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Sustainability assessment in Colombian educational institutions: Case studies

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Abstract: The evaluation of processes and impacts of the inclusion of sustainability in the curriculum of three educational institutions in Colombia, the object of this study, enable us to know normative and pedagogical processes around environmental education and the diligent transition to education for sustainability. At the methodological level, descriptive exploratory research is presented, focused on a group of selected institutions, characterized by converging for the same normative, ethical, social and environmental educational purpose. All of these institutions are pedagogically different in implementing the School Environmental Project (PRAE, in Spanish). Findings obtained show different environmental-pedagogical models in selected institutions due to their approach, strategy, and processes. It is noted, though, that most teachers are well-aligned in their preferences for addressing education for sustainability.

Keywords: Education for sustainability, Evaluation, School Environmental Project, Pedagogical Practices, Curriculum Greening.

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Introduction

We live today in the aftermath of the COVID-19 pandemic, which reaches a global scale. This situation also leads to rethinking the role of mental health, economy, culture, or education in the development of strategies to face critical changes generate by the pandemic.

To face this scenario of unceasing transformation, education has a major role in generating strategies for helping citizens adapt to the "new normal", cultivating positions of resilience and self-awareness in order to assume shared responsibilities(ROMÁN et al., 2020).

This priority in education is based on an international framework of action, which is endorsed by approaches generated with the 2030 Agenda's design of the and the Sustainable Development Goals (SDG) (UNESCO, 2012). It appeals to the role of social and educational institutions in the formation of a citizenry committed to the environment, aware of the economic model that must be developed, and it is aimed at generating a critique of the political structures that threaten socio-environmental developments on the territory(JULIA-IGUAL; MARTÍ; RIBERA, 2020; TALAN; TYAGI, 2020). To achieve this, both teacher training and their knowledge and skills are essential, as well as a fundamental link in this chain to educate sustainably competent citizens.

From this logic, the research experience presented is attached to this educational model, prescribed by the 2030 Agenda with SDG 4 "Quality Education", as well as its goals and associated indicators, which show the need for students to acquire the necessary skills to promote Sustainable Development (SD) from a comprehensive perspective(UNESCO, 2016).

In the Colombian context, the scenario and framework of this research, the educational institutions attend to the development of the policies proposed by the Ministry of National Education (MEN, in Spanish), in line with the principles that mark the 2030 Agenda's prescriptions. The disciplinary areas are responsible to build the navigation documents in accordance with legal guidelines through proposals or initiatives, giving direction to institutional pedagogical projects from a sustainability perspective(BRIONES; BARREIRO; ZAMBRANO, 2020).

To this end, attending to the SD from an economic-social-environmental perspective (RENDÓN et al., 2018), the proposed educational context creates full-meaning education, one governed by sustainability principles and that gives priority to students' acquisition of knowledge, skills, and attitudes that contribute to alleviating socio-environmental problems. This represents what is known as Education for Sustainability (EfS).

In this task, it is essential to include basic teaching-learning issues of the SD, and it is, therefore, a priority to propose innovative and participatory methods that promote empowerment and motivation in the students , motivating them to act for the sake of SD(UNESCO, 2014). This is related to the development of competencies in sustainability aligned with critical thinking, understanding complex systems, hypothesis generation and participatory and collaborative decision-making.(MURGA MENOYO, 2015;

POZA-VILCHES; LÓPEZ-ALCARRIA; MAZUECOS-CIARRA, 2019). And this must be reflected in the curriculum with epistemic, pedagogical, social, and cultural criteria according with different contexts(BLANCO-PORTELA et al., 2020; TILBURY, 2011). Despite that, some questions are raised on the impacts of including the theme of sustainability in schools(GALVIS-RIAÑO; PERALES-PALACIOS; LADINO-OSPINA, 2020), as well as questions about whether the intervention scenarios enable public and private organizations to participate, from different fronts, in the educational sphere to give way to the EfS. The answer is clear: the inclusion of sustainability in the educational sphere aims to develop competencies in schoolchildren that allow them to make decisions in their everyday lives that improve the quality of their life, for the present and immediate future. To achieve this goal, it is indispensable reference institutions (VILCHES et al., 2014).

On the other hand, at the theoretical level, it is important to emphasize that schoolchildren require conceptual support in curriculum disciplines to properly manage the principles of SD. Consequently, the next task for teachers and managers in schools is to redesign the curriculum and generate methodological strategies and teaching material to guide schoolchildren towards EfS. This must be carried out by respecting the new local and global dynamics, prioritizing the environment, innovating new academic proposals, and proposing quality strategies in the school setting at all educational levels(BLANCO-PORTELA et al., 2020). All citizens must be involved in responsible, democratic, supportive, and equitable decision-making(GUZMÁN ALONSO; GUTIÉRREZ BASTIDA, 2009; CADEP-CRUE, 2012; UNESCO, 2012). In the case of Colombia, it must also be applied in accordance with Colombian Ministry of National Education's guidelines (COLOMBIA, 2005).

In this process of promoting sustainability in schools, several questions are raised about the management model and curriculum: How is quality education addressed? Have teachers managed to introduce SD in schools? Do institutional projects favor EfS? Is public education policy meeting the demands of the curriculum? Is EfS a strategy for schoolchildren to transform their way of thinking and acting to deal with global emergencies such as climate change or pandemics?

In face of these questions, the EfS is positioned as an indispensable tool to generate spaces to rethink and propose new educational public policy strategies(VILCHES et al., 2014). Academic programs and pedagogical practices outline changes planned to be carried out globally, ranging from forms of management, financial perspectives, pedagogical strategies, and orienting behaviors and values in the different paths that are established in the natural context(UNESCO, 2010).

In Colombia, the inclusion of sustainability in the curriculum allows different institutional entities to seek strategies, contents, and processes aimed at progressively facilitating such inclusion in schools and universities through the implementation of the School Environmental Project (PRAE). This is a strategy to enrich, socialize and validate the above-mentioned public policy at different educational levels and incorporate it into the curriculum in led-by-teachers transversal way(COLOMBIA, 1994). In its evolution, the transition from Environmental Education (EE) to EfS is revealed in the educational

policy, international and national agendas, and the leadership of teachers' unions, together with the monitoring of different national and local entities in the country(VILCHES; MACÍAS; PÉREZ, 2014). For this, it is essential to understand EE and EfS as political acts toward social and environmental transformation, from the search for collaborative practices, and as an element of conceptual transformation that point out the limits of growth and a sustainable future(AVENDAÑO; CORDERO-BRICEÑO, 2019; LLINARES et al., 2019; SARTORI; LATRÔNICO; CAMPOS, 2014), prospects that can be found in SDG 4 "Quality education".

From this framework of action, the article aims to analyze the EfS model that is behind the curriculum and teaching practices of three educational institutions in Bogotá (Colombia). As a case study in this city, the research had as its central axis the EfS approach and the perception that teachers, counselors, and managers of different areas that produce curriculum, have in relation to its incorporation in the educational sphere.

Methods

The research corresponds to an exploratory descriptive study proposed from a combined methodological approach (concurrent nested design) (HERNÁNDEZ; FERNÁNDEZ; BAPTISTA, 2014). Therefore, it was applied a questionnaire and a semi-structured interview, which, from the logic of combination, aim to delve into the perception of key informants in the topic under study (GREENE; CARACELLI; GRAHAM, 1989; BERICAT, 1998 and ECHEVARRÍA, 2016). The different situations and processes developed by teachers both in classrooms and transversal institutional projects are described, in accordance with established guidelines of MEN and the District Education Secretariat.

On the other hand, it is approached from the case study (STAKE, 1998) of three educational institutions in the capital of Colombia which develop an interinstitutional project in-line with academic, social and cultural works of permanent exchanges. In this way, it seeks to show the perception of participating teachers, what they think, what they do and the role they play in the processes carried out with the students, those sustainable pedagogical practices being implemented in particular, keeping as the main theme in the research the field of knowledge about EE and EfS, within the framework of the PRAE.

Description of the cases

In Colombia, educational institutions are constituted according to their legal nature. In this particular case of study, three were selected, whose public or private nature is determined by: Institution 1, official, institution 2, private and institution 3, district.

The educational institutions are located in the northeast of Bogotá, in the residential areas of Usaquén, which belong to the upper classes (six). Facilities present in this place favor their conditions of social well-being, mobility, health access, sport and recreation, among others. Aspects that benefit students in school environment(SECRETARÍA DISTRITAL DE PLANEACIÓN, 2011).

Institutions comply with national public policy. Each has its institutional transversal PRAE project, which aims to stimulate and encourage students to recognize and take care of the natural capital of their town, city or country. In general, projects are developed in each institution, with one or more teachers of Natural Sciences leading the process, especially because of their formation and other related areas that keep an eye on supporting the management of PRAE.

Case 1 Institution 1 (official: nation's resources - public)

An institution with a student population of diverse socioeconomic stratum (1 to 6); it has extensive facilities and enough teachers specialized in different areas to support pedagogical processes, its Institutional Educational Project (PEI, in Spanish), and it has a pedagogical approach for "comprehensive pedagogical projects".

The purpose of PRAE is to ensure a sense of belonging and identity in the promotion of a citizen culture, based on spaces of participation, reflection, consultation and self-management.

Case 2 Institution 2 (private: family resources)

An institution with a high socioeconomic student population (6); it has a modern, extensive infrastructure, and teachers are specialized in different disciplines; its Institutional Educational Project (PEI) has an organized constructivist approach from preschool to twelfth grade and offers international certification. PRAE is designed in accordance with the government's guidelines and the environmental commission as a management and decision-making body of the institutional environmental action plan.

Case 3. Institution 3 (district: city resources – public)

It has two offices for middle- and low-budget students (1 to 3), and the Institutional Educational Project is formation-oriented of upstanding and productive people. The PRAE aims to promote personal, social and environmental ecological awareness.

Data collection strategies

To address this study, two information-gathering techniques have been applied: the questionnaire and an in-depth interview.

Questionnaire

The applied instrument was proposed and validated by the research group of the Higher Education Development Center, Otago University of New Zealand, with the "Q" methodology(SHEPHARD; FURNARI, 2013), which finally adjusted the instrument to 50 statements on the topic called "Education for development". Subsequently, it was implemented in the research TORRES; CEBRIÁN (2018) to analyze the incorporation of sustainability in the curriculum questioning teachers about what they think and do about the EfS, in general, and what should be their role.

These 50 items have made it possible to evaluate political, pedagogical, and quality impacts of the inclusion of sustainability in the curriculum, based on experience, perception, and teaching practices, as well as their classroom dynamics and their experi-

ence throughout professional life, just as in the transversal project in the corresponding educational institution.

We have used a Lyker-type scale instrument(MATAS, 2018), with five response options: totally disagree (-2), disagree (-1), do not know (0), agree (1), and totally agree (2).

Interview

A semi-structured interview was developed(DÍAZ-BRAVO et al., 2013), aiming at generating close communication and broadening the knowledge about positions, pedagogical practices, and interaction strategies with the EfS of the teachers surveyed. The interview consisted of 23 questions organized in four dimensions, related to aspects concerning EfS: 1. "Education for sustainability at school", 2. "Incorporation of relevant topics", 3. Sustainability competences and 4. "Diversity of evaluation methods".

Sample. Study participants

The questionnaire was completed by 66 teachers from the three schools: Institution 1: 48.5%, Institution 2: 25.8% and Institution 3: 25.8%. The resource was applied in two modalities, virtual and on-site. The population consisted of 57.6% women and 42.4% men, who work in each institution with different roles.

Teachers surveyed participated in different fundamental and optional areas of the curriculum in the 2018-2019 period and had academic assignments and positions delegated by the management of each institution. In general, teachers worked with students of preschool, primary, lower secondary and special education, and belonged to 13 different areas of knowledge. There was more participation of teachers working with Natural Science (18.2%), Mathematics (16.7%), Social Science (12.1%), and Foreign Language (12.1%), and less involvement of teachers working with Art Education, Orientation, Technology, Elementary school, and Special Education, with 1.5% each.

As for their professional training, all teachers are graduates and most have postgraduate degrees, with 30% with a Master's degree and 25.8% with a Specialization degree.

The participants' ages ranged from 27 to 64 years, with office time from 1 to 35 years and a period of experience from 1 to 40 years.

All the interviews were conducted with 6 teachers and 1 director that is linked with institutional activities in the environmental dimension in the classroom, community or institutional project. Most of the interviewees had implemented environmental proposals in different phases with the educational community, socializing results and future commitments to preserve and sustain the natural environment.

Analysis Procedure

For the questionnaire, descriptive analysis was carried out analyzing SPSS v.25 statistical packages, which allowed us to acknowledge representative data of central trend measures, dispersion measures, attendances, percentages, standard deviation and

summaries.

For the reliability of the questionnaire, Cronbach's Alpha was calculated with a pooled value of 0.842, a high value of reliability(TUAPANTA DACTO; DUQUE VACA; MENA REINOSO, 2017). Regarding validity, this scale is already validated by the previous studies in which has been applied(SHEPHARD; FURNARI, 2013; TORRES; CEBRIÁN, 2018).

In the interviews, an audio record was implemented individually for each participant to guarantee the fidelity of the information collected, and the content analysis presented quality and reliability criteria according to CACERES (2008) and VICUÑA; PÉREZ (2018) those who establish detailed processes relevant to the case: a) narrative transcriptions of interviewees' recordings; b) dimensions in relation to EfS, topics, competencies, and evaluation, which accounted for the concepts and knowledge of teachers in their pedagogical classroom practices; c) text coding in four dimensions of analysis, as previously presented in the interview protocol; and d) discourse analysis based on these dimensions. Likewise, an analysis process was carried out with a deductive and inductive approach, to establish frequency lists, identification, and thematic classification(HERRERA, 2018).

Results

Although institutions convened to meet the policies of the Ministry of National Education, the District Education Secretariat, and the internal guidelines of the institutions, each of them actually aims at the development of the environmental dimension, from action plans, monitoring, and particular evaluations. The three institutions converge for the same normative, ethical, social and environmental educational purpose. The pedagogical strategies implemented are different and vary their pedagogical style of working with the community depending on levels, phases and results; these are presented to the educational community and government control entities when required.

Questionnaire

For the analysis, measures of central tendency were carried out; as well as the multivariate classification of content through the analysis of hierarchical clusters, these through Ward Linkage, to see how items are grouped based on the responses of subjects interviewed.

The dendrogram (Figure 1) shows the existence of 5 clearly differentiated clusters.

Cluster 1 Strengths of teaching practice that favor the incorporation of the EfS in the classroom, with 18 items (32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49 and 50), of a greater degree of agreement.

Cluster 2 Curriculum and sustainable teaching practice, with 3 items (28, 31 and 33).

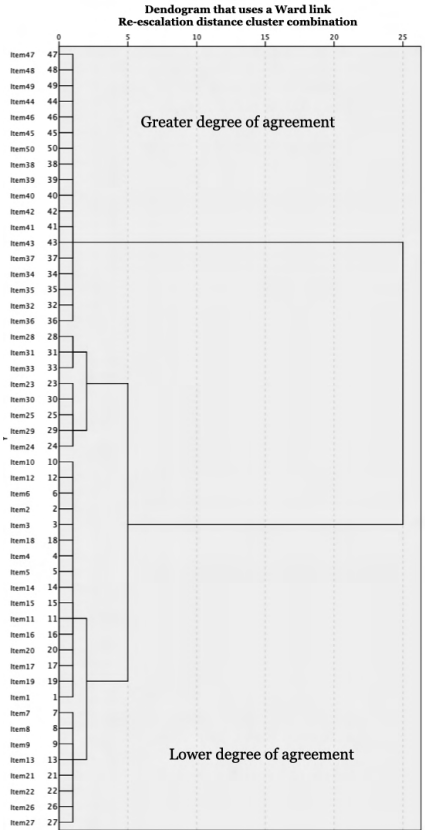
Cluster 3 Teacher involvement in curriculum greening with 5 items (23, 24, 25,

29 and 30).

Cluster 4 Conditions for incorporating the EfS in the classroom, with 16 items (1, 2, 3, 4, 5, 6, 10, 11, 12, 14,15,16,17, 18,19,20).

#Cluster 5. Social and political responsibility to address the EfS in the curriculum, with 8 Items (7, 8, 9, 13, 21, 22, 26 and 27) of a lower degree of agreement.

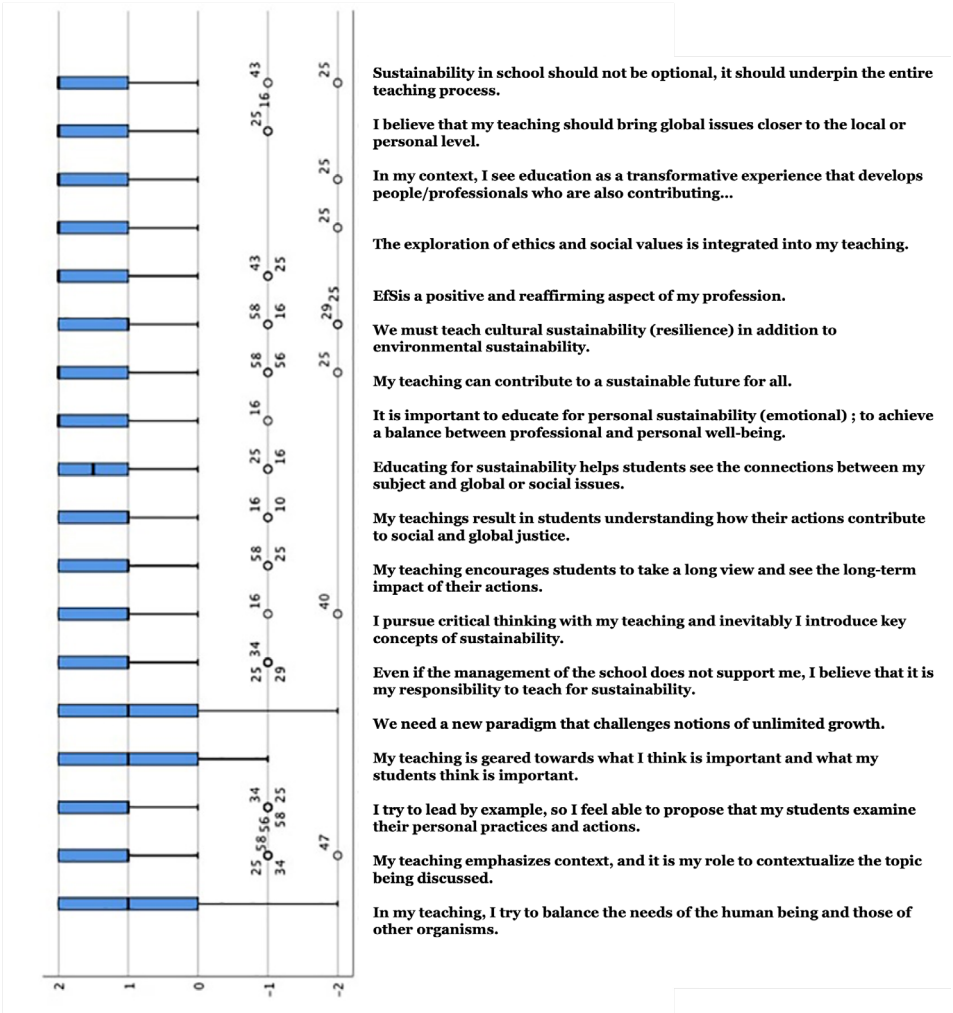
Figure 1 - Conglomerate of items. (Dendrogram of 5 clusters from highest to lowest degree of agreement, of the Education for Sustainable Development instrument)



Source: Own elaboration

In a detailed analysis regarding Cluster 1, it is highlighted that teachers positively express the incorporation of sustainability in the classroom, through guidance and contextualization of interventions that benefit sustainable teaching, as shown in Figure 2. The median data indicate that most of the responses are in the fourth quartile, which shows a homogeneous positive trend among the ones polled on these issues.

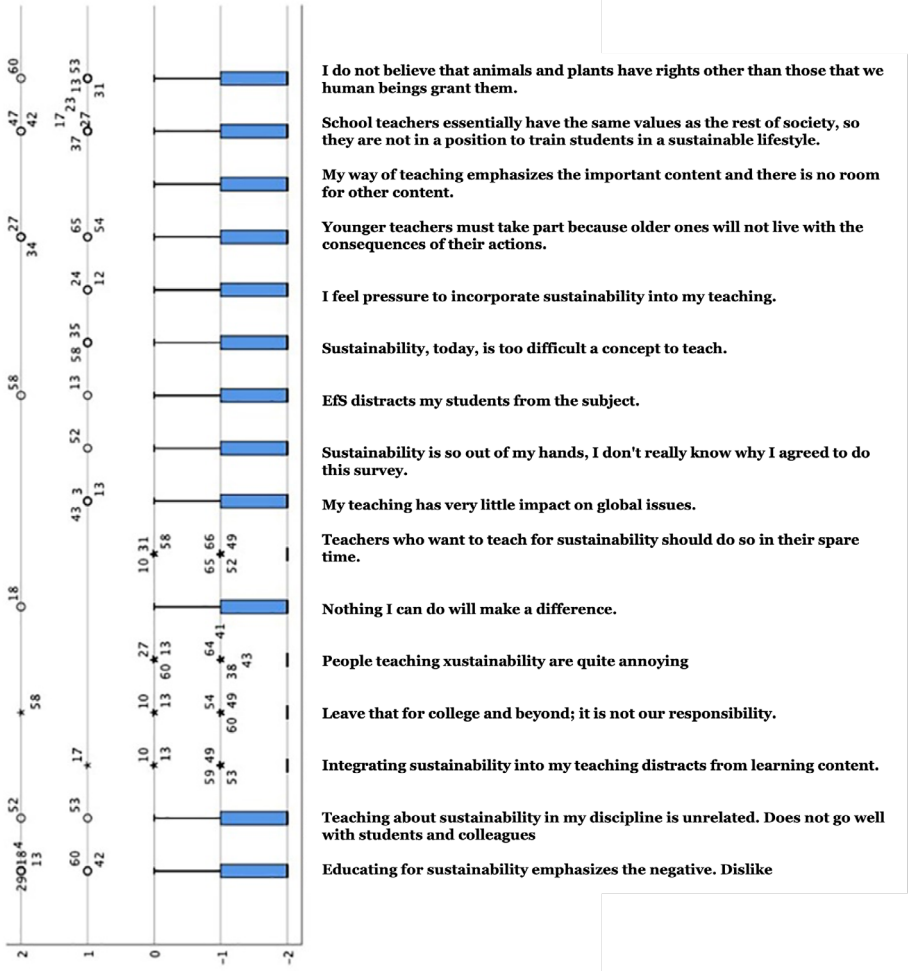
Figure 2 - Cluster 1. (Teaching practice strengths that favor the incorporation of the EfS in the classroom)



Source: Own elaboration

Similar analyzes are carried out for other clusters. Regarding Cluster 2, the participants declare to integrate and develop sustainable pedagogical practices in their classroom actions based on the proposed curricula, as found in the predominantly identified median for the third quartile (Figure 3).

Figure 3 - Cluster 2. (Curriculum and sustainable teaching practice)



Source: Own elaboration

However, with respect to Cluster 3, teachers recognize in their responses, restrictions, requirements and changes necessary to achieve the strengthening of curriculum greening in institutions, although the was dispersion in the responses, marked by medians oscillating between the second and third quartiles.

On the other hand, regarding Cluster 4, it is found that participants recognize the beneficial perspective of EfS in the teaching-learning process in the classroom, despite conditions manifested in the statements. Although there is variability in the responses, the median holds a negative trend, placing itself in the first quartile in most of the items, given the marked negativity of the issues raised in this block, the value is reversed and denotes a positive framework and awareness of teachers in favor of sustainability.

Finally, in relation to Cluster 5, participants in the perspective to address sustainability in the curriculum restructuring recognize the importance and social commitment that is required. Teachers reflect the intention to include EfS in the classroom in their pedagogical practices.

Supported by the trends shown in the statistical analysis of the components of medium, standard deviation and sum, some statements with a high-positive and high-negative rating by an institution are analyzed, in order to establish the trend in each of them on the incorporation of the EfS in their curricular model, from perceptions of the participants (Table 1).

Table 1- Results with high and low numbering from the questionnaire according to high-positive and high-negative evaluations for each institution

ITEM	Institution 1			Institution 2			Institution 3		
	MED	S.D	SUM	MED	S.D	SUM	MED	S.D	SUM
3. Integrating sustainability into my teaching distracts content learning.	-1,75	0,62	-56	-1,76	0,44	-30	-1,59	0,71	-27
10. Teachers who want to teach sustainability should do so in their spare time.	-1,72	0,58	-55	-1,59	0,71	-27	-1,71	0,59	-29
12. Sustainability is so beyond my responsibility, I don't know why I agreed to take this survey.	-1,78	0,42	-57	-1,65	0,61	-28	-1,47	0,94	-25
43. It is important to educate for personal (emotional) sustainability; to achieve a balance between professional and personal well-being.	1,50	0,76	48	1,29	0,77	22	1,35	0,86	23
46. Educating for sustainability is a positive and reaffirming aspect of my profession.	1,38	0,79	44	1,24	0,66	21	1,41	0,94	24
47. The exploration of ethics and social values is integrated into my teaching.	1,47	0,92	47	1,53	0,72	26	1,65	0,61	28

48 In my context, I see education as a transformative experience that develops people/professionals who are also contributing as members of society.	1,50	0,88	48	1,41	0,51	24	1,76	0,56	30
49. I think my teaching should bring global problems closer to the local or personal level.	1,38	0,91	44	1,35	0,49	23	1,71	0,59	29

Source: SHEPHARD; FURNARI, 2013 y TORRES; CEBRIÁN, 2018,

Own elaboration.

It is then found that in institution 1, the statements with high and positive evaluation (43, 47, 48, 49) show that teachers agree with the idea of EfS in values, personal growth, and the approach to problems with schoolchildren. Negative items (3, 5, 10, 12) expose prevention, rejection, and doubt in teachers, causing disagreement in their determinations in school.

Regarding institution 2, the high and positive values of the items (47, 48, 49, 49, 50) highlight that teachers attribute the work to values, training, problems, and implementation of sustainability throughout the institution. Negatively rated items (1, 2, 3, 4, 5) reflect prevention, doubt, confusion, and rejection in teacher statements.

In the third (3) institution, the high and positive values in the items (40, 42, 47, 48, 49) show a futuristic, ethical, professional, and global vision of problems related to sustainability. On the contrary, the negatives (10, 18, 19) indicate distrust and rejection in the implementation of the EfS from the teacher's perspective.

The three institutions propose work in relation to problems in context, the approach to institutional, social, and personal values, with an ethical, professional, and futuristic perspective. In negative aspects, the statements mostly evoke little interest and mistrust.

Interviews

From the dimensions identified in the interviews and the content analysis developed, the following information is extracted:

Dimension 1. "Education for sustainability at school", 2.

The closest experiences that teachers express about sustainability have been from EE, through classroom, levels and community projects with the development of PRAE from interdisciplinary work in the formation of careful, critical and conscious students

of their actions for their future. An interviewee narrates, "[...] the objective, I believe, is that children can be trained with a right posture and also with different forms of action in relation to the environment" (S.1/I.1)[1]

Institution 1, in particular, shows its intention to work with sustainability through environmental education, projects, actions and care of natural resources; institution 2 opted to carry out interinstitutional and recycling activities, and institution 3 applied the project through general and recycling activities.

Dimension 2. "Incorporation of relevant topics", 3.

Environmental and sustainable issues are related to the problems, habits, lifestyles, and customs, which are processed from analysis, reflections, and teamwork in the development of the PRAE, as some interviewees affirm below. "*The second and third grades, … They developed a totally transversal project in the management of endangered animals in Colombia and in worldwide, so each child took care of an animal with its characteristics, environment and what can be done for them*" *(S.5/I.2)*. There are also specific issues, " *for instance, I think it is important to take care of water, conservation, solid waste management, protect plants as fundamental elements for oxygen, making children knows how it is important" (S.7/I.3)*.

Institution 1 works especially on issues resulting from environmental conflicts, producing reflections, discussing natural resources, farming and national guidelines. Institution 2 carries out transversal projects, taking care of nature, and environmental awareness of schoolchildren, and institution 3 contemplates the appreciation of natural resources, politics, ethics, and bioethics.

Dimension 3. Sustainability skills.

In training by competencies at the general level, teachers focus on empowerment, values, teamwork, citizen training, and critical and ethical reflections, aiming at educating for life. The teachers consider what they want to cause in their students "*to become leaders, and when they leave the school, in their family, environment, and neighborhood, they spread this knowledge to others, tell them that we can accept things, tell what was learned in school. It is precisely our objective: to encourage leaders" (S.5/I.2)*.

Institution 1, individually, focuses on competencies from novelties, needs, autonomy, context, understanding, reflection, principles, research and participation. Institution 2 does so with the meaning of contents, values, interests, self-knowledge, participation, social relationships, doing, reflections and citizen culture. The third one, representations, communication, contexts, games, questioning, interests, skills and coexistence are focused.

Dimension 4. "Diversity of evaluation methods".

The provisions of the national standard of self-evaluation, co-evaluation and hetero-evaluation are carried out; however, it is complemented by procedural monitoring of progress, difficulties, willingness, capacity and permanent improvement, therefore: "*... they know we have a rating scale on a national level, they know that it is superior, high, low, but they also evaluate their peers and say their work is well done, they something is missing, based*

1 - Coding of research participants (subject and institution)

on the values of institutions of responsibility and respect..." (S.1/ I.2).

In the first institution, the evaluation is controlled by the regulation, based on values and observation, with a requirement for special training. The second one applies the norm, with monitoring and values; and, for institution 3, the evaluation is consensual, and they request a review of the curriculum on the subject.

Finally, an analysis of the interviews' transcripts of the words or terms was carried out, which were most repeated, to evidence some important relationships between the EE and the EfS.

This term review shows us an important relationship of teachers' actions in different academic and shared spaces in relation to the environment, always in relation to children or schoolchildren, their school or college, the study process and the relationship with values among others. In addition, there is evidence of an intention to include sustainability in the curriculum from their experiences in working with projects and activities aimed at reflecting on the environment; several terms such as conflict, actions, awareness, and sustainability are related to pedagogical practices. This demonstrates a position to make the transition from EE to EfS in a procedural way, with some impacts on the institutions.

Discussion

In light of the results obtained and taking into account the aim of the study, it is highlighted that teachers mirror a preference towards the inclusion of sustainability in the curriculum, as presented in the statements grouped in each cluster. The opposing statements show in their score the possibility of working with sustainability in classrooms.

In general, the pedagogical proposal developed by institution 1 makes visible EfS's approach, in different stages, phases, processes, and evaluations; it is focused on habits, standards, values, actions, critical reflections, in various scenarios of problematization and alternative solutions, enhancing its environmental proposal. This supports the idea that the community needs to address the issue of sustainability from its specificity (UNESCO, 2012) and that the evaluation tools that help work and implement sustainability in classrooms must be incorporated the way it can be found in other research (GARCÍA-GONZÁLEZ; JIMÉNEZ FONTANA; AZCÁRATE, 2018).

On the other hand, pedagogical development from a "constructivist approach", in institution 2, attends the EfS with institutional actions, visits and pedagogical practices both in local and global spaces with a "sustainable environmental ethics", paying attention to the formation of values, social relations and citizen culture that produces competences in sustainability from a transversal and integrative logic (POZA-VILCHES; LÓPEZ-ALCARRIA; MAZUECOS-CIARRA, 2019).

Finally, the approach of institution 3, with integral and productive training, approaches the EfS, from the "personal, social, environmental ecological awareness", provoking a sense of belonging with the activities in context through themes, natural resources, values, representations, games, questioning, interests, and coexistence; this

would correspond to what BUCKLER; CREECH (2014) they raise when highlighting the role that experiences and actions occupied by training models and teacher training.

The questionnaire and interview results show evidence that implementing the EfS in educational institutions in Colombia is in process and that it is a commitment marked by the guidelines of the PRAE that supports and legitimizes teaching actions in terms of sustainability for its implementation and consolidation in the Colombian curriculum.

Conclusions

The research process and developed work show that the three educational institutions follow the same ministerial and district guidelines as a starting point, but with different approaches, developments, and segments in the PRAE that each institution has designed and addressed. In general, teachers are officially uninformed and unfamiliar with the EfS; however, it is implemented or, at least, it gets closer to it through activities, strategies and institutional proposals.

The link between statements presented in each cluster by teachers indicates their preferences and willingness to include the EfS in their pedagogical plans and practices according to the contexts, needs and social benefits of each of participating educational institutions.

These surveys clearly demonstrate that the majority of teachers prefer positive statements, agreeing with their preferences to address the EfS in giving attention to issues, competencies, values, and projections with schoolchildren, despite being institutions with different curricular proposals and PRAE.

In the same way, negative statements led teachers to disagree with EfS and therefore emphasize the negative elements, assuming that relationships are not established, that students get distracted, it requires a free time of the teacher, it is not their responsibility and there is no space in the curriculum to address these issues. Several teachers said whilst being in favor of EfS, they have little experience in acting in the classroom.

In the interviews with teachers, the approach to the EfS from the work of the EE that, in turn, comes from PRAE, of natural and social contexts of sustainability in the classroom is ratified(PINZÓN, 2011), with the approach to local and global problems, lifestyles, and critical and ethical reflections of the students(CALLEJAS RESTREPO et al., 2017).

In summary, for institution 1, it is interesting how the environmental dimension is developed well-aligned with all school levels, presenting flexible plans and different methodologies. There can also be seen how an academic elaboration is sought to give teachers better tools to develop their activities in the environmental project. Academic free-acting and support of the educational community are also encouraged, which generates flexibility in the direction and development of institutional projects by allowing teachers autonomy.

In the case of institution 2, a programmed, simultaneous and intentional work by

grades, which has the support of internal institutional bodies, is reflected, and this work is designed from external and internal natural resources with conservation and sustainable environmental ethics.

Finally, in institution 3, the work is executed from life education, with internal works and the coexistence of students around the EE, with local and institutional guidelines.

In chosen institutions, teachers reveal their intention to train for life, with integral developments in (WEE, 2017) the EfS as well as the implementation of the PRAE and curriculum greening. However, there are limitations to sustainable change with conventional practices that hinder academic and coexisting processes, which explain lines of research and educational action that are required to address global citizen education, local and global problems, and teacher training in EfS, to enrich pedagogical discourses and rethink the sustainable curriculum.

References

AVENDAÑO, M. N. V.; CORDERO-BRICEÑO, M. E. F. Environmental Education and Education for Sustainability: history, fundamentals and/Educación Ambiental y Educaciòn para la Sostenibilidad: historia, fundamentos y tendencias. REVISTA ENCUENTROS, v. 17, n. 02, 3 jul. 2019.

BERICAT, E. La integración de los métodos cuantitativo y cualitativo en la investigación social. Barcelona: Editorial Ariel. S. A. 1998.

BLANCO-PORTELA, N. et al. Estrategia de investigación-acción participativa para el desarrollo profesional del profesorado universitario en educación para la sostenibilidad: "Academy sustainability Latinoamérica". v. 24, n. 3, p. 25, 2020.

BRIONES, J. G. B.; BARREIRO, L. J. P.; ZAMBRANO, G. V. V. El maestro y la educación sostenible 2030. CIENCIAMATRIA, v. 6, n. 10, p. 609–624, 2020.

BUCKLER, C.; CREECH, H. Formando el futuro que queremos: Decenio de las Naciones Unidas de la Educación para el Desarrollo Sostenible (2005-2014), informe final, resumen - UNESCO Biblioteca Digital, 2014. Disponível em: <https://unesdoc.unesco.org/ark:/48223/pf0000230302_spa>. Acesso em: 23 fev. 2021.

CACERES, P. Análisis cualitativo de contenido: Una alternativa metodológica alcanzable. Psicoperspectivas: Individuo y Sociedad, v. 2, 1 out. 2008.

CADEP-CRUE. Directrices para la introducción de la Sostenibilidad en el Curriculum CADEP--CRUE, 2012. Disponível em: <https://docplayer.es/16105151-Directrices-para-la-introduccion-de-la-sostenibilidad-en-el-curriculum-crue.html>. Acesso em: 12 jan. 2021.

CALLEJAS RESTREPO, M. M. et al. Professional development of university educators in ESD: a study from pedagogical styles. International Journal of Sustainability in Higher Education, v.

18, n. 5, p. 648–665, 24 abr. 2017.

COLOMBIA. Ministerio de Educación General. Ley 115 de febrero 8 de1994, Diario Oficial no. 41.214. 1994. Disponível em: <http://www.suin-juriscol.gov.co/viewDocument.asp?ruta=Leyes/1645150>. Acesso em: 5 mar. 2021.

COLOMBIA. Ministerio de Educación Nacional. (2005, agosto - septiembre) "educar para el desarrollo sostenible" Al tablero, 36. 2005. Disponível em: <https://www.mineducacion.gov.co/1621/propertyvalue-31665.html>. Acesso em: 11 jan. 2021.

DÍAZ-BRAVO, L. et al. La entrevista, recurso flexible y dinámico. Investigación en educación médica, v. 2, n. 7, p. 162–167, set. 2013.

ECHEVARRÍA, H.D. Los fundamentos epistemológicos de los métodos mixtos. Revista Cronía, n. 13, p.10-18. 2017.

GALVIS-RIAÑO, C. J.; PERALES-PALACIOS, F. J.; LADINO-OSPINA, Y. Concepciones sobre ambiente y educación ambiental de profesores de centros educativos rurales de Bogotá - Colombia. Ambiente & Sociedade, v. 23, 2020.

GARCÍA-GONZÁLEZ, E.; JIMÉNEZ FONTANA, R.; AZCÁRATE, P. ¿Cómo evaluar desde una Educación para la Sostenibilidad? Espcios, v. 38, 22 jan. 2018.

GREENE, C.; CARACELLI, J.; GRAHAM, F. Toward a Conceptual Framework for Mixed-Method Evaluation Designs. Revista de Evaluación educativa y análisis de políticas. v.11, n. 3, p. 255 – 274, 1989.

GUZMÁN ALONSO, J. I. DE; GUTIÉRREZ BASTIDA, J. M. Hacia la sostenibilidad escolar: criterios de calidad en educación para la sostenibilidad. Vitoria-Gasteiz: Eusko Jaurlaritzaren Argitalpen Zerbitzu Nagusia = Servicio Central de Publicaciones del Gobierno Vasco, 2009.

HERNANDEZ, R.; FERNANDEZ, C.; BAPTISTA, P. Metodología de la investigación-sexta edición. México D.F. Mc Graw Hill. 2014

HERRERA, C. D. Investigación cualitativa y análisis de contenido temático. Orientación intelectual de revista Universum. Revista General de Información y Documentación, v. 28, n. 1, p. 119–142, 2018.

JULIA-IGUAL, J. F. J.; MARTÍ, E. M.; RIBERA, E. M. Rol de la Economía Social y la Universidad en orden a un emprendimiento basado en el conocimiento tecnológico y los valores. CIRIEC-España, revista de economía pública, social y cooperativa, v. 0, n. 98, p. 31–57, 1 abr. 2020.

LLINARES, M. C. et al. La educación para la sostenibilidad en la formación del profesorado de ciencias experimentales en Secundaria. Enseñanza de las Ciencias. Revista de investigación y experiencias didácticas, v. 37, n. 1, p. 157–175, 4 mar. 2019.

MATAS, A. Diseño del formato de escalas tipo Likert: un estado de la cuestión. Revista Electrónica de Investigación Educativa, v. 20, n. 1, p. 38, 9 fev. 2018.

MURGA MENOYO, M. Á. Competencias para el desarrollo sostenible: las capacidades, actitudes y valores meta de la educación en el marco de la Agenda global post-2015. Foro de Educación, v. 13, p. 55–83, 20 jul. 2015.

PINZÓN, M. C. R. Hacia una construcción de ciudadanía ambiental en la escuela. Espiral, Revista de Docencia e Investigación, v. 1, n. 1, p. 13–20, 1 jul. 2011.

POZA-VILCHES, F.; LÓPEZ-ALCARRIA, A.; MAZUECOS-CIARRA, N. A professional competences' diagnosis in education for sustainability: A case study from the Standpoint of the Education Guidance Service (EGS) in the Spanish Context. Sustainability, v. 11, n. 6, p. 1568, 2019.

RENDÓN, L. M. et al. Educación para el desarrollo sostenible: acercamientos desde una perspectiva colombiana. Producción + Limpia, v. 13, n. 2, p. 133–149, dez. 2018.

ROMÁN, F. et al. Resiliencia de docentes en distanciamiento social preventivo obligatorio durante la pandemia de COVID-19. Journal of Neuroeducation, v. 1, n. 1, p. 76–87, 15 jul. 2020.

SARTORI, S.; LATRÔNICO, F.; CAMPOS, L. Sustainability and sustainable development: A taxonomy in the field of literature. Ambiente & sociedade, v. XVII, p. 1–20, 1 mar. 2014.

SECRETARÍA DISTRITAL DE PLANEACIÓN. 21 monografías de las Localidades: Distrito Capital, 2011. Disponível em: <http://www.sdp.gov.co/busqueda-avanzada?search_api_multi_fulltext=MONOGRF%C3%8DAS+USAQUEN+2011>. Acesso em: 1 mar. 2021.

SHEPHARD, K.; FURNARI, M. Exploring what university teachers think about education for sustainability. Studies in Higher Education, v. 38, n. 10, p. 1577–1590, 1 dez. 2013.

STAKE, R. E. Investigación con estudio de casos. Madrid: Ediciones Morata, 1998.

TALAN, A.; TYAGI, R. D. Education and Human Resource Development for Sustainability. In: Sustainability. [s.l.] John Wiley & Sons, Ltd, p. 413–438. 2020.

TILBURY, D. Educación para el Desarrollo Sostenible Examen por los expertos de los procesos y el aprendizaje, 2011. Disponível em: <https://unesdoc.unesco.org/ark:/48223/pf0000191442_spa/PDF/191442spa.pdf.multi>. Acesso em: 14 nov. 2020.

TORRES, M.; CEBRIÁN, G. Análisis de la percepción de la educación para la sostenibilidad por parte del profesorado de Educación Secundaria y Bachillerato. Enseñanza de las Ciencias, v. 36, p. 141, 5 nov. 2018.

TUAPANTA DACTO, J. V.; DUQUE VACA, M. A.; MENA REINOSO, A. P. ALFA DE CRONBACH PARA VALIDAR UN CUESTIONARIO DE USO DE TIC EN DOCENTES UNIVERSITARIOS - PDF Descargar libre, 2017. Disponível em: <https://docplayer.es/112719239-Alfa-de-cronbach-para-validar-un-cuestionario-de-uso-de-tic-en-docentes-universitarios.html>. Acesso em: 24 fev. 2021.

UNESCO. La Lente de la educación para el desarollo sostenible: una herramienta para examinar las políticas y la práctica - UNESCO Biblioteca Digital, 2010. Disponível em: <https://unesdoc.

unesco.org/ark:/48223/pf0000190898_spa>. Acesso em: 12 jan. 2021.

UNESCO. Educación para el desarrollo sostenible: Libro de consulta. [s.l.] UNESCO, 2012.

UNESCO. Enseñanza y aprendizaje: lograr la calidad para todos; informe de seguimiento de la EPT en el mundo, 2013- 2014 - UNESCO Biblioteca Digital, 2014. Disponível em: <https://unesdoc.unesco.org/ark:/48223/pf0000226159>. Acesso em: 11 jan. 2021.

UNESCO. Educación 2030: Declaración de Incheon y Marco de Acción para la realización del Objetivo de Desarrollo Sostenible 4: Garantizar una educación inclusiva y equitativa de calidad y promover oportunid... - UNESCO Biblioteca Digital, 2016. Disponível em: <https://unesdoc.unesco.org/ark:/48223/pf0000245656_spa>. Acesso em: 23 fev. 2021.

VICUÑA, D. M.; PÉREZ, J. E. Aproximación metodológica al análisis de contenidos a partir del discurso de los actores. Un ensayo de investigación social de procesos de desarrollo local (Loja, Ecuador). Empiria. Revista de metodología de ciencias sociales, v. 0, n. 39, p. 15–47, 12 jan. 2018.

VILCHES, A. et al. Educación para la Sostenibilidad. OEI, 1 jan. 2014.

VILCHES, A.; MACÍAS, Ó.; PÉREZ, D. La transición a la sostenibilidad | Un desafío urgente para la ciencia, la educación y la acción ciudadana Pongamos que Hablo de Madrid, 22 ago. 2014. Disponível em: <https://pongamosquehablodemadrid.com/2014/08/22/la-transicion-a--la-sostenibilidad-un-desafio-urgente-para-la-ciencia-la-educacion-y-la-accion-ciudadana/>. Acesso em: 24 fev. 2021

WEE, C. Sostenibilidad, Currículum y Calidad. Revista Educación, v. 1, p. 15, 2017.

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Avaliação da sustentabilidade em instituições educacionais colombianas: Estudos de caso

Danilo Tovar Mora
María de Fátima Poza Vilches
Yolanda Ladino Ospina

Resumo: A avaliação dos processos e impactos da inclusão da sustentabilidade no currículo de três instituições de ensino na Colômbia como objeto deste estudo, permitiu conhecer processos normativos e pedagógicos em torno da educação ambiental e a transição diligente para uma educação para a sustentabilidade. A nível metodológico, apresenta-se uma pesquisa exploratória descritiva, voltada para o estudo de casos das instituições selecionadas, caracterizadas por sua convergência em um mesmo propósito ambiental normativo, ético, social e educacional. Isso sem perder de vista que essas instituições são divergentes na implantação pedagógica do Projeto Ambiental Escolar (PRAE). Os resultados obtidos mostram diferentes modelos pedagógicos ambientais nas três instituições devido à sua abordagem, estratégia e processos. Porém, observa-se que a maioria dos professores coincide em suas preferências por abordar a educação para a sustentabilidade.

Palavras-chave: Educação para a sustentabilidade, Avaliação, Projeto Ambiental Escolar, Práticas Pedagógicas, Ambientalização Curricular.

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Resumen: El evaluar procesos e impactos de la inclusión de la sostenibilidad en el currículo de tres instituciones educativas de Colombia, objeto de este estudio, permite conocer procesos normativos y pedagógicos en torno a la educación ambiental y la transición diligente a la educación para la sostenibilidad. A nivel metodológico, se presenta una investigación exploratoria descriptiva, centrada en el estudio de casos de las instituciones seleccionadas, caracterizadas porque convergen al mismo propósito normativo, ético, social y ambiental educativo. Esto, a la vez que dichas instituciones son divergentes en la implementación pedagógica del Proyecto Ambiental Escolar (PRAE). Los hallazgos obtenidos muestran modelos pedagógicos ambientales diferentes en las instituciones por su enfoque, estrategia y procesos. No obstante, se observa que la mayoría de los docentes coinciden en sus preferencias por abordar la educación para la sostenibilidad.

Palabras-clave: Educación para la sostenibilidad, Evaluación, Proyecto Ambiental Escolar, Prácticas Pedagógicas, Ambientalización curricular.