Children's Perception of Climate Change in North-Eastern Portugal

Ricardo Ramos [1], Maria José Rodrigues [2] and Isilda Rodrigues [3,]

[1,2] Research Centre in Basic Education (CIEB), Instituto Politécnico de Bragança

[3] Education and Psychology Department, University of Trás os Montes and Alto Douro

Abstract

Despite the impact that climate change is having on our planet and considering its consequences for future generations, much of the academic literature focuses on adolescent and adult perceptions, giving little relevance to children's perceptions. This quantitative study was based on the application of 245 questionnaires to children aged between 9 and 13 years old from five schools in north-eastern Portugal. The questionnaire included 24 closed-ended items using a Likert scale with 5 response options (totally disagree, disagree, indifferent/don't know, agree, totally agree), it also contained one open-response question and a final multiple-choice question. But concerning this, we intentionally used five questions as shown in this present paper. The data were statistically treated using SPSS software. The results show that most of the children express concern about the study's potential problem. However, they show some doubts and a lack of knowledge about some of the themes like consequences of climate change. We found differences with the female students, also showed a slightly more ecological posture, i.e., an eco-friendlier posture. From the results obtained, we can open new paths for future research and contribute to the definition of policies and educational practices since the school has the responsibility to cooperate in the production of values, attitudes, and pro-environmental behaviours.

METHODOLOGY

The rationale of the current research paper is to explore the perceptions about climate change, and how these are faced by the 4th grade students (first cycle), between 9 and 10 years old, and the 6th grade students (second cycle), between 11 and 12 years old. The data collection instrument used was a questionnaire, which was previously approved by the Ethics Committee of the University of Trás-os-Montes and Alto Douro and the Directorate-General of Education of Portugal, (nº0811200001). It also had the consent of the students' parents and included an informed consent form stating that the students agreed to participate in the research, which was for academic purposes only. The questions in the instrument were written in an objective and simple way so that they would be easy for the children to understand. It also contained one open-response question and a final multiple-choice question. We focused on questions that could assess: (i) scientific understanding of the climate change phenomenon; (ii) consequences of climate change; and (iii) anthropocentric vs. ecocentric posture.

RESULTS AND DISCUSSION

In Table 1 we can see that most students, around 72%, expressed their concern about climate change. Even so, about 16% said they were not concerned about the issue, and 10,7% said its not relevant problem.

Table 1 – Results on concern about climate change.

N=242		
	Frequencies	**Percentage**
Totally Disagree	101	41,7%
Disagree	74	30,6%
Not Relevant	26	10,7%
Agree	30	12,4%
Totally Agree	11	4,5%

It was possible to verify that around 70% of the students are concerned about climate change. However, their knowledge of the phenomenon falls short. Regarding the understanding of the phenomenon, when analyzing figure 1, we found that 33.5% could not list a consequence of climate change. Others mentioned pollution (10.3%) and volcanic activity (2.9%), when these should be mentioned as a cause, not a consequence.

Figure 1 – World cloud in students responses to the question "List one consequence of climate change" n=242

As a result of Figure 1, aided by the previous figure 1, we can see that the extinction of flora and fauna, with a representation of around 12% (n = 30), is the second most mentioned consequence by the responding students, followed by pollution, represented by 10.3% (n = 25). Other causes, although in a lower percentage, were mentioned by the students, such as rising sea levels, water shortages, and droughts, among others.

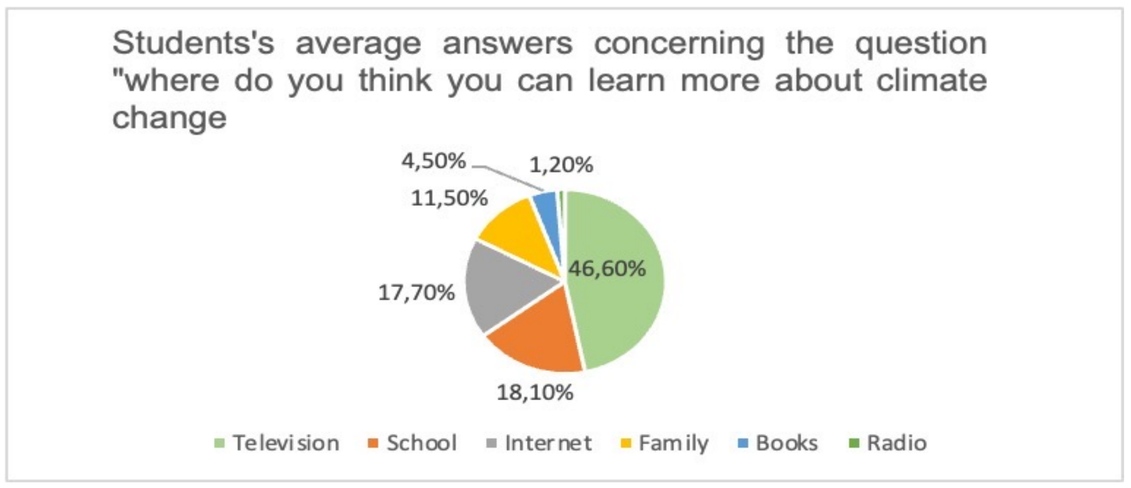
We also discuss the degree of agreement with the statements on climate change, according to gender, present the significance value (Table 2), and then present the parameters of the results that proved to be statistically significant.

Table 2: Significant results of the comparison of the degree of agreement with the climate change statements according to gender *(p= Test Mann-Witney).*

	Male			**Female**			*dif*	*p*
	N	average	Dp	N	average	Dp		
I would like to learn more about climate change	105	**3,59**	1,14	137	**3,93**	1,04	0,34	0,014

Female students showed greater sensitivity than male students.

In a final multiple-choice question, we wanted to find out where students considered learning more about climate change. The answers varied, indicating school, TV, the internet, radio, family, books, or other. The answers are represented in graphic 1.



Graphic 1 - analyzing the graph, we can see that 46% of the students answered that it was on television, followed by 18% at school, 17% on the internet, 11.5% in the family, 4.5% in books and finally 1.24% on the radio.

Scientific information about the global climate and its development is complex. Mass media, such as the Internet, are the main sources of information on climate change, although in some situations they can negatively affect levels of knowledge, problem awareness, and behavioral intentions [1],[2].

CONCLUSIONS

This study proved that, although climate change concerns students and they want to know more about the subject, their perceptions are below the level of literacy that would be desirable, since this theme is highlighted as a priority and fundamental to solving this emergency. We therefore hope that this work will contribute to raising awareness among citizens, particularly children, and that they will adopt attitudes and behaviours in their daily practice, that are more pro-environmental. Climate literacy must go beyond the natural sciences and be integrated into the various subject areas, from the social sciences (economics, sociology, anthropology, geography, etc.) to the humanities (philosophy, ethics, etc.) [3]. Schools, we believe, must play an important role in raising awareness and educating about climate change. As an institution responsible for the integral formation of citizens, the school, from early childhood education to higher education, must embrace climate education for greener progress and face this issue as a serious problem, considering it the great challenge of the twenty-first century. Over a decade ago, we still educate young people as if there were no planetary emergency [4].

REFERENCES

[1] Guiddens A. A política da mudança climática. 1st ed. Rio de Janeiro: Zahar; 2010.

[2] Taddicken M. Climate change from the user's perspective. Journal of Media Psychology. 2013;25(1):39–52.

[3] O'Neill B, Jiang J, Funch R. The effect of education on determinants of climate change risks. Nature Sustainability. 2020;:520–8.

[4] Orr, D. Alfabetização ecológica: Educação e a transição para um mundo pós-moderno. New York: State University of New York Press; 2004

This work has been supported by FCT – Fundação para a Ciência e Tecnologia within the Project Scope: UIDB/05777/2020.

UNIVERSIDADE DE TRÁS-OS-MONTES E ALTO DOURO

INSTITUTO POLITÉCNICO DE BRAGANÇA Escola Superior de Educação

FCT Fundação para a Ciência e a Tecnologia

cieb