



Proceeding Paper

Construct of Youth Environmental Citizenship among International Large-Scale Educational Studies [†]

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Abstract: Environmental citizenship has become an integral element of civic and citizenship education curricula, both globally and at the European level. Previous analysis provided important evidence that environmental-citizenship education practice in Nordic schools has a significant positive association with heightened attitudes and magnified behaviours among students toward environmental actions now and in the future. This paper starts with critiques on the strengths and limitations of ICCS 2016 data measures of youth environmental citizenship, and then it provides an overview of measures applied in a few other large-scale international studies such as PISA 2015 and PISA 2018. At the end, we present a measurement proposal on environmental citizenship through combining the measures from these studies.

Keywords: environmental citizenship; Nordic countries; citizenship education; International Civic and Citizenship Education Study (ICCS); Programme for International Student Assessment (PISA)



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1. Introduction

Environmental citizenship has become an integral element of civic and citizenship education curricula, both globally and at the European level [1,2]. Previous analysis [3,4] provided results of measures using students' concerns, values, engagement, and intended future participation on environmental issues to construct environmental citizenship and its relation to student home socioeconomic background, gender, and migrant status. The results show that there are both similarities and small variations in elements of student environmental citizenship among the Nordic countries and in comparison with their European and international peers. Nordic students stand out as concerned environmental citizens while they rank somehow lower than their European and international peers in engagement, values, and intended participation of environmental citizenship. We find that student environmental citizenship is socially divided in all Nordic countries as it differs significantly between students from different socioeconomic strata and genders. Although not all differences of student environmental citizenship by migrant status are statistically significant among the Nordic countries, we find some significant influence of migrant status interaction with socioeconomic status and genders.

We follow a recent and comprehensive definition of environmental citizenship by the European Network for Environmental Citizenship (ENEC, 2017–2022):

Environmental citizenship is the responsible pro-environmental behavior of citizens who act and participate in society as agents of change in the private and public sphere on a local, national, and global scale, through individual and collective actions, in the direction of solving contemporary environmental problems, preventing the creation of new environmental problems, and achieving sustainability and developing a healthy relationship with nature (<http://enec-cost.eu/our-approach/>) (assessed on 16 March 2022 ENEC, 2018) [5].

The ENEC definition of Environmental citizenship includes elements of knowledge, skills, attitudes, values. These elements are also compatible with the UNESCO definition of Education for Sustainable Development (ESD), “Education for Sustainable Development Education for Sustainable Development (ESD) empowers learners with knowledge, skills, values and attitudes to take informed decisions and make responsible actions for environmental integrity, economic viability and a just society.” [6].

2. Existing Data and Measures of Environmental Citizenship

We present the variables of interest measuring student concerns, values, attitudes, behaviors and intended behaviors related to environmental issues from existing data of ICCS 2016 in Table 1 and PISA 2016 and PISA 2018 in Table 2. Table 1 shows students’ responses to the measurement items in percentages of Europe comparing with those of international. The preliminary results in Table 1 indicate an overall similarity between European students and students of the world. In Table 2, without data analysis, we only present the measures of variables relevant for environmental citizenship existing in PISA 2015 and PISA 2018 studies, to serve the purpose of our conference presentation of proposing a measurement of environmental citizenship.

Table 1. Description of measures from International Civic and Citizenship Education Study (ICCS) 2016 study.

Items of Interest in ICCS 2016	Response Alternative	% Europe	% International
Have you ever been involved in environmental organizations or groups (STQ15b)	Yes, have been	25.1 (0.3)	28.1 (0.2)
	Never	74.9 (0.3)	71.9 (0.2)
	Total	100	100
Have you ever been participating in an activity to make the school more environmentally friendly (STQ16f)	Yes, have done	43.5 (0.4)	49 (0.3)
	Never	56.5 (0.4)	51 (0.3)
	Total	100	100
A school, to what extent have you learnt how to protect the environment (STQ18c)	A lot	41.2 (0.4)	46.1 (0.3)
	To some extent	37.9 (0.3)	34.7 (0.2)
	A little	16.5 (0.2)	15.2 (0.2)
	Not at all	4.4 (0.2)	3.9 (0.1)
Total	100	100	
How important for a good adult citizen to participate in protecting the environment (STQ23j)	Very important	38.2 (0.3)	44.1 (0.2)
	Quite important	43.8 (0.3)	41.3 (0.2)
	Not very important	15.1 (0.2)	12.1 (0.1)
	Not important at all	2.9 (0.1)	2.5 (0.1)
Total	100	100	
How important for a good adult citizen make personal effort to protect the environment (STQ23n)	Very important	43.1 (0.3)	48.7 (0.2)
	Quite important	43.9 (0.3)	40.7 (0.2)
	Not very important	10.9 (0.2)	8.8 (0.1)
	Not important at all	2.1 (0.1)	1.9 (0.1)
Total	100	100	
Biggest threat to the world future is pollution (STQ28a)	To a large extent	73.6 (0.3)	75.3 (0.2)
	To a moderate extent	21.5 (0.3)	20 (0.2)
	To a small extent	3.7 (0.1)	3.5 (0.1)
	Not at all	1.2 (0.1)	1.2 (0.0)
Total	100	100	

Table 1. Cont.

Items of Interest in ICCS 2016	Response Alternative	% Europe	% International
Biggest threat to the world future is climate change (STQ28i)	To a large extent	55.6 (0.3)	56.8 (0.2)
	To a moderate extent	29.6 (0.3)	28.4 (0.2)
	To a small extent	11.9 (0.2)	11.9 (0.1)
	Not at all	2.9 (0.1)	2.8 (0.1)
	Total	100	100
When becoming adult, will you make personal efforts to protect the environment (STQ31j)	I would certainly do	29.6 (0.3)	38 (0.2)
	I would probably do	45 (0.3)	41.4 (0.2)
	I would probably <u>not</u> do	19.2 (0.2)	15.3 (0.2)
	I would certainly <u>not</u> do	6.1 (0.2)	5.3 (0.1)
	Total	100	100

Source: Table A1 in [4].

Table 2. Measures from PISA 2015 and 2018 studies.

Items of Interest in PISA 2015	Response Alternatives
<i>Students' responses to question "How informed are you about the following environmental issues?" (ST092)</i>	
The increase of greenhouse gases in the atmosphere	1 = I have never heard of this 2 = have heard about this but I would not be able to explain what it is really about 3 = I know something about this and could explain the general issue 4 = I am familiar with this and I would be able to explain this well
The use of genetically modified organisms (<GMO>)	
Nuclear waste	
The consequences of clearing forests for other land use	
Air pollution	
Extinction of plants and animals	
Water shortage	
<i>Students' responses to question "Do you think problems associated with the environmental issues below will improve or get worse over the next 20 years?" (ST093)</i>	
Air pollution	1 = improve 2 = stay about the same 3 = get worse
Extinction of plants and animals	
Clearing of forests for other land use	
Water shortages	
Nuclear waste	
The increase of greenhouse gases in the atmosphere	
The use of genetically modified organisms (GMO)	
<i>Students' responses to question "How easy do you think it would be for you to perform the following tasks on your own? (ST129)</i>	
Predict how changes to an environment will affect the survival of certain species	1 = I couldn't do this, 2 = I would struggle to do this on my own, 3 = I could do this with a bit of effort, 4 = I could do this easily
<i>Students' responses to question "How often do you do these things?" (ST146)</i>	
Follow news of science, environmental, or ecology organisations via blogs and microblogging	1 = very often 2 = regularly 3 = sometimes 4 = never or hardly ever

Table 2. *Cont.*

Items of Interest in PISA 2018	Response Alternatives
Students' responses to questions "How easy do you think it would be for you to perform the following tasks on your own?" (ST196)	
Explain how carbon-dioxide emissions affect global climate change	
Establish a connection between prices of textiles and working conditions in the countries of production	
Discuss the different reasons why people become refugees	1 = I couldn't do this,
Explain why some countries suffer more from global climate change than others	2 = I would struggle to do this on my own,
Explain how economic crisis in single countries affect the global economy	3 = I could do this with a bit of effort,
Discuss the consequences of economic development on the environment	4 = I could do this easily
Students' responses to question "How informed are you about the following topics?" (ST197)	
ST197Q01HA: Climate change and global warming	1 = I have never heard of this, 2 = I have heard about this but I would not be able to explain what it is really about, 3 = I know something about this and could explain the general issues, 4 = I am familiar with this and I would be able to explain this well
Students' responses to question "Are you involved in the following activities?" (ST222)	
I reduce the energy I use at home (e.g., by turning the heating down or turning the air conditioning up or down or by turning the lights when leaving a room) to protect the environment	
I choose certain products for ethical or environmental reasons, even if they are a bit more expensive	
I sign environmental or social petition online	
I keep myself informed about world events via Twitter or Facebook	Yes = 1 No = 2
I boycott products or companies for political, ethical or environmental reasons	
I participate in activities promoting equality between men and women	
I participate in activities in favour of environmental protection	
I regularly read websites on international social issues (e.g., poverty, human rights)	
Students' responses to question "To what extent do you agree with the following statements?" (ST219)	
ST219Q06HA: Looking after the global environment is important to me	1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Strongly agree

Source: Student Questionnaire for Pisa 2018 www.oecd.org/pisa/data (accessed on 16 March 2022).

3. Discussion and Conclusions

There have been studies that explore concepts and measures relevant to environmental education; in this paper we have categorised environmental-related questions formulated in the ICCS 2016 and PISA studies into several environmental citizenship attributes. First, the ICCS study appears to focus on students' concerns, values and future intentions in/outside of school engagement that are interpreted as environmental citizenship attributes. Second, the PISA studies seem to focus on knowledge, skills, engagement, dialogue, social media participation, and habit formation that are interpreted as environmental citizenship attributes. Nonetheless, existing studies such as teachers' understanding of sustainable development and student attitudes and consciousness towards the environment, school education and student learning for environmental citizenship, and a collective effort in conceptualization of environmental citizenship [7] also explore concepts and contribute to measures of environmental citizenship. However, the concepts and measures of envi-

ronmental citizenship are rather fragmented geographically and socio-culturally, as well as across different scientific disciplines at different analytical levels. Hence, this array of studies may also contribute to a current lack of comprehensive measurement and perhaps enable researchers to assess and compare youth environmental citizenship across systems and national borders. This preliminary analysis of the ICCS and PISA studies has led to our proposing a new measurement including eight items measuring students' concerns, values, and future intentions in/outside of school engagement, and knowledge, skills, dialogue, social media participation and habit formation that are conducive to pro-environmental movements and change.

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