

Education, culture and environmental citizenship program to raise awareness among the population of Ventanilla in Lima, Peru

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Abstract– *The lack of environmental education and culture in the population generates actions against the environment. Therefore, each local government is responsible for preserving and promoting the conservation of ecosystems. Thus, the objective of this research was to evaluate the annual work plan of a municipal program of education, culture and environmental citizenship (EDUCCA), carried out in the years 2018 to 2020 in the district of Ventanilla in Lima, Peru. For the evaluation, a documentary review of all the activities raised and executed in the work plans of the years under study was carried out. Tests and surveys conducted by the district municipality of Ventanilla were also reviewed. The study indicated that, in 2019 there were better results compared to 2018 and 2020, training 107 school environmental promoters (SEP), 35 youth environmental promoters (YEP) and 78 community environmental promoters (CEP). In the same year, 5 events and 5 campaigns on environmental issues were held, observing greater interest from respondents in answering questions related to environmental issues and knowledge of the program. Finally, it is concluded that the municipal program EDUCCA promotes environmental education and culture among citizens, and serves as a model for other public entities to improve their environmental management policies.*

Keywords– *environmental education, environmental culture, municipal program, environmental promoter, citizenship.*

I. INTRODUCTION

The increase in environmental pollution caused by anthropic activities is a problem of interest to global society [1]. In this sense, various organizations propose strategies for environmental education and awareness-raising, generating paradigmatic and cultural changes towards more sustainable ways of living, with actions that persist in the attitudes, behaviors and habits of society in order to significantly enhance social transformation and thus reduce discharges and emissions of pollutants into the environment [2], [3], forming a society that acts in a fair manner with the environment [4]. In Peru, 80% of the population is aware that the lack of environmental education and culture are the main causes for a healthy relationship between man and nature, which lead to an unfavorable quality of life with effects on the economy and

health of the inhabitants [5]. Theoretical and empirical strategies applied for the environmental education of young university students are viable for increasing learning and thus achieving an environmental culture in graduates [6]. Environmental education and sustainable development have evolved over the years, with a concept of environmental education that has adapted to the thinking of the educational system by applying strategies and instruments that allow understanding and strengthening environmental knowledge and commitment [7], [8].

Municipal programs describe and propose activities of an administrative nature to be implemented in the various organizational units of a municipality, taking into account the different human and material resources available. EDUCCA is a municipal management and planning program for the implementation of the national environmental education plan, which is led by local governments to program and execute environmental education actions at the local level and promote stakeholder participation.

Environmental education is the ecological knowledge, environmental awareness, attitude and values focused on the environment that occurs in the day-to-day life of the person who takes commitments and responsibility [9] to develop skills in favor of the environment [10]. Environmental education is classified into formal and community education, formal education seeks to integrate all environmental knowledge into the education system, and community environmental education is aimed at the population as a whole with the objective of increasing environmental knowledge and strengthening attitudes and values of environmental responsibility.

On the other hand, environmental culture is the behavior in relation man-nature and the application of beliefs, attitudes with the environment in which it develops, leaving footprints with favorable results in sustaining natural resources [11]. Reference [12] showed that environmental attitude has a relationship between product value and green culture; therefore, the consumer tends to have a strong cultural stance and promotion of the value of eco-friendly products.

Therefore, the research evaluated the application of the EDUCCA program as a management and planning tool for municipalities to increase community participation either directly or indirectly, changing their habits and behavior to

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generate a healthy environment framed towards sustainable development. For this purpose, the work plans and annual reports applied by the District Municipality of Ventanilla in the population were reviewed to determine the efficiency of the program in increasing environmental education and culture.

II. METHODOLOGY

A. Study Area

The research was carried out in the district of Ventanilla of the Constitutional Province of Callao in Lima-Peru (Figure

1), with geographical coordinates of $11^{\circ} 51' 20''$ S, $77^{\circ} 04' 25''$ W. Ventanilla is the largest district of the Constitutional Province of Callao with 7352 hectares, politically created on 28 January 1969, and is currently the second most populated district of the seven districts that make up the province.

B. Data Collection and Processing

The information was obtained from the District Municipality of Ventanilla. This information corresponds to the municipal EDUCCA program for the years 2018, 2019 and 2020.



Fig. 1 Location of the district municipality of Ventanilla

To evaluate the annual work plan of the municipal EDUCCA program in the district of Ventanilla, the data collected were examined by comparing the results of each

year's plan with the report obtained in the same year. Table I shows the types of documents evaluated.

TABLE I
DOCUMENTS EVALUATED

Documents	2018	2019	2020
Work plan	RGM N°037-2018-MDV/GM	RGM N°035-2019-MDV/GM	RGM N°029-2020-MDV/GM
Annuals reports	Official letter N°115-2018 MDV/ALC	Official letter N°137-2019 MDV/ALC	Official letter N°137 -2020 MDV/ALC

III. RESULTS AND DISCUSSION

A. Environmental Education

Table II presents the comparison of plans and annual reports of all activities that were executed in the years 2018, 2019 and 2020, noting that the formation of SEP in the year

2018 reached 80%, in the year 2019 obtained 107% and in the year 2020 reached 32%. Meanwhile, the participation of educational institutions (EI) reached 100% in 2020. For [13], teachers must be prepared to accompany and encourage children and young people to reflect; this action was 100% achieved in 2018 and 2019.

TABLE II
COMPARISON OF THE ACTIVITIES IN THE ENVIRONMENTAL EDUCATION LINE

Line of action 1: Environmental education									
1.1: Formal environmental education									
Activity	Plan 2018	Report 2018	%	Plan 2019	Report 2019	%	Plan 2020	Report 2020	%
Training of SEPs	15	12	80	100	107	107	100	32	32
Participating EIs	3	7	223	5	8	160	10	10	100
Teacher trained	0	5	100	0	8	100	0	0	0
Persons indirectly benefited in the EIs	800	3000	375	2500	5000	200	3000	100	3
1.2: Community education									
Design and implementation of environmentally educating public spaces	1	1	100	3	0	0	4	4	100

In other research, for [14], current education and educational models go through new paradigms on the active participation of students in the preservation and care of the environment; therefore, student-oriented strategies for the understanding of sustainable development must be implemented, and these methodologies can be initiatives of educational institutions. Reference [7] refer that awareness of environmental issues should be managed from an early age and thus achieve a cultural, attitudinal and behavioral change in people. Furthermore, environmental education has been adapted to the development of thinking within the education system. For this reason, in the formation of the SEP it was proposed to intervene in primary and secondary educational institutions. It is also highlighted that, within the conceptual and methodological evolution of environmental education towards the Sustainable Development Goals (SDGs), its motivation has been the search and construction of pedagogical alternatives focused on sustainability as a guiding

principle [15]. In this context, higher education is considered to play a crucial role in achieving the SDGs, helping society to face social, economic and environmental challenges [16].

B. Culture and Environmental Communication

Table III shows the comparison of the annual plans and reports of the environmental culture and communication line through the activities of environmental events and campaigns. The environmental events in 2018, 2019 and 2020 reached 100, 83 and 88%, respectively. The environmental campaign activities in the same evaluated years reached 100, 100 and 25%, respectively. The purpose of carrying out these environmental campaigns and events is to encourage the population to adopt certain behavioral patterns from communication to the application of what has been learned, in order to motivate voluntary changes that contain positive results to solve any type of problem raised [17].

TABLE III
COMPARISON OF THE ACTIVITIES IN THE CULTURE AND ENVIRONMENTAL COMMUNICATION LINE

Line of action 2: Culture and environmental communication									
2.1 Design and implementation of information campaigns and events									
Activity	Plan 2018	Report 2018	%	Plan 2019	Report 2019	%	Plan 2020	Report 2020	%
Environmental events	1	1	100	6	5	83	8	7	88
Environmental campaigns	5	5	100	5	5	100	4	1	25
People campaigning	200	600	300	1000	2950	295	365	85	23
Reach of people on social media	0	8866	100	0	50350	100	0	1500	100

In a study conducted by [18], they applied awareness campaigns as a didactic tool to favor the teaching and learning processes of a group of primary school students in raising awareness about environmental conservation. The results of the study showed that, with the application of the awareness campaign, the students were able to propose strategies and solutions to the proposed environmental problems.

C. Citizenship and Environmental Participation

Table IV presents the comparison of the amount of YEP and CEP training that were proposed and implemented in the annual plans and reports for the years 2018, 2019 and 2020. It shows that the training of YEPs in 2018 was 90%

implemented, in 2019 it was 70% implemented and in 2020 it was 52% implemented. The participation of the university community increased favorably in 2018 and 2019, but decreased in 2020. Whereas, in the CEP formation in the year 2018 it was realized by 40%, in the year 2019 it was realized by 111% and in the year 2020 it was realized by 67%. The notable downward changes in 2020 is due to the COVID-19 pandemic, generating an accelerated change from in-person to virtual, which led to rethinking the new forms of teaching and the adaptation of digital platforms that are key tools in people's learning.

TABLE IV
COMPARISON OF THE ACTIVITIES IN THE CITIZENSHIP AND ENVIRONMENTAL PARTICIPATION LINE

Line of action 3: Citizenship and environmental participation									
3.1 YEP training									
Activity	Plan 2018	Report 2018	%	Plan 2019	Report 2019	%	Plan 2020	Report 2020	%
Training of YEPs	10	9	90	50	35	70	100	52	52
Number of trainings for YEPs	6	9	150	3	9	300	3	3	100
Number of activities for YEPs	0	1	100	1	1	100	1	1	100
3.2: CEP training									
Training of CEPs	10	4	40	70	78	111	150	100	67
Number of trainings for CEPs	3	1	33	3	2	67	3	3	100

In other research, reference [6] elaborated a strategy in university centers to favor the university community, indicating that the application of environmental training contributes to perfecting future graduates in implementing actions to raise the awareness of citizens. Meanwhile, reference [19] refer that the CEPs are the great teachers who transmit their knowledge through the training of these leaders.

Thus, reference [8] conducted research on parents of students in the understanding of texts on environmental issues, demonstrating a desired transformation in parents to promote environmental education to their children. In addition, within the family, parents play an important role, contributing knowledge and providing tools for the active participation of family members. Reference [20] evaluated the level of

environmental culture in a construction company, identifying the limited environmental culture and the lack of risk perception of environmental problems among workers. This need helped to design environmental education strategies to transform the way workers act on the environment.

On the other hand, Table V shows the average grades of the SEP, YEP and CEP of the years evaluated, showing that the highest grades were obtained in 2019 compared to 2018

TABLE V
COMPARISON OF THE EVALUATION IN GRADES

Activity	2018	Increase	2019	Increase	2020	Increase
SEP	13	65%	16	80%	15	75%
YEP	14	70%	18	90%	16	80%
CEP	13	65%	16	80%	15	75%

D. Proposals for improvement in environmental education programs

Two proposals for improvement are put forward for the application of the work plan of the municipal EDUCCA program. Firstly, all the companies in the industrial zone of Ventanilla should be invited as fundamental allies so that they can participate in the implementation of the proposed activities and be trained as environmental promoters for their certification as companies that contribute to the environmental wellbeing of their jurisdiction. Finally, to integrate more educational institutions in order to form inter-institutional alliances to increase the efficiency of the implementation of the EDUCCA program in Ventanilla and to make it known to more people.

IV. CONCLUSIONS

The research showed that the activities of the work plan of the municipal program EDUCCA were efficiently executed in 2019 compared to 2018 and 2020. It was obtained that in the year 2018 12 SEPs, 9 YEPs and 4 CEPs were formed, in the year 2019 107 SEPs, 35 YEPs and 78 CEPs were formed and in the year 2020 32 SEPs, 52 YEPs and 100 CEPs were formed. This shows that the activities provided by the municipal program EDUCCA are essential to spread environmental knowledge to the population, developing responsible citizens who share their learning with their community. In 2018, 1 event and 5 environmental campaigns were held; in 2019, 5 events and 5 environmental campaigns were held; and in 2020, 7 events and 1 environmental campaign were held. All this generated an environmentally friendly action in the population, increasing environmental awareness. On the other hand, the application of evaluations and surveys showed that the participants in the municipal EDUCCA program improved their level of environmental knowledge and changed their attitudes and behavior in relation to the environment. With all this, the study put forward proposals for improvement, such as calling on all companies

and 2020. Reference [21] refer that evaluations are fundamental to know the final results, allowing to recognize the successes and difficulties in the learning process, and then propose new learning strategies. For this reason, reference [18] applied a questionnaire to primary school students to see the results obtained after the application of environmental awareness, highlighting the outstanding interest of the learners.

as fundamental allies to participate in the implementation of the proposed activities. Also, integrating more educational institutions in order to form inter-institutional alliances.

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