

ENVIRONMENTAL EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT IN ROMANIA. TEACHERS' PERCEPTIONS AND RECOMMENDATIONS (II)

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Abstract

This paper analyses a part of the results regarding environmental education (EE) and education for sustainable development (ESD) in Romania, obtained by administering a survey in 2017, willingly and anonymously filled out by 335 teachers (preschool teachers, primary school teachers, Geography teachers). It examines: respondents' interest, importance, knowledge and involvement in EE and sustainable development (SD); activity impact on teacher knowledge, attitude and behaviour towards SD and environment in Romania; importance of aims and levels in EE and ESD; EE and SD activities involving preschoolers and pupils as well as their frequency; the efficiency of some activities in preschoolers' and pupils' EE and ESD; problems that may occur due to a subpar EE. In its conclusions, the paper highlights several measures for an increase in EE and ESD levels.

Keywords: *Geography, research, active learning, activity in nature, field trips, tasks*

INTRODUCTION

There is an increasing global level of interest in environmental education (EE) and education for sustainable development (ESD). In order to know the situation regarding EE and ESD in Romania, we conducted a survey in 2017 and examined the opinions of preschool and primary school teachers as well as those of Geography teachers from the primary and secondary levels of education.

In a previous paper, we employed other results from the same survey to study teachers' perception of EE and ESD in the Romanian system of education (Ilovan et al., 2018b). We reviewed environmental issues in official documents, the impact of several factors and EE and ESD activities from the Romanian educational system on preschoolers and pupils, EE and ESD strengths and weaknesses/deficiencies in the education system, as well as the opportunities and risks for EE and ESD. Teachers offered several suggestions for the improvement of EE and ESD in Romania (Ilovan et al., 2018b).

In this paper, we will focus on other aspects regarding EE and ESD in Romania, aspects researched in our 2017 survey. We will therefore examine: (1) respondents' interest in, importance given to, knowledge about and involvement in EE and sustainable development (SD); (2) impact of some activities on teachers' knowledge, attitudes and behaviours towards SD and the environment in Romania; (3) importance of aims and levels in environmental education and sustainable development; (4) activities involving preschoolers and pupils aiming at EE and SD; (5) efficiency of some activities for preschoolers' and pupils' EE and SD; (6) frequency of EE activities involving children; (7) problems that may occur because of deficiencies in the pupils'/citizens' EE and ESD.

THEORETICAL BACKGROUND

EE is crucial for awareness increase towards the necessity of environmental preservation and quality of life improvement, now and for future generations (Severiche-Sierra et al., 2016). EE is essential for the establishment of values, abilities and the promotion of the necessary ethics for SD (Calvente et al., 2018), for achieving SD (Tsekos, 2012), and for biodiversity conservation (Ramados & Poyyamoli, 2011). EE aids in determining attitude changes, thus creating an opportunity for attaining a balance between people and their environment (Severiche-Sierra et al., 2016).

Knowing that knowledge about the environment, attitudes, consumer behaviour and EE activities contribute to the development of sustainable behaviour (Zsóka et al., 2013), researchers clarified the concepts of SD, sustainability, EE and ESD (Correa & Ashley, 2018), investigated attitudes towards the environment (Franzen & Meyer, 2010), EE importance in the neoliberal political, cultural and economic contexts (Hursh et al., 2015), aspects related to the importance of environmental ethics (Kopnina, 2012), and EE policies for ESD (Payne, 2016).

Some highlight the necessity for children's environmental orientation (Roberts & Suren, 2010) through family and educational activities. It is also stated that early childhood educators' perceptions of topics such as nature, science, and EE, influence children's environmental values (Torquati et al., 2013). Other studies focus on investigating pupils' knowledge and attitudes towards the environment (Timur & Timur, 2013), as well as their perceptions regarding nature and the environment (Ozturk & Enez, 2015). Ozel et al. (2013) bring forward the perspectives and attitudes of Turkish Geography teachers concerning SD, while other two studies examine the situation of forest education, as part of EE, reflected in Romanian Geography teachers' perceptions (Dulamă et al., 2016, 2017).

Many studies seek to analyse the contexts in which EE takes place and the strategies used to attain it. During the communist years, in Romania, the school lot was a place where pupils could develop specific abilities, necessary in rural areas, while a series of extracurricular activities (such as collecting medicinal plants, fruit picking, etc.) gave pupils useful knowledge about the environment (Dulamă & Ilovan, 2015, 2017). The school garden is seen as an optimal/favourable place for EE (Dias Rodrigues et al., 2018). Non-formal EE practices can improve gardening abilities, environmental ethics and sustainable food practices (Calvente et al., 2018). Learning activities organised in wooded areas are prime opportunities for forest education as well as EE and ESD (Dulamă et al., 2016, 2017). Studying one's hometown is the most favourable practice for ED, in the case of small children (Dulamă, 2010a), pupils and pupils (Dulamă, 2010b, c), as well as for the development of the necessary abilities for an integrated environmental study, from the perspective of its sustainable development (Dulamă, 2011, 2012).

EE and ESD are efficiently undertaken in group activities where pupils reflect on the importance of taking care of the planet, develop useful critical thinking and social skills (Martinez Lirola, 2018; Dulamă, 2008a, 2008b), as well as teamwork, during coastal EE activities (Santos et al., 2018). Some researchers state that EE programming influences people's attitudes and values towards the natural world (Gould et al., 2018). Observations, investigation, learning through discovery are efficient methods that ease the exploration of the environment and the acquisition of knowledge about it, from a sustainable development perspective (Dulamă, 1996; Dulamă & Roşcovan, 2007). Other researchers described an EE practice, developed in an EE workshop for pupils, focusing on solid waste management, the measurement of the effect of ecological ESD in elementary schools and ascertained an increase in the knowledge acquired about this subject (Thao & Kato, 2016). Current studies investigate the impact of knowledge about the environment and product quality on the people's purchasing habits of recycled products (paper, smartphones and printers) (Sun et al., 2018).

International summer schools offer a wide array of learning contexts and activities in which pupils are able to acquire knowledge about the environment and practice a series of abilities necessary for studying it (Havadi-Nagy & Ilovan, 2013; Ilovan & Havadi-Nagy, 2016). The EE and environmental preservation international initiative emphasizes that museums can decisively contribute to EE. Museums are currently a force in informal education, a cultural transporter which is able to integrate the values of local, regional and national cultures and aim to contribute to raising awareness for environmental issues, thus adding value to EE and SD (Wang & Chiou, 2018).

Romanian Geography pupils build their specific abilities for environmental research as they provide support for several hydrographic basin development projects (Dulamă et al., 2016), geographic landscape studies (Toderaş, 2017), territorial disfunctions (Popa et al., 2017), field research (Dulamă et al., 2018), studies regarding the territorial identity of historical urban centres (Ilovan et al., 2018a), as well as internet sources about the environment (Dulamă et al., 2015). In order to attain EE, one must employ all disciplines, while solving environmental issues must actively include both government agencies and the population (Severiche-Sierra et al., 2016; Dulamă et al., 2017).

A series of studies focus on EE assessment (Heimlich, 2010). Carleton-Hug & Hug (2010) punctuate the challenges and opportunities in assessing EE programmes. Based on the investigation of learning concepts and educational experiences accumulated during EE, researchers developed learning gradients for EE (Otsuka et al., 2018). An efficient and proper learning requires the usage of feedforward and feedback (Dulamă & Ilovan, 2016). At the end of EE and ESD activities, as a final aim, some researchers suggested the necessity to create a so-called ecological citizenship (Howles et al., 2018).

METHODOLOGY

Research methods

Research data was collected in 2017 through a survey (questionnaire). Firstly, we collected information regarding respondents (qualification, years of service, degree, gender, place of residence). Secondly, we gathered information regarding EE and ESD in Romania. The items analysed by this study had a 1 to 5-point Likert scale attached to them. The survey was distributed by email and Facebook during March 2017. We then processed the collected data using Excel and ordered and grouped them into tables. We examined the respondents' options and answers and we interpreted them based on bibliography, the researchers' expertise and abilities, as well as information obtained via the participative observation method. Some concepts were studied using the community diagnostic method (i.e. participant observation in the school communities).

Participants

The survey was completed voluntarily and anonymously by 335 teachers (Table 1).

Table 1. Respondets' professional features

Teachers' qualification	Teachers' seniority		Teachers' degree (obtained through exams)	
Preschool and primary school teachers	Over 20 years	48.89%	I	57.22%
	11-20 years	20.56%	II	14.44%
	5-10 years	13.33%	Tenure	18.89%
	Under 5 years	17.22%	Junior	9.44%
Geography teachers	Over 20 years	33.35%	I	66.45%
	11-20 years	43.23%	II	18.06%
	5-10 years	16.13%	Tenure	10.97%
	Under 5 years	7.10%	Junior	4.52%
Total number of teachers 335 – 96 preschool, 84 primary and 155 geography teachers				

Most of the respondents have a long teaching experience and the first didactic degree, which is the basis for considering relevant their opinions and perceptions regarding EE and ESD.

Respondents teach either in urban or in rural areas (urban - 53.89% preschool and primary school teachers and 58.71% of Geography teachers; rural - 46.11% of preschool and primary school teachers and 38.06% Geography teachers; urban and rural - 3.23% of Geography teachers) ensure

a proper knowledge of the complexity of problems found in both areas. The spatial distribution of respondents - 32 (from a total of 41) counties (NUTS2 administrative level), most from Cluj (17.01%), Sălaj (16.42%), Suceava (10.75%), Bistrița-Năsăud (7.46%), Botoșani (6.57%), Botoșani, Prahova, Mureș, Sibiu, Galați, etc. and Bucharest (11 teachers) – also provides a solid overview of specific environmental issues at national level.

The research materials are the options and answers to all the proposed items from the survey.

RESULTS AND DISCUSSION

Respondents' interest in the environment and SD increases depending on the educational cycle they teach (Table 2). However, Geography teachers argue that they are more interested compared to kindergarten and primary school teachers, as the latter give less importance to EE and ESD of Romania/E.U./the World than the others. Geography teachers consider that they have the most extensive knowledge regarding SD and environmental protection in Romania, compared to preschool and primary school teachers. However, the involvement of Romanian preschoolers and pupils in EE and ESD is considered to be more significant than that of Geography teachers. This level of involvement is also backed by the large percentage of environmental themes found in the preschool and primary school curricula, more than in other educational cycles, and their participation in a series of educational projects related to environmental understanding and protection (Table 4). In terms of the level of central, regional and local government involvement in SD and environmental protection, respondents view it to be less significant than the level of personal participation (mean of 2.31).

Regarding the level and quality of personal knowledge of the environment and SD, the growth is directly proportional to the educational cycle, therefore greater for Geography teachers, compared to preschool and primary school teachers. In comparison to the level and quality of personal knowledge about the environment and SD, that of teachers is considered to be much lower in Romania, that of pupils and graduates of compulsory education even lower, while that of regular citizens lower still. When it comes to such answers, Geography teachers are more demanding than preschool and primary school teachers, with the exception of the personal level of knowledge, a view backed by the professional competence in environmental science.

Grown-up informal activities had the most significant impact on Romanian teacher knowledge, attitude and behaviour towards SD and environment. These include: listening/reading news about the environment on television or the internet, watching documentary films about the environment, outdoor activities, reading scientific papers, studying

photographs or books about the environment, activities in brownfields/greyfields (Fig. 1). The fact that formally organized activities (continuous education programmes, activities in universities) have had a reduced impact indicates poor concern for SD and the environment in Romania in the educational system, at the moment the respective respondents were being trained to become teachers.

Table 2. Respondents' interest, importance, knowledge and level of involvement in EE and SD

Analysed aspects	Mean value			
	Preschool and primary school teachers	Primary school teachers	Geography teachers	Entire group
Personal interest in environment and SD	4.49	4.50	4.60	4.54
Importance of the EE and ESD in Romania/E.U./the World	4.58	4.63	3.89	4.52
Personal involvement level (attitude and development) into SD and environmental protection in Romania	3.84	3.84	3.87	3.85
Kindergarteners' and pupils' personal level of involvement in EE and ESD in Romania	4.00	3.81	3.79	3.85
Central, regional and local public authorities' involvement level into SD and environmental protection in Romania	2.49	2.46	2.11	2.31
Respondents' knowledge level (quantity and quality) about the environment and SD	3.65	3.67	4.02	3.83
Teachers' level of EE and ESD in Romania	3.42	3.35	2.95	3.19
Pupils'/graduates' level of EE and ESD in the compulsory education of Romania	2.92	2.86	2.84	2.87
Citizens' level of EE and ESD in Romania	2.32	2.36	2.01	2.19

Outdoor activities during childhood and adolescence had greater impact on EE compared to the activities taking place in brownfields or degraded/polluted areas (such areas may have not been chosen or rarely chosen for EE), probably due to a poor cognisance of environmental issues during formative years, correlated with a lackluster formal education offer. The insignificant educational impact of central, regional and local authorities on EE and SDE is caused by inconsequent government involvement in matters related to the environment. The respondents provided examples of other activities which influence EE and ESD in Romania: direct observations

of environments and landscapes, participation in international and local educational projects, volunteer work, NGO activity, local and national reforestation campaigns, waste collection. Internet access is seen as decisive in “raising awareness concerning environmental issues”. “interest in the environment is only feigned, as only self-interest matters” (quotations from our respondents’ answers).



Fig. 1. Impact of some activities on teachers’ knowledge, attitudes and behaviours towards SD and environment in Romania

In terms of the efficiency of several EE and ESD activities for preschoolers and pupils, respondents’ opinions are similar even though they work with children and teenagers of different ages and have different competence levels regarding the environment (Table 3). Therefore, the most efficient are non-formal outdoor activities (hikes, walks, camps, expeditions), travels and visits to different places, reforestation campaigns. Their opinions differ when it comes to cleaning and selective waste collection activities as well as outdoor family activities, which are viewed as more effective for younger children and less effective for older pupils. Educational efficiency of lessons and educational projects about the environment decreases the older the pupils get, while the educational efficiency of the teacher’s personal actions in relation to the environment increases. Therefore, older pupils are more influenced by personal examples and models of good practices about the environment and SD, then by theory. Less efficient activities are attending scientific conferences about the environment, environmental protection meetings, looking at posters, caricatures.

Table 3. Efficiency of EE and SD activities for preschoolers and pupils

Activities	Mean value			
	Preschool teachers	Primary school teachers	Geography teachers	Entire group
Family environmental activities	4.56	4.61	4.38	4.52
School lessons about the environment	4.44	4.55	4.39	4.46
Teachers' environmental actions (as a model)	4.47	4.59	4.53	4.53
Reading/watching environmental materials shared on the social media (especially Facebook)	4.33	4.17	4.24	4.25
Environmental workshops	4.31	4.23	4.19	4.24
Environmental debates	4.03	4.00	4.18	4.07
Studying posters and caricatures about the environment	3.93	3.80	3.91	3.88
Elaborating posters about the environment	4.11	4.05	4.06	4.07
Getting involved into environmental educational projects	4.52	4.51	4.48	4.50
Conducting research in the environment	4.20	4.23	4.21	4.21
Writing scientific papers about the env.	3.97	4.10	4.11	4.06
Listening to scientific conferences about the environment	3.85	3.90	3.78	3.84
TV news about the environment	4.15	3.92	4.13	4.07
Watching documentaries about the env.	4.23	4.16	4.34	4.24
Systematic observations in diverse environments	4.29	4.18	4.33	4.27
Trips and walks in nature	4.77	4.70	4.66	4.71
Encampments in nature	4.80	4.65	4.72	4.72
Expeditions in nature	4.75	4.66	4.71	4.71
Trips in diverse environments	4.70	4.68	4.65	4.68
Visits in diverse environments	4.68	4.68	4.62	4.66
Activities in adventure parks	4.50	4.01	4.14	4.22
Afforestation and taking care of the forest campaigns	4.73	4.64	4.70	4.69
Activities of cleaning and selective collection of waste	4.73	4.77	4.39	4.63
Picking berries, medicinal plants, and mushrooms	4.42	4.21	4.16	4.26
Environmental protection protests	3.85	3.57	3.71	3.71
Meeting representatives of NGOs on environmental issues	4.05	4.00	3.95	4.00

Respondents consider all the EE and ESD goals mentioned by the researchers as important (means of over 4.52) (Fig. 2), which shows a high degree of competence in EE. However, they place behaviour or the participation in actions in the environment and environmental protection activities first, which ranks as number five in the 1977 Tbilisi Declaration, on the important role of EE in preserving and improving the environment and for the sustainable development of communities around the world (Timur & Timur, 2013). Less important are considered the following: being aware of each person’s responsibility towards the environment, the development of ecological consciousness, of responsibility, and solidarity between individuals for preserving and improving the environment, aspects correlated with attitudes and values towards the environment (level 3 of EE, established in the 1977 Tbilisi Declaration, Dulamă, 2010a). Next come being aware of environmental issues (first EE level), developing abilities for the investigation and interpretation of different environmental phenomena and processes (level 4), acquiring knowledge about the environment, its functionality and people’s interaction with their environment (level 2).

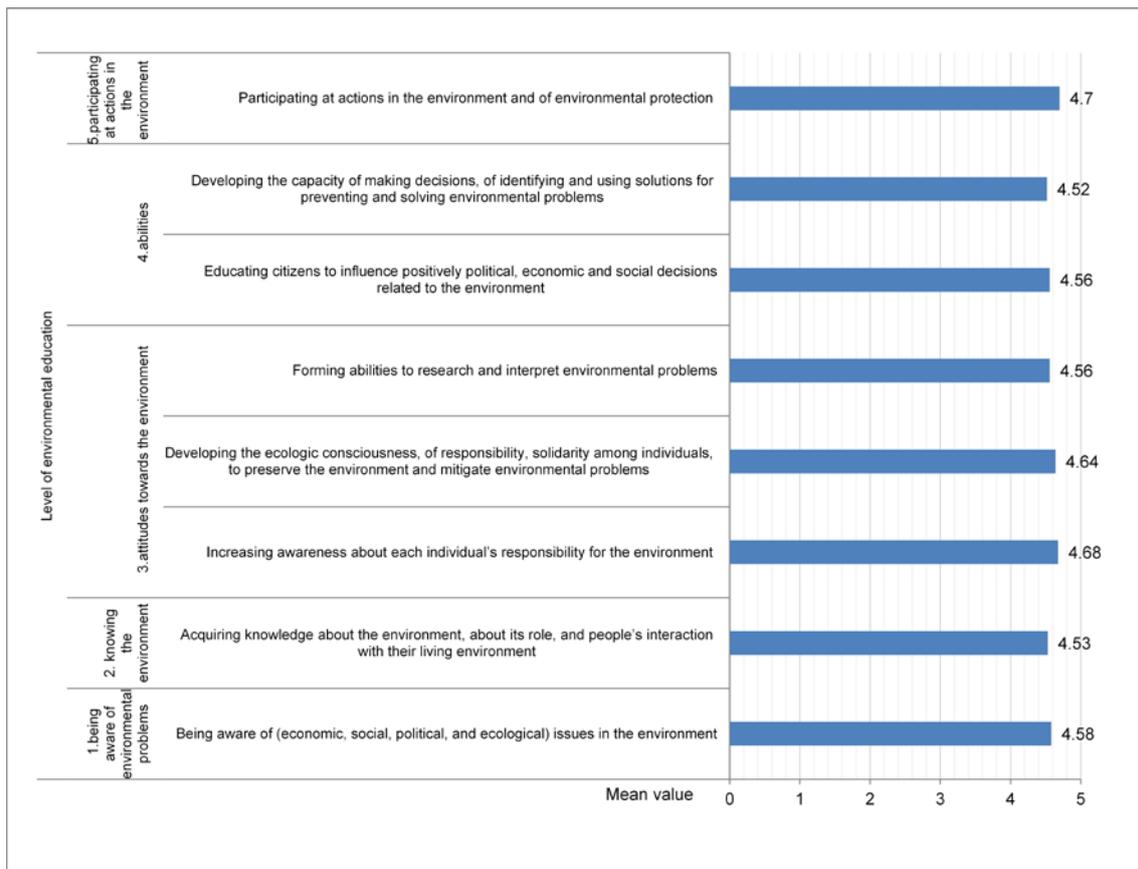


Fig. 2. Importance of goals and levels in EE and SD

Trips and walks in nature were the activities most used by teachers to include pupils from all educational cycles in order for them to comprehend the environment's importance and the need for its protection, to help them acquire knowledge about the environment and develop good behaviours towards it, followed by watching documentary films about the environment, cleaning and selective waste collection campaigns and visits in diverse environments (Table 4). In kindergarten, preschoolers were also heavily involved in systematic observations of different areas. A favourite EE activity of primary school pupils was also designing posters depicting the environment. This may be considered one of their age-appropriate activities in school. Geography teachers stated that they have organized a more diversified and more comprehensive range of activities compared to preschool and primary school teachers. They also coordinated different environmental and educational projects, examination of satellite imagery, educational software, Google Earth, etc., exhibitions about the environment, poster sessions, field trips, reforestation and cleaning campaigns. Respondents also identified ecological and environmental protection competitions as suitable EE activities.

Table 4. EE and SD activities involving preschoolers and pupils

Activities	Mean value			
	Preschool teachers	Primary school teachers	Geography teachers	Entire group
Environmental workshops	2.65	2.44	2.75	2.63
Environmental debates (involving citizens, the authorities)	2.43	2.53	3.23	2.56
Environmental interviews (involving citizens, the authorities)	1.87	2.06	2.31	2.00
Contests on environmental and SD topics	2.51	2.45	3.18	2.60
Environmental exhibitions	2.76	2.82	3.41	2.78
Studying posters, caricatures about the env.	2.65	2.80	3.13	2.68
Elaborating posters about the environment	2.47	3.18	3.34	2.82
Getting involved into environmental educational projects	2.79	2.71	3.60	2.70
Conducting research in the environment	1.96	1.91	2.84	1.98
Writing scientific papers about the env.	1.53	1.53	2.63	1.67
Listening to scientific conferences about the environment	1.64	1.70	2.24	1.82
Watching documentaries about the env.	3.28	3.27	3.73	3.30
Simulations of natural and anthropic phenomena in school labs/during AEL lessons	1.98	2.11	3.21	2.27

Using/studying remote sensing images, educational software, Google Earth, etc.	2.40	2.63	3.54	2.79
Systematic observations in diverse environments	3.10	2.89	3.22	2.91
Trips and walks in nature	3.73	3.35	3.69	3.38
Encampments in nature	1.72	1.82	2.12	1.85
Expeditions in nature	2.41	2.30	2.88	2.40
Trips in diverse environments	2.93	2.79	3.35	2.82
Visits in diverse environments	3.36	2.94	3.50	3.04
Activities in adventure parks	1.90	1.95	1.99	1.87
Afforestation and taking care of the forest campaigns	1.87	1.94	3.24	2.07
Activities of cleaning and selective collection of waste	3.20	3.17	3.64	3.12
Picking berries, medicinal plants, and mushrooms	1.87	1.93	1.63	1.75
Environmental protection protests	1.33	1.30	1.56	1.38
Meeting representatives of NGOs on environmental issues	1.62	1.70	2.28	1.81

Almost all respondents (93-99.10%) believe that poor pupils'/citizens' EE and ESD in Romania can lead to problems for the local, regional and national environment: environmental pollution (99.10%), irrational exploitation of natural resources (97.29%), insufficient environmental protection (96.97%), disregard for environmental protection laws (96.10%), retaining kindergarteners'/pupils'/citizens' inadequate behaviour towards the environment and SD in Romania (95.45%), the inability to plan SD strategies (94.85%), and making certain wrong decisions about the economic development (93.03%). Respondents also identified several other possible issues: the pauperization and bankruptcy of the country, deals related to natural resources exploitation, detrimental to the State (e.g. "shale gas extraction; the Roşia Montană case"), and chaotic urban sprawl and industrial development.

Respondents recommended several measures for EE and ESD: a strategy for EE and ESD in the Romanian educational system; the inclusion of EE and SD as disciplines in the education plan; more environmental related themes included in other courses (i.e. Geography); an efficient and effective institutional management for resource preservation and waste collection; involvement of teachers, children and pupils in more activities related to the environment (Ilovan et al., 2018b).

CONCLUSIONS

Romanian preschool and primary school teachers, as well as Geography teachers are interested in EE and SD. Geography teachers are usually more knowledgeable about the environment and SD than the remaining respondents, but are less involved in EE and ESD activities. The most efficient activities are non-formal ones, held outdoors (hikes, walks, camps, and expeditions), trips and visits to different places, reforestation and forest cleaning campaigns.

In order to attain proper EE and ESD, respondents organized hikes and trips in nature for preschoolers and pupils, followed by documentary films, cleaning and waste collection, visits in different areas. Preschoolers were also involved in systematic observations in the wild. Geography teachers also organized other activities for their pupils involving: educational projects, satellite imagery, educational software, Google Earth, exhibitions, poster design, trips, reforestations and cleaning campaigns, and competitions.

Realizing that the deficient EE and ESD of Romanian children and citizens may cause problems at local, regional or national levels, the participants proposed several solutions for the improvement of children's, pupils' and citizens' EE and ESD.

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