Discusión: Los resultados obtenidos revelaron la presencia de actividades, aún insuficientes, que tratan el tema agua en los textos. Sus mayores frecuencias de actividades educativas se advierten en quinto y sexto año. Las habilidades que promueven son las capacidades intelectuales (operaciones para adquirir, recuperar, resolver problemas y reter diferentes tipos de saberes); en cambio, las destrezas que demandan un proceso de práctica, (dominio de la técnica o habilidad), las actitudes, hábitos, como formas de actuar, comportarse, son las menos promovidas.

Implicaciones de la investigación: Las implicaciones del estudio están referidas a la metodología del profesorado de ciencia en Educación Básica y la respectiva formación docente.
1 INTRODUCTION

Since some decades, the earth has begun to show various changes and manifestations that reveal indicators of a global crisis, associated mainly with water as a water resource for the life of the planet and its members. The alteration of the rhythm of the rains, of the rivers and lakes, turns out to be evident for the public opinion and a great concern for the researchers, academics and educators, as well as for the individuals, families and educational communities interested in coming from their territory (United Nations [UN], 2015; World Resources Institute [WRI], 2019).

To this local concern is added the voice of international agencies, such as the UN, the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Children's Fund (UNICEF), among others. All of which express concern and doubt about the future of the planet and of life in general, even in the last 50 years various initiatives have been proclaimed such as: the United Nations Conference on Water (1977), the International Drinking Water and Sanitation Decade (1981-1990), the International Conference on Water and the Environment (1992) and the Earth Summit (1992). Situation that has been maintained in the present century with: the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015-2030, the Addis Ababa Action Agenda 2015 on Financing for Development, and the Paris Agreement 2015 within the Framework of the United Nations Convention on Climate Change (World Water Development Report [WWDR., 2020), being one of these results expressed in the formulation of the Sustainable Development Goals (SDGs), that refers to the current water problem, that is, the number 6 of the SDGs.

Goal 6 challenges “ensuring the availability and sustainable management of water and sanitation for all” (UN, 2023, p. 63). The targets of this objective cover both water cycle and sanitation aspects. Given that water is a crucial element in many areas of human life, achieving
this goal will contribute to the progress of other SDGs, mainly those related to health, education, economic growth and the environment (UN, 2015).

Indeed, all nations and their education systems have incorporated as a component of their education policy the challenge of accepting and educating that water is an essential human right to human life and to diverse biological systems, as the best way to ensure sustainable development for its inhabitants.

In this way, it is conducive that, through educational work, it can help to “protect and restore water-related ecosystems, including forests, mountains, wetlands, rivers, aquifers and lakes” (UN, 2018, p. 36). At the same time, it seeks to:

(…) by 2030, improve water quality by reducing pollution, eliminating landfill and minimizing the emission of chemicals and hazardous materials, halving the percentage of untreated wastewater and significantly increasing recycling and safe reuse globally (UN, 2018, p. 35)

These challenges represent examples of SDG 6 that, at an early stage, have been incorporated into the pedagogical work in the classroom, through environmental education programs, recycling campaigns and household waste management, clean-ups to beaches and vacant lots, etc.

In this sense, the Ministry of Education (MINEDUC, 2012) has incorporated environmental issues as a transversal axis of the work of teachers, whether in the curricular bases, the programs of the subjects, the teaching resources, such as school texts. Perhaps, it is appropriate to raise some questions about water, which help focus this research work.

• Does water as a natural resource matter in the educational theme of school textbooks?
• Does water appear in school textbooks as a problem that facilitates school learning?
• Does water as a didactic content of the school text turn out to be relevant for developing research skills?

Chile's national curriculum, particularly in Natural Sciences (MINEDUC, 2012), declares framed thematic nuclei on the care of the environment, sustainable productive development and the promotion of attitudes and habits for healthy living, according to the proposal of the SDGs of the United Nations declaration (UN, 2015).

By looking at the discipline in the school curriculum and the curricula of Basic Education, which are subsequently recognized in school texts, it is possible to rethink the didactic development of students, by focusing the pedagogical effort of the teacher on the learning outcomes and the skills that underlie their formulation.
Despite the technological progress and cultural changes of the current century, textbooks are still the most used teaching resources in the classroom by teachers, because it represents the real curriculum that requires programming – planning of the school curriculum, that is, the nature of the textbooks is explained by the official regulations of the school system, the curricular bases and the subjects (Ásgeirsdóttir, 2007). In this sense, Ásgeirsdóttir (2007) highlights that:

We must ensure that there is a natural structure in the way student education is organized. What they learn today is based on what they learned yesterday and when designing a school text one must be aware of what comes next and what must come before so that they can understand the most complex matter that will happen. A school text cannot be like an island, it must be part of an archipelago, only perhaps more systematic, like a chain. The structure of the educational material should be organized by making clear what are the theories of teaching and learning on which such material is based (p.19).

In fact, it is also possible to recognize in its content, not only a list of exercise activities, activities, images and forms of evaluation, but also there is a vision of science, the world and a valuable organization of the ways of living life, whether in the animal world as a human. This last fact is very important when it seeks to promote changes in the new generations of students, that is, to valorize the projective function of the educational work, a look towards the future from the present that is educated.

Recognizing the intermediary function between the official curriculum and the teaching and learning practice that the school text fulfills, may help to focus the pedagogical and didactic effort of teachers in the classroom, a reality that explains the cultural changes that are evident in the last time. This is the thesis that helps explain the nature of the present study.

2 OBJECTIVES

To determine the presence of the topic water resource and the areas in which its learning is developed in the educational activities declared in the school texts of Natural Sciences from 5th to 8th year, in the Chilean basic education.
3 METHOD

The method used was mixed and descriptive (Hernández et al., 2018). The unit of analysis was the school text of Natural Sciences of the student (year 2021) of fifth, sixth, seventh and eighth of Basic Teaching, corresponding to students of 11-15 years of age (Table 1). The decision of the subject was taken because the Curricular Bases (MINEDUC, 2015), for Natural Sciences, declare the teaching of the water theme in their objectives.

Table 1
Identification of basic school texts analyzed

<table>
<thead>
<tr>
<th>Code</th>
<th>Authors (year)</th>
<th>Title</th>
<th>Editorial</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Jerez and Espinoza (2021)</td>
<td>Natural Sciences, student text, 5th year</td>
<td>SM</td>
</tr>
<tr>
<td>T2</td>
<td>Espinoza and Valdebenito (2021)</td>
<td>Natural Sciences, student text, 6th year</td>
<td>SM</td>
</tr>
<tr>
<td>Q3</td>
<td>Romero, Tobar and Muñoz (2021)</td>
<td>Natural Sciences, student text, 7th year</td>
<td>SM</td>
</tr>
<tr>
<td>Q4</td>
<td>Campbell (2021)</td>
<td>Natural Sciences, student text 8th year</td>
<td>SM</td>
</tr>
</tbody>
</table>

Source: own elaboration.

The school text is a document defined as a pedagogical instrument that is distributed, free of charge, to all students of public schools in the country. The texts, according to MINEDUC (2012), declare the knowledge that is learned by students. Educational activities promote skills, knowledge, skills, procedures, ideologies, discourses that exercise control in the learning process, influencing student behavior and contributing to the quality of education (MINEDUC, 2012). The reasons for selecting the texts were: their validity of use, being the most frequently used editorial of the text, level of incidence in student training and national coverage.

The research, definition and classification of the data was carried out by means of a priori categories built from the learning areas: knowledge, intellectual skills, attitudes, procedures and skills, proposed and analyzed by previous works (Anderson and Krathwohl, 2001; Bloom, 1979; MINEDUC, 2012; Montes de Oca and Machado, 2009; Pérez and Meneses, 2020) (Table 2).

Table 2
Categories of analysis

<table>
<thead>
<tr>
<th>Areas of learning</th>
<th>Description</th>
</tr>
</thead>
</table>

| Knowledge | It corresponds to concepts, networks of concepts, data on facts, objects, events, phenomena, symbols, that is, the information integrated into greater explanatory and interpretative frameworks that give basis for discernment and judgments. |
| Skills/Intellectual | They are understood as operations and procedures to acquire, retain and recover different types of knowledge and execution. They are those that refer to what is related to attention, perception, memory, problem solving, understanding, establishment of analogies among others. Identify, understand, analyze, describe, create, synthesize, apply, evaluate. Access to information and communicate using information and communication technologies in a thoughtful and effective way. Think thoughtfully, communicate effectively. |
| Attitudes/morals | A person's way of acting, the behavior that an individual employs to do things, has its focus on the other person or thing. Attitudes are learned dispositions to respond, in a favorable or unfavorable way, to objects, ideas or people; they include affective, cognitive and valuative components that incline people to certain types of actions. Acquire habits of hygiene and self-care and health. To act in accordance with values and norms of civic, peaceful coexistence, to know their rights and responsibilities, and to make commitments to themselves and to others. Think thoughtfully, communicate effectively. |
| Procedures | Knowing how to do. Set of organized and ordered actions whose sole purpose is the achievement of a cognitive matter. It usually has a structure defined and accepted by its growers. |
| Skills | Set of organized and ordered actions. It involves a process of practice that leads to the mastery of the technique, skill or strategy object of learning. They are those that allow us to change and develop the motor behavior of the human being through practice. |

Source: own elaboration.

Before carrying out the content analysis of the texts (Taylor and Bogdan, 2000) and their corresponding emptying of the data in the categories, and to increase the objectivity of this process of identification and classification of the activities, a pilot phase was carried out with the authors of the study. At this stage, it was agreed that the appearance of the word “water” in the texts would be the main evidence of the existence of an activity or question related to the subject in question.

Once the procedure was agreed, a matrix consisting of five (5) categories was constructed. This instrument was applied to school texts with the purpose of finding the presence of the water resource theme in each of its areas and awarding it a category. The classification and quantification was done under the modality: number of records by educational level (fifth to eighth). This process was carried out by three (3) participating researchers, firstly, individually, subsequently, some working meetings were held to resolve the discrepancies. Considering as agreement a minimum of two coincidences. After reviewing all the sample texts and emptying the data into the corresponding instrument (matrix), and on the understanding of protecting the systematicity of the process and the validity of the data, the classification of activities with water resources is ratified or rectified by three expert judges. The results matrix containing the learning areas and their corresponding definition, the activity or question extracted from the school texts and two columns with a question each were sent to each of them:
Is the activity or question related to the topic water well classified in the learning area? And if the activity or question is not well classified, in what learning environment would you place it?

Subsequently, with the suggestions of the judges, we proceed to reclassify the questions and activities related to the water resource, in the final areas. It should be noted that the classification of the activities and questions related to the water resource dictated by the judges, coincided almost entirely with the classification made by the authors of the study. There were only five disagreements between procedures and skills, discrepancies that were resolved after the debate between the positions and the argumentative defense until reaching the agreement of most of the authors of the investigation.

For the interpretation of the data, according to the formulated purpose and the investigation of the results, the descriptive analysis of the guarisms was used, by means of the calculation of frequencies and percentages, as well as, looking for patterns of behavior, singularities, qualitative differences, supported by the bibliographic references, by means of the basic Excel program.

4 RESULTS

The results give an account of the educational activities by learning areas, present in the school texts by educational level. Then, examples of activities or questions are shown, with the presence of the theme water resource.

Table 3 shows the presence of the water theme in educational levels according to learning areas. It is found that: the highest frequency of activities related to the water resource is located at the fifth and sixth year levels. In the first of the levels mentioned, 43 activities were classified as intellectual skills and 34 related to knowledge. In the sixth year, 11 activities with the presence of the water resource in the field of intellectual skills and another 9 related to the field of knowledge are identified. Attitude-related activities (13) and 13 activities related to a procedure are also noted. In contrast, in the area of skill (2) the frequency is lower. Fact that could also be noticed in the skills, attitudes, procedures in sixth year. In both seventh and eighth years, there were virtually no water-related activities in school textbooks. In general, that is, at all educational levels, the highest percentage of activities related to the water resource is observed in the intellectual skills field (41.5%), followed by the knowledge field (31.9%), in contrast, the area where less educational activities were found was skills (2.2%) and attitudes (10.4%).
Table 3

*Frequency of activities related to the water resource, according to course and learning area*

<table>
<thead>
<tr>
<th>Course</th>
<th>Areas of learning</th>
<th>Frequency (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge</td>
<td>43 (31.9)</td>
</tr>
<tr>
<td></td>
<td>Skill/intellectual</td>
<td>56 (41.5)</td>
</tr>
<tr>
<td></td>
<td>Attitude/morale</td>
<td>14 (10.4)</td>
</tr>
<tr>
<td></td>
<td>Procedure</td>
<td>19 (14.1)</td>
</tr>
<tr>
<td></td>
<td>Dexterity</td>
<td>3 (2.2)</td>
</tr>
<tr>
<td>Fifth</td>
<td>34</td>
<td>13 (100)</td>
</tr>
<tr>
<td>Sixth</td>
<td>9</td>
<td>5 (41.5)</td>
</tr>
<tr>
<td>Seventh</td>
<td>0</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Eighth</td>
<td>0</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td>135 (100)</td>
</tr>
</tbody>
</table>

Source: own elaboration.

Along with the above, it is found in Figure 1 that the highest frequency of educational activities related to the water theme was at the fifth year level (105). Practically, this amount quadruples the activities found in the sixth year (27). On the other hand, the frequency of educational activities related to the water theme is marginal in eighth year (3) and they were not found in seventh year, activities whose theme was the water resource.

Figure 1

*Frequency of activities with the presence of the water resource, according to educational level*

Figure 2 shows the activities linked to the water resource, specifically, between the levels of fifth to eighth year, by learning areas. The highest frequency was observed in the field of intellectual skills (56), followed by the field of knowledge (43). It was also possible to
identify activities related to procedures (19) and activities related to attitudes (14). In contrast, in the skills field the frequency is lower (3).

**Figure 2**

*Frequency of activities with the presence of the water resource, by educational area.*

[Bar chart showing the frequency of activities across different educational areas:
- Conocimientos (Knowledge): 43
- Habilidades intelectuales (Intellectual Skills): 56
- Actitudes moral (Moral Attitudes): 14
- Procedimientos (Procedures): 19
- Destrezas (Skills): 3]

Source: own elaboration.

Figure 3 shows that in the fifth year there are educational activities that promote all areas of reference learning, highlighting intellectual skills (43) and knowledge (34), instead, the area of skills is the least (2). The sixth year also saw activities that promote all areas of learning, however, their presence is less frequent. As in the fifth year, intellectual ability is maintained as the most frequent area, (11) together with the knowledge area (9) and, the least frequent area is the procedure (1) and skills (1). In both the 7th and 8th year, there were virtually no activities related to the water resource, in the areas of learning, in school textbooks.

**Figure 3**

*Frequency of water activities according to educational level and learning areas.*

[Bar chart showing the frequency of activities by educational level:
- Quinto (Fifth): 34, 13, 9, 2, 0
- Sexto (Sixth): 13, 11, 1, 0, 2
- Séptimo (Seventh): 1, 1, 1, 0, 1
- Octavo (Eighth): 0, 0, 0, 0, 0]

Source: own elaboration.
Figure 4 shows the presence of the water resource theme in educational levels according to learning areas. The highest frequency of educational activities is in the fifth basic year and the most promoted learning area, at this level, is intellectual skills (43). In the development of attitudes, 13 activities were observed, and only 2 activities related to skills. In the sixth basic year, 11 activities were identified that mobilize intellectual skills and another 9 related to the field of knowledge, of which one promotes attitudes using the theme water resource. For the 7th and 8th year, there were virtually no water-related activities in school textbooks.

**Figure 4**

*Frequency of water activities according to learning areas and educational level.*

Table 4 shows examples of educational activities and questions, recorded in the Natural Sciences textbooks, related to the topic of water. Its presence in all areas of learning is noticed. This means promoting, defining, knowing, etc. concepts, phenomena, operations, procedures, form of action, behaviors, organize actions, assume commitments, among others, made by students, in a group or individual way.

**Table 4**

*Examples of activities or questions with the presence of the topic water resource in school texts*

<table>
<thead>
<tr>
<th>Areas of learning</th>
<th>Examples of questions and activities</th>
</tr>
</thead>
</table>
| Knowledge         | What states of matter does water possess in Figures 1, 2, and 3? (Q1, p.13)  
                   | It informs why it is important to take care of water supplies. (Q1, p.45) 
                   | What activities do you use water for at home? (Q2, p.21) |
| Skills/Intellectual | How does boiling time relate to the volume of water being boiled? (Q4, p.159)  
                     | If the water temperature of a container drops from 80 °C to 15 °C, what can we infer that happened at the level of its particles? (Q1, p. 125) |
Areas of learning | Examples of questions and activities
---|---
Attitudes/morals | On the basis of the proposal submitted, he responds 1. Why do you think that water occupies the center of the circle? (Q2, p. 17)
| What human activities can have a negative impact on water supplies? (Q1, p.35) What actions would you propose to avoid water pollution? (Q1, p.41) What actions would prevent water from becoming contaminated with detergents? (Q1, p.43) Water Purifier: What benefits does this invention have for the population? What's your take on this campaign? (Q1, p.44)
Procedures | As a couple, develop a model that compares the volumes of the geosphere and hydrosphere (T1, p.15)
| Design an experiment that answers the research question. What's the taste of seawater like? How does the drinking water taste? (Q1, p11) Perform the following procedure described in the Activity Log (T2, p.21)
| Activity Use models. In pairs, get: a plastic container with water with dye and a light bulb. Blow and then reply in your notebooks (T4, p.30)
Skills | Activity. In a group, imagine that you have two water samples and are asked to determine which of them is from a river and which from the sea. Considering the information provided in the table “Percentage of salts in the water”, do as requested:
| 1. What are the similarities and differences between freshwater and saltwater? 2. What variable would they consider to differentiate between fresh and salt water?” (T1, p.16).
| Activity: Fernando wanted to find out how the amount of salt dissolved in the water affects the boiling time. Perform and respond: What are the variables in the experiment? (Q1, p.23)
| Do as described in the activity notebook on water. (Q2, p. 28).

Source: own elaboration.

5 DISCUSSION

Nowadays, the importance of water turns out to be an undoubted and relevant topic in the human work that, gradually, has been incorporated in the various didactic and formative activities of the teachers in the school system. The aim is to educate and raise awareness among new generations of students about the fragility of water resources in the conservation of life on the planet.

Consequently, the program of the subject of Natural Sciences for the second cycle of Chilean Basic Education (from the 5th to the 8th year of Basic Education) has incorporated this problem in the teaching and learning activities that are recognized in the use of the school texts of this subject, by teachers in the classroom.

In this way, the science teacher helps the student reflect when he points out that:

- The water resource is unique and irreplaceable, therefore, it is very important in the life of living beings and therefore we must take care of it.
- Water is important for our health, it is the most necessary element for life. Our body is made up of a high percentage of water, particularly the brain, our blood, the lungs, among many other organs.
• It fulfills functions of hydration of cells and organs. It is the medium where chemical reactions occur, helps to clean the body of toxins, regulates body temperature, among other functions (UNESCO, 2021).

Likewise, when it comes to favoring a favorable attitude for the care of water. Here's how we see, for example:

• There is no doubt that water is scarce and limited, therefore, it must be taken care of.
• Fresh water is scarce, but fresh drinking water is even scarcer.
• The scarcity of water in the world is one of the problems that most worries, therefore, it is important to instill in students habits, behaviors, attitudes to save water.

In fact, these didactic contents on water are the reflection of the scientific advance on this vital resource for the life of the planet. This can be read in: The World Water Development Report 2021 of UNESCO, whose title is “The value of water” investigates the status of the resource, revealing the value of water, ways in which such valuation can be promoted, its scarcity, challenges, procedures that contribute to achieving sustainability, such as valuing water supply and sanitation services.

Humans are largely responsible for the amount of water in the world and for the deterioration of the quality of all the waters that exist on the planet. The discharge of untreated wastewater, pollutants such as waste, industrial waste, oil and other fuels, insecticides and fertilizers, drugs, hormones, plastics, among others, are polluting the water. Therefore, we need to take care of the quantity and quality of fresh, surface, groundwater, and salt water (UNFPA, 2019).

In sum, scientific evidence shows that the existence of water and its quantity are very important and, therefore, it is necessary to take care of it; but, the quality of water is even more important, since drinking contaminated water can be worse than even having no water. This situation has been assumed by various international bodies, as well as by the ministries of education of the various countries of the world.

For UNESCO (2021), the idea of force is to promote in teachers and students the impact that human beings have on the environment and to express that it is urgent and necessary to adopt measures that go beyond the immediate or daily, such as fixing leaking keys, for example. It is intended that in schools the culture of water is promoted, a socio-educational practice of a transversal nature, which is able to affect the set of beliefs, habits, behaviors and mechanisms that are used to meet the human needs and the other living species that depend on the vital element.
Generating a true water culture will allow the acquisition of habits and standards of conservation of the drinking water resource and, therefore, promote better sanitation in school and conditions of its sanitary operation. This situation can be facilitated by the use of textbooks that reinforce this behavior in students, where the present study represents a necessary stage in a possible diagnosis of the learning outcomes to be developed.

In this sense, the results of this study show that the range of activities declared in the Natural Sciences texts on water, gives priority to the acquisition of intellectual skills and knowledge, at the expense of other forms of learning, such as procedures, skills and attitudes, areas that are determinant in the awareness of students about problems related to the conservation and care of the water resource.

6 CONCLUSIONS

The results of this study reveal that it is possible to conjecture a plausible explanation about the importance of water resources in school learning, which is reflected in the various activities of the Natural Sciences textbooks, for the second cycle of basic education.

We note the presence of the water resource theme in Natural Sciences school texts, whose most frequent educational activities are observed in the 5th and 6th basic years. The field of intellectual skills, understood as operations and procedures to acquire, retain, solve problems and recover different types of knowledge was the most present in the educational activities of the texts; instead, the skills that involve a process of practice, which results in a domain of technique or skill and attitudes, which are ways of acting, behaving, are the least promoted in the activities declared in the texts.

It is concluded, as does Ruíz and Aravena (2021), that educational activities, in the texts, should focus more and directly, on behaviors, habits, tending to the care of the water resource. In addition to the above, the activities do not clearly contemplate the human factor, so important and necessary to understand the current crisis of the water resource. In addition, it is concluded that, in school texts, the classic learning of water, its cycle scheme, hard data, some experiments, among other activities of this nature are observed. We must promote and promote the view as a problem, conservation, care habits, understand that water "is not an inexhaustible resource". It is therefore crucial, in order to promote changes in school textbooks, that this topic is worked in a transversal way, through awareness, knowledge and action.

We emphasize that not all activities on water in the texts are irrelevant or poorly planned, there are activities that are directed, trying to break the traditional culture, but there is a lack of
a better and greater commitment to a water culture in favor of conservation, reuse of water, reduce spending, enhance responsibility with its use and penalization of actions of excessive spending and waste.

School textbooks, like the entire educational community, must seek ways, strategies and tools necessary to make informed decisions and responsible measures to, together, help to take care of water, learn habits and rules of conservation of the resource drinking water and sanitation in educational institutions, enhance the positive behaviors that they have learned in their homes and community, this will allow us to integrate into the culture of water. Along with the above, declare at all levels and subjects, educational activities on the water resource, as well as promote the correct use of water and its reuse, encourage critical reflection activities on the importance of water for life, so that the environmental impacts of water works are highlighted and the public is responsible for water management.

Finally, it is proposed that, from second basic to fourth medium, in practically all learning objectives are commented, developed and reflected on the topic of water, so that teachers, in their classes, can take a new look at the problem, understanding that the water resource "is not an inexhaustible resource". It is important, then, that, in order to generate the necessary changes in educational establishments, particularly in school texts, work is done in a transversal way through awareness, knowledge and action, the theme: Water Resource.

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