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## Research Article

### DISSEMINATION IN SCHOOL PROJECTS OF ENVIRONMENTAL EDUCATION: A CASE STUDY

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#### ABSTRACT

Dissemination of the project results is a planned process of providing information on the project process, outcomes, experiences and initiatives to key actors. This involves spreading the word about the project successes and outcomes as far as possible, making others aware and contributing in other organizations' raising their profile. Communication is a broader concept in dissemination and exploitation of the project results. It includes information and promotion activities to raise awareness and enhance the visibility of the project's activities.

The research aimed to reveal the mechanisms for dissemination of project results and feedback that teachers plan and apply as part of the educational process of School Projects of Environmental Education (SPEEs). It carried out a qualitative research with content analysis of archival material with quantitating the findings by the use of analysis criteria. It carried out in the archival material of the SPEEs that had materialized in lower secondary schools of Heraklion prefecture.

SPEEs' research revealed that the ultimate beneficiaries of the project results are satisfactorily determined (eg local entities related matter), they are invited in many actions and activities of SPEE, mainly at the project presentation, where, also, distributed special material. So, in this way, the opening of school to the society offers important feedback and develops dissemination mechanism of the project, as important component of the design of SPEEs and basic requirement of Environmental Education and Education for the Sustainable Development.

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## INTRODUCTION

The main objective of ESD is the citizens' configuration, who will be able to resolve environmental issues, to cooperate responsibly and make decisions together about their future, the future of their region, the quality of life. In recent decades, a number of international intergovernmental and other conferences, shape the character, objectives and principles of the EE field and direct its form to ESD with recipients teachers, students, their families, educational and municipal authorities. Local bodies and associations. According to Agenda 2030 for SD "Transforming our world", all people should have access to life-long learning opportunities that help them to acquire the knowledge and skills needed to exploit opportunities and to participate fully in society. Current generation ought to provide children and youth with a nurturing environment for the full realization of their rights and capabilities through safe schools and cohesive communities and families (UN, 2015).

Over the last 35 years, UNESCO is the leader and moderator at international level, in matters of SD. At all United Nations

conferences, regardless of the subject matter (environment, population, social development, human rights, democracy), SD has become commonplace and that Education is a driving force for the changes needed. Promoting AA, according to the decisions of the UNESCO's and European Union's Conferences and Declaration requires global cooperation, given the fact that the local element is character universal and decisions of local communities form an overall economic and social policy worldwide (European Union, 2006).

The World Conference on ESD "Learning Today for a Sustainable Future" marked the end of the ESD Decade, as well as constituted an important milestone for pointing the way ahead. It highlighted the role of ESD for the transition to green economies and societies and as a catalyst for cross-sector planning and implementation of programs in areas such as climate change, biodiversity and disaster risk reduction (UNESCO, 2014). The World Conference also addressed how ESD can help move SD policy and action forward, to meet different global, regional, national, and local needs.

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Environmental Education (EE) in Greek Secondary Education is voluntary, implemented mainly through school projects, and at the Environmental Education Centres. The School Projects of Environmental Education (SPEE) have one-year duration, designed and implemented beyond the school curriculum and timetable, jointly by students and teachers, completely different from the school courses to design, content, methodology, assessment, satisfying students' needs for education, communication and social participation (Raptis, 2000). In Greece, during the last years, a great effort is attempted in EE to open the schools in society through partnerships with local authorities, institutions, parents unions and specialists, developing democratic dialogue and critical thinking with Municipalities and Bodies (Circular of Ministry of Education, 2007).

SPEEs in materialization involve adults from educational and local authorities, associations and Universities, also local people with teachers contributing to adult learning. Adult learning is a vital component of lifelong learning policies, and essential to competitiveness and employability, social inclusion, active citizenship and personal development across Europe. However, greater efforts are needed to ensure even more adults participate in learning activities throughout their lives (EU, 2001; UNECE, 2005).

There are varying definitions of adult learning in different countries. In European policy discussions, it is defined as all forms of learning undertaken by adults after having left initial education and training. It includes learning for personal, civic and social purposes, as well as for employment-related purposes, and can take place in a variety of environments in and outside formal education and training systems. To develop ideas is important for every educational project, not to stand alone but be part of larger initiatives of the participating organizations but can help future policy and practice. It often creates new opportunities to extend the project or develop new partnerships for the future. For Erasmus+ (2016), dissemination of the project results is a planned process of providing information on the project process, outcomes, experiences and initiatives to key actors. This involves spreading the word about the project successes and outcomes as far as possible, making others aware and contributing in other organizations' raising their profile. Communication is a broader concept in dissemination and exploitation of the project results. It includes information and promotion activities to raise awareness and enhance the visibility of the project's activities.

## METHOD

The research aimed to reveal the mechanisms for dissemination of project results and feedback that teachers plan and apply as part of the educational process of SPEEs. It carried out a qualitative research with content analysis of archival material with quantitating the findings by the use of analysis criteria (Cohen and Manion, 1994; Bird *et al.*, 1999; Iosifidis, 2003; Wolcott H.F., 1990, Woods P., 1999). The criteria correspond to the dimensions of the specific evaluation objects of the planned mechanisms for dissemination of SPEEs results and feedback, based on the literature review to meet the aims and objectives of the research. The criteria drawn satisfy the design principles of EE and ESD projects (UNESCO, 2004; Ζηγούρη, 2005; Φλογαίτη, 2006; UNECE, 2006; Aegean

University/spee, 2004; NTUA, 2007; PI, 2007; Circular Ministry of Education, 2007).

The research carried out in the archival material of the SPEEs that had materialized during the school year 2005-2006 in lower secondary schools of Heraklion prefecture. The research sample consisted of archival material of 22 Application Forms (AFs) with corresponding 22 Final Reports (FRs) in printed and electronic form, also 7 texts written by teachers participated to SPEEs. For the research triangulation collected data from more than one source and became combination of qualitative and quantitative methods to quantify qualitative data (Cohen & Manion, 1994; Bell, 1997; Iosifidis, 2003). SPEEs were divided into two groups: the group A consisted of 8 programs that had been approved for funding by the Aegean University and group B of the rest 14 programs. All the AFs of the programs had the same template SYP-B of Greek Ministry of Education (title, aims, method, activities, evaluation, schedule, budget, names of participating students and teachers). The AFs that submitted for funding to the Aegean University were more detailed, generally with the same template. All the studied FRs did not had a template, they had all submitted to the Responsible of Environmental Education of Heraklion at the end of the school year and the SPEEs. They were collections of the produced materials in the programs, such as texts, interviews, songs, music, photos, videos. The 8 SYP-A were in electronic form, the 22 SYP-B were in print, the 22 FRs were in print and electronic form, as the 7 written texts of teachers. The texts of teachers contained in AFs are written by some teachers who participated in the SPEEs, outlining the benefits of the implementation of projects and generally dealing with EE. As the activities that take place in the projects, in most cases modified in the process, significantly altering the original design, study of the AFs allowed collection of more comprehensive data from the investigated archival material.

The discourse analysis was done with recording unit the word and phrase. During the critical reading of the archival material, notes with comments and interpretations held referring to the studied content. Readings of AFs and FRs were focused on that phrases and points that answer the research questions and scored the criteria. There were elements easily and immediately responded to the criteria, but in many cases, information is derived from the interpretation of data rather than specific references.

The scoring of criteria was 0-4 in a five-point scale. 0: no evidence to satisfy the criterion. 1: limited, weak link to the Adult Education methodology, 2: moderate, 3: substantial, strong satisfaction, 4: the design and implementation of the project regarding the dissemination of the results judged effective. Thereafter, the scoring criteria entered into special databases in EXCEL, separately for the group A and B of the SYPs and in total of the Final Reports for statistical analysis per criterion. Ratings of criteria's statistical analysis presented in the table 1. Each cell of the table contains the % relative frequencies (above) and frequencies (below) for grades 0,1,2,3,4 taken by SPEEs. SYP-A and SYP-B compared with the p-values of the non-parametric test Wilcoxon & Mann Whitney. Wherever the p-value is < 0.05, there is statistically significant difference.

Some indicative references isolated from SYP-A, SYP-B, FRs which complete the image of the design of SPEEs and contribute to a more complete answer of the research question. The research sub queries referred on the production and distribution material produced for the projects' needs, organization of conference, open discussions, generally open events, the call to local institutions and those related to the subject matter and feedback.

## **RESULTS**

To effectively disseminate results, an appropriate process at the beginning of the project needs to be designed. This should cover why, what, how, when, to whom and where disseminating results will take place, both during and after the funding period. Dissemination and exploitation goals may be to raise awareness, extend the impact, engage stakeholders and target groups, share a solution and a knowhow, influence policy and practice, develop new partnerships (Erasmus+, 2016).

Table 1 shows the scores of the evaluated SPEEs in two criteria of the research sub query A which is referred to feedback provision of project results, and to criterion of the research sub query B which is referred to naming of ultimate beneficiaries of the project results. The Table shows the number of projects and their relative frequency receiving each score.

### ***Produced And Distributed Material For The Project Needs***

The type of result will vary depending on the type of project. Results can be accessible products like curricula, studies, reports, materials, events, or websites; results can also mean the knowledge and experience gained by participants, partners or other stakeholders involved in the project. Results should be developed in such a way that they can be tailored to the needs of others, transferred to new areas, sustained after the funding period has finished, or used to influence future policy and practice (Erasmus+, 2016).

During SPEEs materialization is produced and distributed special material that designed to satisfy project's needs. A portion of it has been forecasting from the beginning, the rest, depending the ongoing demands and the forming situations, prepared during the implementation. In many cases, there is special material only for dissemination, at the end of the project. Usually, this commemorative material supplied in CDs, on web pages or as booklets and brochures. The types of educational material recorded in the archives of the research material was printed form (books with specialized content on environmental issues, worksheets, charts, diagrams, photographs, excerpts of articles in newspapers and magazines), audiovisual material and software (audio cassettes, CD-ROMS, DVDs, videotapes, educational software for PCs) and other forms of practical exercise materials (such as devices, tools, samples, materials for constructions and experiments, etc.). The produced educational material and the specific supplied equipment for the needs of each SPEE significantly contribute to more convenient project development.

Tangible results referred by Erasmus+ (2016), for example approaches or a models to solve a problem, practical products, research reports, case studies, evaluation reports, brochures, newsletters or information leaflets were detected to a limited

extent from the studied archival material (Erasmus+, 2016). In the Conference for the dissemination of project results, at the end of the school year, all ETs present the material produced for the needs of their programs. 36.4% of FRs (N = 8) have plenty of such material got rating 4. In most SYP-B of B group (71.4%, N = 10) there were no reference to production and distribution of material produced for the needs of the project, perhaps because there isn't the relevant field to complete (Table1). In those SYP-B of Group B (N = 4, 28.6%) were the slightest data for this criterion, retrieved from the objectives and planning calendars of activities. In the following excerpts from archival material, it becomes evident the variety of educational materials developed in SPEEs: FR-A-7"... and make proposals to solve problems", A3-SYP-B- "... creation of booklet and CD-ROM and DVD", A-4-SYP-B "to record modern Greek myths, traditions, songs and serenades in the subject matter", A3-FR- "In the DVD that resulted from our work, we played some representative games in the Natural Environment of Archanes, in order to revive them and make them known to the public, in an effort of informing and awareness on the game", B-4-SYP-B-"publication of calendar, photo exhibition", A-1-SYP-A-" Dissemination of results through press releases but mainly by the final deliverable (DVD) to all schools (primary and secondary) of the county of Heraklion", A-5-SYPP-A-"Dissemination of the results through our school website".

### ***Open Events***

The power of communications technologies, including connection technologies and innovative applications is high to promote knowledge exchange, technical cooperation and capacity building for sustainable development. ICTs facilitate the flow of information between beneficiaries and the public, that's why it is essential the work toward improved access to ICT, especially broad-band network and services, and bridge the digital divide, recognizing the contribution of international cooperation in this regard (Rio+20, 2012).

Organization of conference, open discussions, panels, round tables, lectures of scientists to locals, etc are open events that usually organized by schools as actions of SPEEs. In the studied archival material reported participations of the ETs in Conferences and Workshops. When SPEEs are planned, at the beginning of the school year, they have not yet been announced Conferences or Workshops could schools register. All SYP-A mention presentation of the project in Conference at the end of the school year and 6 of them (75%) describe it in great detail. In contrast, only IN 3 of SYP-B (13.6%) analyzed the participation to workshop (Table 1). Some FRs, describe the organization of Workshops, open discussions and Conferences, which took place during the program, not initially foreseen in SYP-B. As appears from AFs, 72.7% (N=16), of SPEEs organized Workshops and open discussions and they took grades 3 and 4 (Table 1).

Each school may participate in the Conference organized by Heraklion Secondary Education Administration, at the end of the school year, where all schools can present the Education and Culture projects that materialized during the past year (Circular Ministry of Education, 2007). Thus, all schools, in one or another way, provide and ensure dissemination and

feedback. Generally, collaborations and open events contribute to the dissemination of SPEEs' results (Aegean / ee, 2004).

evidenced by the following reports: A3-SYP-A-"presentation Conference (informing the rest school community,

**Table 1** Dissemination Mechanisms of SPEEs' Results-Score Table regarding the feedback predicting of program results and the determination of final results accepted. Presented the % Relevant Frequencies and Frequencies (in parentheses) of SPEEs in the grading scale 0-4

Dissemination Mechanisms of SPEEs' Results	Subqueries and criteria	Kind of document	Grading scale	SYP-A (N=8)					SYP-B (N=14)					FRs (N=22)									
				0	1	2	3	4	0	1	2	3	4	0	1	2	3	4					
A Feedback predicting of project results	1	A	1	0,0	0,0	12,5	12,5	75,0	0,0	71,4	87,5	7,1	0,0	0,0	0,0	7,1	12,5	14,3	0,0	22,7	4,5	31,8	40,9
			2	0	0	1	1	6	0	10	7	1	0	0	0	1	1	2	0	5	1	7	9
	2	B	1	0,0	12,5	12,5	0,0	75,0	0,0	71,4	75,0	7,1	0,0	14,3	12,5	0,0	12,5	7,1	18,2	18,2	18,2	9,1	36,4
			2	0	1	1	0	6	0	10	6	1	0	2	1	0	1	1	4	4	4	2	8
B Determination of final results accepted	1	B	1	0,0	0,0	12,5	37,5	50,0	100,0	64,3	0,0	14,3	0,0	7,1	0,0	0,0	0,0	14,3	40,9	9,1	18,2	9,1	22,7
			2	0	0	1	3	4	8	9	0	2	0	1	0	0	0	2	9	2	4	2	5

Below are given some indicative references of project works' presentation: A3-SYP-B- "Presentation and evaluation, Workshop in the school amphitheater and the municipal cinema", B-10-SYP-B-"presentation and synthesis of the research findings of the project", A-1-SYP-A-"with press releases will be issued during the course, and will be addressed in the local community. Already it has begun. Attached relevant article of the local newspaper 'TOLMI' 18-11-2004 with the introduction of the project to the settlements, with its central presentation, by posting on the school bulletin board and Gorgolaini Municipality information related to the program".

**Ultimate Beneficiaries**

Local entities related to the subject matter are the ultimate beneficiaries of the SPEE and they are invited in the actions and activities related to their specialty and the task of the project. Of course, SPEE's results addressed, firstly, to the school community, but also invited local institutions, organizations, cultural associations, unions, etc to share the project experience. They didn't encourage participants to share with others, from those target populations they addressed, what they have gained from taking part in the project activities. Benefits to other stakeholders should also be considered in order to make a bigger difference and get the most from the project. Wong & Yeung (2003) found that there may be some other factors affecting course participants' recommendation of a training course in addition to their level of satisfaction. This implies that participants' level of satisfaction may not guarantee their recommendation of the course to other people.

Half percentage of SYPs-A analyzed very well the ultimate beneficiaries and addresses of SPEEs and invited that institutions involved in the project subject matter to be informed and offer support. This does not happen with the SYP-B, where only 5 (22.7%) recorded the final beneficiaries and addresses of the projects (Table 1). In FRs is revealed a greater percentage of SPEEs that communicates with the final recipients and beneficiaries, local institutions related to the subject (N = 13, 59.1% share). Only 22.7% of the FRs (N=5) graded to the larger scale in this criterion. The invitation to local bodies, stakeholders, authorities, institutions and organizations associated with the project subject matter and materialization, usually limited to the project presentation Conference, at the end of the school year, where announced the results of the project to the school and local community, as

parents, local authorities etc.)", A2-SYP-A-"Association of parents of Gymnasium, the School Committee, teachers and parents of St. Myron Lyceum, Forestry Inspectorate, Natural History Museum, University of Crete, Municipality Gorgolaini", A5-SYP-A-"The products from the vegetable garden will be donated to the Municipality, the Farmer Union and the invited guests at the presentation ... Dissemination of the results through our school website".

**Feedback**

Impact is the effect that the activity carried out and its results have on people, practices, organizations and systems, so dissemination and exploitation of results plans can help to maximize the effect of the activities being developed so that they will impact on the immediate participants and partners for years to come (Erasmus+, 2016). ICTs can build capacity and enable the sharing of experiences and knowledge in the different areas of sustainable development in an open and transparent manner (Rio+20, 2012).

The impact assessment is an essential part of the process. It evaluates achievements and generates recommendations for future improvements. Indicators can be both quantitative relating to numbers and percentages as well as qualitative relating to the quality of the participation and experience (Erasmus+, 2016). Learning outcomes statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and competence. Some questionnaires, interviews, observations used by a small number of SPEEs to measure the project impact. Forecasting of feedback can be in the field D18 of SYP-A concerning the estimated impact on the local community, and in D16 about the final Conference organization for presenting the project's results. Regarding the improvements of SPEE itself in possible repetition, there weren't any references of exploitation of project assessment and evaluation conclusion in order to be more effective a future re-implementation.

All SYPs seems prepared to be implemented only once. In terms of satisfying the expectations of the target group from the program results and social requirements, questions related to paragraph D18 of SYP-A, as there is not relevant field in SYP-B and AFs, couldn't accurately determine the answer because there were remarkable data. The written texts by some teachers externalize what they received from the project describe what they lived and shared with the students, all that, spontaneously,

wanted to bring home to their colleagues. These texts show how teachers have realized the contribution of SPEEs in students' culture and their personal and professional development. Their aspects indicate the degree of transformation of education and training intake through the participation to SPEEs, in a metacognitive approach (Kalathaki&Sfakianaki, 2008).

## CONCLUSIONS

For Erasmus+ (2016), exploitation means to use and benefit from something. This means maximizing the potential of the funded activities, so that the results are used beyond the lifetime of the project. It should be noted that the project is being carried out as part of the projects of lifelong learning and supporting European and national policies in the field of education, training, youth and culture, in generally. SPEEs research revealed that the ultimate beneficiaries of the project results are satisfactorily determined (eg local entities related matter), they are invited in many actions and activities of SPEE, mainly at the project presentation, where, also, distributed special material. So, in this way, the opening of school to the society offers important feedback and develops dissemination mechanism of the project, as important component of the design of SPEEs and basic requirement of EE and ESD.

An important group of ultimate beneficiaries of the school community, except the main one of students, is teachers' who involved in the project and teachers who collaborated, in any way during the project implementation. As teachers declared in the written texts, and the AFs revealed, SPEEs contribute sufficiently to the teacher's training, they function as adult education and training projects. They offer teachers knowledge on many topics, innovative teaching methods, cultivating skills of cooperation with students, colleagues, parents, social agencies etc., planning and structuring of educational activities and projects, configuration of attitudes, values and behaviors, generally, personal and professional development and evolution. It deserves their implementation been wide spread in schools, not be voluntary by a small portion of teachers, but if possible, all teachers involved.

Application of non-parametric test Wilcoxon W. & Mann-Whitney U in the following sub-questions arose the following results on the comparison of SYP-A and SYP-B (p-value>0.05): SYP-A seems to ensure valuable feedback prediction, that does not happen in SYP-B (p-value=0,001), as well as the clarification of the final beneficiaries of the project (p-value=0,042). For this, the better designed, highly detailed and challenging form of SYP-A, that Aegean University requested for approval of funding, highlight the need for training and guidance in the design of more effective SPEEs and, in the process of implementation, better coordinated. Proper design of SPEEs that meets the principles of EE and ESD, the strategic plan and school curriculum goals, can offer significantly to the improvement of education and social services of all cooperating agencies and the recipients of the project results (Roussou, 2007; Scott, 2007).

## Recommendations

The dimension of this research is local and limited. However, the findings can be used on a larger scale. Apart from teachers

who prepare SPEEs in Secondary Schools of Heraklion, else teachers, researchers, specialists, responsible policy makers in EE and School Education and other authorities involved in any way in the EE, in Adult Education and teachers' training, can draw data to improve their work.

Moreover, conducting a series of similar surveys in other parts of Greece, integrated into a common framework, will enable a comprehensive and systematic assessment of the current situation in the students' offered EE, also the Teachers' training in EE and ESD. Change will, however, not make an impact on students' learning unless it reaches the whole teaching staff, which means that substantial resources need to be allocated to development processes. Teachers have to be part of learning communities, from which no one must be excluded (Smith, 2011). Likewise, regional school leadership and central national bodies are those who have to allocate resources and space for long-term professional development processes to take place if they want to see sustainable change in the assessment practice.

Inasmuch teachers touch the lives of millions of learners in specific ways, help learners' to shape worldviews, economic potentials and attitudes towards others in the community, and as they cultivate skills and abilities of individuals' participation in community decision-making and interaction with the environment, they have enormous potential to bring about major changes in society and to create a more sustainable future (UNESCO, 2010; Mckeown, 2012). Spreading the values of ESD is hypothesis of the whole community. The Global Action Program (GAP) on ESD, launched in Nagoya (Japan), reorients education and learning to focus on advancing policy, integrating sustainability practices into education and training; empowering and mobilizing youth and encouraging municipal authorities and local communities to develop community-based ESD programs.

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