



**Do eco-schools really help implementation of
ESD?: A comparison between eco-school
systems of Hungary and Israel**

2019, Vol. 9(4) 628–653

© The Author(s) 2019

<https://akademiai.com/loi/063>

Akadémiai Kiadó

DOI:10.1556/063.9.2019.4.53

Dafna Gan¹, Avid Gal², Réka Könczey³ & Attila Varga⁴

Abstract

As global challenges to sustainable development are increasing, there is a growing pressure for educational systems to embed education for sustainable development (ESD) into formal education. To meet this demand, Eco-School systems were established in many countries during the past decades. Using General Inductive Approach to analyze raw data sources like interviews with experts and eco-school principals, documents, and official as well as educational research databases both in Hungary and in Israel, the paper compares the process and the outcome of the implementation of eco-school movement in Hungary and Israel. The major conclusion is that eco-school system itself has a significant positive but limited effect on the implementation of ESD in educational systems. Without a person, a “change agent,” without the commitment of the principal or the teachers, the central eco-school initiative could not trigger changes on local levels; however, eco-school systems may survive for another decade if eco-school teachers

¹ Kibbutzim College of Education Technology and the Arts, 149 Namir Street, Tel Aviv 6250769, Israel, Email address: dafna.gan@gmail.com, ORCID: [0000-0003-1322-3564](https://orcid.org/0000-0003-1322-3564)

² Kibbutzim College of Education Technology and the Arts, 149 Namir Street, Tel Aviv 6250769, Israel, Email address: adiv.gal@smkb.ac.il, ORCID: [0000-0001-5657-3068](https://orcid.org/0000-0001-5657-3068)

³ Hungarian Institute for Educational Research and Development, Eszterházy Károly University, 70. Rákóczi út, Budapest 1074, Hungary, Email address: konczey.reka@ofi.hu, ORCID: [0000-0002-9745-1371](https://orcid.org/0000-0002-9745-1371)

⁴ Hungarian Institute for Educational Research and Development, Eszterházy Károly University, 70. Rákóczi út, Budapest 1074, Hungary, Email address: varga.attila@ofi.hu, ORCID: [0000-0002-0659-3551](https://orcid.org/0000-0002-0659-3551)

Recommended citation format: Gan, D., Gal, A., Könczey, R., Varga, A. (2019). Do eco-schools really help implementation of ESD?: A comparison between eco-school systems of Hungary and Israel. *Hungarian Educational Research Journal*, 9(4), 628–653. DOI:[10.1556/063.9.2019.4.53](https://doi.org/10.1556/063.9.2019.4.53)

This is an open-access article distributed under the terms of the [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/), which permits unrestricted use, distribution, and reproduction in any medium for non-commercial purposes, provided the original author and source are credited, a link to the CC License is provided, and changes – if any – are indicated.

continue innovation and collective learning. On the system level, the existence of the movement demonstrates the sustainability pedagogy for decision-makers – and therefore they can be satisfied without further efforts.

Keywords: education for sustainable development, school organizational change, eco-schools, whole-school approach, Human Reaction and Action System

Introduction

Over the past 40 years in education spheres, sustainability has been viewed as a possible solution to the environmental crisis (Rickinson, 2001). After recognizing the importance of sustainability, educators, activists, and policymakers have searched ways to introduce sustainability into the education system, resulting in organizational change. Consequently, education for sustainable development (ESD) was developed and its implementation aims at changing educational systems. This change has impact on the curricula, learning outcomes, and infrastructure of schools. Moreover, it also influences the pro-environmental behavior of school staff, students, and community. Eco-school certification systems are usually set up to facilitate these changes (Affolter & Varga, 2018; Mogensen & Mayer, 2005), which include curricula application (e.g., knowledge, awareness, and behavior) and daily-life changes to support pro-environmental behavior (e.g., recycling center and saving resources; Kurland, 2011). Despite the importance of ESD change, the stakeholders of implementation of the necessary organizational changes are usually resistant to change (Moore, 2005; Szabla, 2007).

Change theories offer frameworks for analyzing the processes and results of changes initiated by eco-school systems. As a theoretical basis of our research, we used the Human Reaction and Action System (HRAS) model (Szabla, Warner, Stefanchin, & Robinson, 2011). This model is based on open-system theory and deals with the human reaction to change (i.e., encourages action or makes resistance to change). This model may help to understand organizational change and its corresponding resistance (e.g., in the education system). The HRAS model includes three main change subsystems and the reaction to change as the basis for the model that influences and influenced by three subsystems: change content, the process of change, and the context of change. Reactions to change can be observed in processes like changes in beliefs, emotions, intentions, and behaviors. This model is based on the open-system theory (Burke, 2008), which represents inputs and outputs of the change system, and the interaction among the influences of organizational change and other subsystems.

The aim of this study was to analyze the implementation of the eco-school initiative in Hungary and Israel based on the HRAS model. The quality criteria for ESD schools (Breiting, Mayer, & Mogensen, 2005), which were established based on the analysis of several countries' initiatives for ESD implementation in the school system, indicated that the common elements of these initiatives are: openness for a change in content, context,

and processes. On this basis, the HRAS model seems to be applicable to analyze the work of these initiatives. Accepting change has to be an imminent element of educational systems, if we would like to realize the global vision of ESD. According to Lindberg (2015), ESD has to be in the center of education systems if we want to achieve sustainable development and this needs significant changes in the educational systems.

By analyzing change content, process, context, and their interactions and reactions, this inquiry tries to identify the possible barriers of implementation of the eco-school approach in educational systems, and so to reveal some insights about the barriers of changes needed for mainstreaming ESD in education.

In the following paragraphs, we present the Israeli and Hungarian eco-school certification systems briefly as examples of localizations of the global vision of ESD and the initiated organizational changes.

Eco-schools in Israel – Background

In Israel, the eco-school change process operates similar to other certification programs (Wu, 2002). In the Ministry of Environment and Ministry of Education, a standing committee, including representatives from governmental agencies, NGOs, and environmental experts, publishes requirements for certification and evaluates school applications for eco-school certification. After a school applies and demonstrates that it meets all requirements, it receives the certification and \$3,000. After 3 years, schools can deepen their ESD practice and receive an advanced certificate for “continuous” eco-school by involving all grades in the ESD process, by rationally using resources in all criteria, and by continuing to create pro-environmental behavior in the community (Ministry of Environment, 2009, 2010, 2012). Eco-school certification adoptions in Israel are not mandatory; individual schools could decide whether or not to participate. According to previous studies, many of the earliest schools participating in the program were already deeply committed to ESD and had changed and affected many aspects of schools (Pizmony Levy & Gan, 2011).

Israeli process of eco-school certification

The eco-school certification was established in 2004 by the Israeli Ministry of Environment and Ministry of Education. An example of eco-school certification is presented in Figure 1. To date, there are 1,075 eco-schools⁵. Eco-school requirements are divided into three domains, and schools are expected to monitor and improve their performance in

⁵ <http://www.sviva.gov.il/English/ResourcesandServices/NewsAndEvents/NewsAndMessageDover/Pages/2018/01-Jan/Ministries-of-Environmental-Protection-and-Education-Certify-49-Green-Schools.aspx>.



Figure 1. Israeli eco-school certification

each. The first domain is pedagogy and schools are evaluated on the integration of environmental subjects into the curriculum and the number of students enrolled in environmental subjects each year (e.g., schools need to enroll at least two grade levels, for at least 30 hr a year). This domain aims to meet ESD's goal of increasing knowledge and awareness of environmental issues. The second domain is the rational use of resources and schools are evaluated on their resource management practices, such as reducing energy, water consumption, recycling paper, and plastic. Schools are required to reduce the use of at least one resource and/or recycle at least three materials, such as plastic bottles, paper, and batteries. This domain is aimed at enabling schools to change behavior and to increase pro-environmental behavior using active learning and experience. The third domain entails a contribution to the community and the environment, and schools are evaluated on students' involvement in continuing projects that contribute to environmental awareness in the community and lead to behavioral changes. Examples of community projects include adopting recycling programs in the community, developing community gardens (as presented in Figure 2) and encouraging educational campaigns (Ministry of Environment, 2010).

The Hungarian eco-school program

The Hungarian eco-school program was established in 2000 with 40 pilot schools based on the whole-school approach of the Environment and School Initiatives (ENSI) network and has continuously been expanding since then. Schools that had long been committed to environmental awareness were the first to join. The program is a national adaptation of the eco-school initiative of the ENSI network, which was an international government-based network focused on innovation and research in ESD. ENSI brought together school initiatives, educational authorities, teacher trainers, educational research institutions, and



Figure 2. A school community garden at an Israeli eco-school

other stakeholders. Therefore, the most innovative aspect of the program is that it continuously encourages all stakeholders of schools to actively participate in school development processes to a more effective ESD. The program promotes environmental understanding, active approaches to teaching and learning, and citizenship education, mainly through running the system of eco-school title as a tool for self-reflection and quality assurance of ESD and through providing in-service teacher training (Varga & Havas, 2018).

After a 4-year learning period, the Hungarian eco-school program was formally established, with the launch of the first open eco-school application form in 2004. The first title was handed over in 2005 by the Ministry of Education and the Ministry of Environment. In 2019, there are 1,003 eco-schools, including the 432 “eternal” eco-schools. These account for about the quarter of the Hungarian schools, teachers, and pupils. For 15 years, the eco-school title has served the highest governmental recognition of those schools that deal with the practical realization of ESD in a carefully considered, institutional and systematic way in Hungary. The program was the model for the Green Kindergarten Program. Principles of sustainability are not only present in the pedagogical practice of the schools but also in all fields of school life. Local environmental issues and problems are dealt with priority in eco-schools’ pedagogical work. The monitoring of the program proved that certified eco-schools are continuously transforming themselves into a social center for sustainable development, where all the stakeholders have a voice and active cooperation with local society. In this way, eco-schools prepare students for active citizenship (Varga, Könczey, & Saly, 2017).

Since 2015, the eco-school criteria include community service, which should empower teenagers to transform themselves and the community they live in. The program also promotes sustainable economic entrepreneurship and encourages students to think

about and even start and run their own sustainable businesses. The program should contribute to a more environment-friendly school maintenance by supporting energy-saving and nature-friendly activities and infrastructural developments, like organizing energy-patrol activities, or creating a natural habitat in schoolyards. Education for global responsibility, as a new pedagogical aspect of eco-schools, was included into the system in 2017.

Hungarian process of eco-school certification

Schools can join the network on a voluntary basis by applying for the eco-school title. The application contains a letter of intent, and some compulsory and many optional commitments. An applicant school declares that their pedagogical program represents the aims of ESD exceedingly. They also take responsibility for preparing the annual eco-school working plan along with the eco-school criteria and publish it on the website. The annual work plans of all the working groups of the school shall adjust to the eco-school work plan, i.e., having ESD content. Those teachers or school coordinators, who take the responsibility and task for making the application, need a strong commitment toward sustainability (or at least one of its aspects), because they fulfill this task without a pay-off. Self-assessment of the whole-school ESD performance is supported by an eco-school criteria system (see <http://ofi.hu/self-assessment-criteria-eco-schools-hungary-2018>). Eco-school criteria cover the whole school life in the following aspects: school documents, school organization, operation, education, school specialties, communication, and external cooperations with ESD actors and with the local community.

A committee led by the Ministry of Education and supported by the Ministry for Environment, which includes non-governmental and academic representatives of ESD, revised and operated the application system since 2005. During the annual reviews, the title system and the eco-school criteria were gradually and slowly refined. The committee evaluates school applications, and the two state secretaries of the two ministries issue the eco-school certifications.

After a school applied successfully for its first eco-school title and demonstrates its engagement and responsibility for 3 years, it can renew its title for another 3-year period. The eternal eco-school title can be attained after 7 years of dedicated work, which means that eternal eco-schools could hold the title without reapplying for it. All eco-schools and eternal eco-schools are subjected to a monitoring system, and if they do not meet the requirements or do not fulfill their commitments, their titles could be withdrawn by the ministry responsible for education.

Titleholders will be the member of the Network of Eco-schools, which facilitates Hungarian and international contacts of the members and provides special ESD information regularly, and furthermore the programs of the Network facilitate professional development of schools and teachers. As members of the network, eco-schools are supported in several ways:

- a biweekly newsletter with ESD-related news and program recommendations to eco-schools,
- a regularly refreshed website (<http://ofi.hu/okoiskola>),
- translations of international ESD teaching materials,
- regional meetings (4–5 years with 40–50 participants each),
- three kinds of in-service teacher training on ESD (held for about 420 teachers in the past 5 years; see evaluation in <http://ofi.hu/node/181290>),
- a complex pedagogical system and program with 220 ESD-related lesson plans,
- participatory research and field activities for schools (e.g., Traces of Life action; see Figure 3 and results at <https://tinyurl.hu/m30E/>),
- innovations following current educational trends (Könczey, 2014), for example, a mobile game app N2Kaland.

A group of 2–3 eco-school experts serve the Network in these supporting areas. Joining the Hungarian eco-school program does not mean either direct extra spending or revenue for the school, as the application is free and the title does not involve a cash grant. To date,



Figure 3. Pupils participating in the Életjelek (Traces of Life) action program from Szekszárdi I. Béla School

the quality work of eco-schools was based on their annual self-reflective reporting, and on random on-site monitoring of eternal eco-schools.

Research questions

- What are the similarities and differences between the development, and process of eco-schools certification in Hungary and Israel?
- In what ways the eco-school criteria and program supported or hampered the implementation of ESD?
- What are the schools' motivations for implementing eco-schools certification?

Methods

For this study, we employed the General Inductive Approach for analysis (Thomas, 2006). In the inductive approach, the researchers allow findings to emerge significant themes and categories from the raw data. Many qualitative studies use both inductive and deductive analyses, which are the ways to check consistency with the categories identified prior to the analysis (Thomas, 2006). In this study, first we used the inductive approach for identifying categories regarding the phenomena of eco-schools, and then we used deductive approach focusing on the presentation and description of the main categories to compare the eco-school phenomena in Hungary (Varga & Havas, 2018) and Israel (Goldman, Ayalon, Baum, & Weiss, 2018; Shay-Margalit & Rubin, 2017). In the deductive analysis stage, we used the HRAS model (Szabla, 2007) for comparing the subsystems (i.e., content, process, context, and reaction to change).

Our raw data sources were interviews with experts, eco-school principals, documents, and former official and educational research databases in both Hungary and Israel. From Hungary, raw materials included the data retrieved from the yearly online monitoring questionnaires and school visits of eco-schools from 2008 to 2017 (Varga et al., 2017). Altogether, the data sources included more than 5,000 questionnaires and more than 100 school visits and individual or focus group interviews for previous studies (e.g., Cseh, Lőrinci, & Tóth, 2016; Kézy & Varga, 2007) and from informal talks and correspondences with eco-school leaders and teachers about the implementation of the eco-school approach in Hungary. Raw materials from Israel included data about eco-schools (Ministry of Environment, 2009, 2010, 2012), interviews with 30 school principals (Pizmony Levy & Gan, 2011), questionnaire (with closed and open-ended questions) of 400, 6th grade students from eight eco-schools (Goldman et al., 2018), questionnaire of 600 elementary school's students (Shay-Margalit & Rubin, 2017), and informal talks and correspondences with eco-school leaders and teachers.

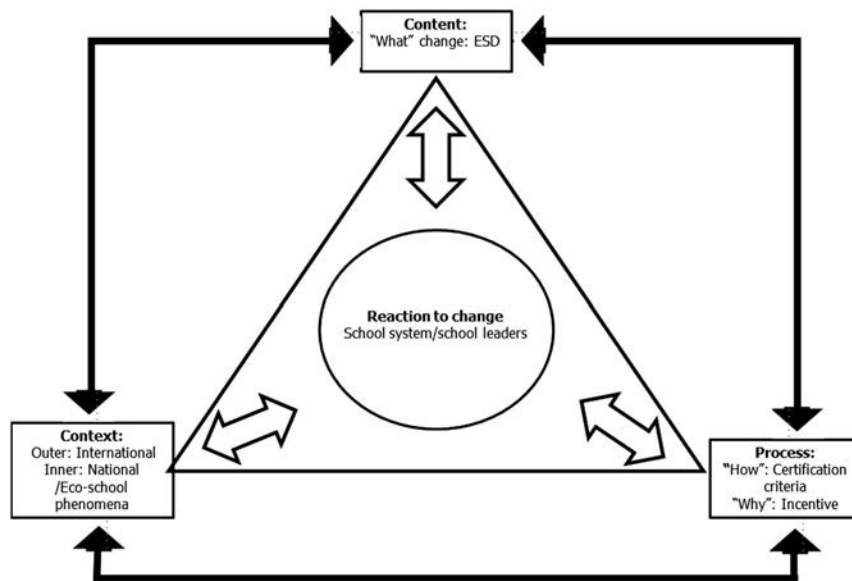


Figure 4. The Human Reaction and Action System and its implementation in the eco-school phenomena (based on Szabla, 2007)

After describing the most widespread “whole institution sustainability education model” of the two countries (the eco-school systems), we developed the main categories and revised them (Thomas, 2006) until the authors agreed on the final categories. We performed the final analysis in a deductive approach, according to the HRAS model (Szabla et al., 2011) in its three main change subsystems: (a) the *content* (the type of ESD), (b) *process* (the implementation process of eco-schools – certification criteria), and the (c) *context* that includes the international context (outer context) and national context (Hungary and Israel) and schools (inner context). We also analyzed the *reaction to change* that included the school system and school leaders (Figure 4). The analysis of the eco-school organizational change was conducted on the level of the national systems comparing Hungary versus Israel.

Results

The results are presented in two parts. The first part of the analysis of the Israeli and Hungarian systems is presented according to the HRAS model parallelly and finally the second part is followed by a comparative SWOT analysis and a summary based on the results.

Change content

In this study, the primary substance of change is ESD and its implementation following a whole-school approach. Implementation of the whole-school approach of ESD is not compulsory in the investigated countries. Eco-school certification serves as the recognition

of those schools that deal with the practical realization of environmental consciousness, awareness, sustainable consumption, and knowledge, which include learning and training for sustainability in a carefully considered, institutional and systematic way. An eco-school differs from the average school in the fact that the principles of sustainability are present not only in its educational activities but also in all fields of school life and behavior, on a higher level than in non-certified schools. Local environmental issues and problems are dealt with priority in the schools' pedagogical work. Details of the content of the eco-school certification were presented above (see sections "Israeli process of eco-school certification" and "Hungarian process of eco-school certification"). In this section, we are focusing on the changes generated by the certification processes in the content of the certified schools.

Examining the change content, we analyzed the substance of organizational change according to the change types: episodic and continuous. Episodic change is an organizational change that is usually revolutionary, deep, discontinuous, and infrequent. In contrast, continuous change is usually evolutionary, incremental, ongoing, and evolving (Szabla et al., 2011; Weick & Quinn, 1999). Eco-school adoption in Israel and Hungary reflected both episodic and continuous types of change. The change in a school usually begins episodically when the school identifies a need to change the content of its work (i.e., ESD and eco-school implementation), the context that the school works (i.e., national and international sustainability discourses), and the process. Initially, this change in the case of many schools was revolutionary, deep, and affected many aspects of schools in Israel (Table 1). For example, eco-school certification required to change the curricula and budgets of the schools (e.g., investment in ESD advisors to help schools to obtain certification), as well as changes in the community. However, in Hungary, where the first 40 schools were already enthusiastic toward ESD and started eco-schooling by applying and adapting an international (ENSI) system to the country, the initial change was not very radical (Table 1). Later, when self-evaluation system made it possible, all voluntarily applying schools found their comfortable way to become an eco-school. In both countries, after implementing the first changes, the change became continuous in those schools, which became more and more "green" to gain the second or third certification. Eternal eco-schools in Hungary increase change content by offering more classes to enhance environmental knowledge, or by undertaking more environmental criteria and becoming a local eco-school knowledge center for novel schools nearby. There are also higher standards in other criteria in these levels.

Change process

In this study, the process reflects the certification procedure, criteria, and incentives for participation. Change process – according to the HRAS model – refers to the "how" and "why" creating a change at national level (Burke, 2008; Szabla et al., 2011), which was

Table 1. Change content – Hungary vs. Israel

| HRAS model subsystems | Hungary | Israel |
|---|---|--|
| Content – “What” changed | <p>Implementation of</p> <ul style="list-style-type: none"> - environmental consciousness - sustainable consumption - local community values and problems - local environmental issues and problems - Revision of school curricula and other documentation according to ESD | <p>Implementation of</p> <ul style="list-style-type: none"> - environmental aspects: environmental literacy (i.e., knowledge, attitudes, and pro-environmental behaviors) - environmental pedagogy: outdoor education and place-based education - whole-school approach to ESD - change the terminology from Environmental Education to ESD |
| ESD principles | <p>Implementation of</p> <ul style="list-style-type: none"> - environmental consciousness - sustainable consumption - local community values and problems - local environmental issues and problems - Revision of school curricula and other documentation according to ESD | <ul style="list-style-type: none"> - <i>Episodic change</i>: Initially, some schools identified a need to change the content, context, and process of the entire educational system and implement a whole-school approach. This change was <i>revolutionary</i>, deep, and affected many aspects of schools' curricula and budgets, and changes in the community) - <i>Continuous change</i>: After implementing the change, schools were encouraged to develop and to become more “green” to gain the second certification (i.e., eternal eco-school) |
| Types of change: <i>Episodic change</i> (i.e., organizational change usually revolutionary, deep, discontinuous, and infrequent) and <i>Continuous change</i> (i.e., evolutionary, ongoing, and evolving) | <p>Implementation of</p> <ul style="list-style-type: none"> - <i>Episodic change</i>: If a rapid change in ESD and SD culture happens in a school, there usually are other factors behind, e.g., a major infrastructural project or an infamous environmental damage - <i>Continuous change</i>: Application is voluntary. Schools' engagement and some spare time and coordination are needed to fill the application form. The change is natural and gradual. However, in eco-schools' own oral history, a dedicated teacher who has a great impact on his colleagues appears in one third of cases | <ul style="list-style-type: none"> - <i>Episodic change</i>: Initially, some schools identified a need to change the content, context, and process of the entire educational system and implement a whole-school approach. This change was <i>revolutionary</i>, deep, and affected many aspects of schools' curricula and budgets, and changes in the community) - <i>Continuous change</i>: After implementing the change, schools were encouraged to develop and to become more “green” to gain the second certification (i.e., eternal eco-school) |

Table 2. Comparison of eco-school change process in Israel and Hungary

| Criteria | Hungary | Israel |
|---|--|---|
| The main process to get certification | a. Eco-school title | a. Eco-school certificate |
| | 1. Simple self-evaluation criteria | 1. The commitment of the school community (school, parents, and student) to the process |
| | 2. Application (sent separately) | 2. Creating an action plan according to self-evaluation in the following criteria (next row) |
| | 3. School and teachers commitment letter; | 3. An external committee examine the school (includes meeting the schools) |
| | 4. Formal evaluation of application and criteria (application-based) | 4. Certification and the school accept 3000\$ |
| | The title is valid for 3 years. | |
| | b. Renewing the title | b. Continue eco-school |
| | After 3 years, by a similar application, with extended commitments, and with a report on the past 3 years. | 3 years of implementation of the criteria and expanding the same criteria |
| c. Eternal Eco-school title: after 7 years of successful eco-school operation, by application, criteria with a higher standard. | | |
| The main criteria for getting certified – Sustainability achievements standards | A. School documents (local curriculum, work plan for the school year) | a. Curriculum plan – environmental studies |
| | B. School organization (leadership, group meetings, HR policy, green student council, etc.) | b. Sustainability action plan – to act in a sustainable manner, to conserve resources and to advance eco-efficiency |
| | C. Pedagogical work (14 different aspects offered, 7 must be chosen at least) | c. Communication plan |
| | D. School operation (33 offered, 5 must be chosen at least for new applicants) | d. Community engagement plan – long-term ESD action |
| | E. Communication (internal and web) | e. Leadership group includes parents, students, administrators, and teachers |
| | F. Cooperations (with other school and non-school partners) | f. Professional development for staff in the school |
| | G. Engagement in the local community and local environment | |
| | H. Specialties and school image | |
| | I. Freely chosen eco-innovations for the next 3 years | |

Table 2. Comparison of eco-school change process in Israel and Hungary (Continued)

| Criteria | Hungary | Israel |
|--|---|---|
| HRAS model subsystems – Process of change – “How” and “Why” (incentives) | A standing committee in Ministry of Education, which includes representatives of Ministry for Environment and non-governmental and academic representatives of ESD operated the application system since 2005 | A standing committee in the Ministry of the Environment and Ministry of Education, which includes representatives from governmental agencies, NGOs, and environmental experts, publishes requirements for certification since 2004 |
| | The certification system and the eco-school criteria were gradually refined | The committee evaluates school applications for green certification (school get \$3,000) |
| | There are no direct financial incentives for schools to apply | After 2 years, schools can deepen their ESD and receive an advanced certificate for “continuous” green schools by involving all grades in the ESD process, by rationally using resources in all criteria, and by continuing to create pro-environmental behavior in the community (Ministry of Environment, 2010) |

analyzed in both countries. In both countries, the process is similar in voluntarily approach, the existence of several different levels of eco-school certification, and criteria for certification (Table 2). Despite the fact that Hungary worked according to the ENSI’s eco-school approach and Israel created its own process, the eco-school change processes operate in a similar fashion in both countries. One major difference between the countries relates to the monetary incentive, which exists in Israel but not in Hungary. In the Israeli system, both stages of eco-school certification the schools receive \$3,000, whereas in Hungary, there is no direct extra financial support for certified eco-schools, although there are many other educational developmental projects in Hungary with financial resources allocated directly for school development and some of them could be used for the development of ESD work of schools too. Probably, the eco-school program is the only educational development program in Hungary that has been working without a constant direct external financial support for the school. It can be assumed that the driving force behind it is the teachers’ sense of responsibility for the environment and for the future. In summary, it can be stated that the direct or indirect benefits of certification (e.g., money – in Israel – honor, respect, and prestige) encourage some schools to participate. The change represented by the eco-school process is based on the assumption that people change their actions and practices to align with their attitudes and norms. Moreover, people have to actively participate and be part of the change. Because being an eco-school is not mandatory for any school in the investigated countries, the assumption is that schools applying for eco-school certification will improve their ESD practice to fulfill the requirements of the certification.

Another important aspect of the eco-school process is the active participation of change agents and recipients. In this process, schools must actively choose to adopt change. They must engage with change processes, choose subjects to teach, and create their own environmental community projects.

Context of change – Outer and inner contexts

In our research, national-level factors were identified as especially important to initiate change in the educational systems. Therefore, the eco-school certification systems were considered to be the leading authority, and schools are considered to be as change recipients. This section will describe the outer context (global and international) and inner context (national and schools including leaders) of change.

The outer context for both investigated countries includes external factors (i.e., global and international) in the change that affects the development of eco-school certification systems (Table 3). For example, international interest in ESD as signified by adoption of Agenda 21 (UN, 1992), Rio + 10 (UN, 2002), and reflected in the UNESCO general educational (e.g., UNESCO, 2016) and sustainability education strategic documents (e.g., UNECE, 2005), which includes global education and sustainability education and natural sciences education programs. These documents and processes influenced the implementation of ESD and the development of eco-school certification processes. Globally, in the beginning of the millennium, educational researchers started to focus on whole-school approach of ESD (EU, 2010; UNECE, 2005). It can be concluded that the global emphasis on the environmental crises led to global and international (the outer context) influences. These influences caused policymakers and NGOs looking for practices for implementation of local actions and concluded into the development of the eco-school certification processes.

The inner context in Israel and also in Hungary includes the national and school level (Table 3). At the national level, the interests in environmental degradation can be strengthened by increasing the number of articles presented by popular media that deal with environmental issues. Governmental and local authorities of both countries represent another important influence to schools by encouraging them to participate in the eco-school certification process. In Israel, the Ministry of Environment along with several other actors helps schools to implement the eco-school program. The Israeli Ministry of Environment has helped to lead this change in terms of financial investment and has invested more money than all other partners, including the Ministry of Education. On the other hand, interaction between schools and the Ministry of Education usually has a negative effect on implementing the eco-school movement in Israel. This is because the Ministry of Education is not always supportive of the change process, and sometimes, although it declares support, it does not act accordingly. Specifically, the Ministry of

Table 3. Change context – Hungary vs. Israel

| HRAS model subsystems | | Hungary | Israel |
|-----------------------|---|--|---|
| Context | Outer context (international level such as economic, market, global, and authorities) | UNESCO global education and sustainability education and natural sciences education programs and philosophies | Global influences for adopting ESD: Agenda 21 (UN, 1992), Rio + 10 (UN, 2002), and Agenda 2030 (UN, 2015) |
| | | Eco-school as an OECD-CERI ENSI initiated idea | Authorities influences: Israel signed Agenda 21, and needed to present in Johannesburg ESD activities therefore started to implement the Green School Certificate |
| | | UN DESD (2005–2014) and DESD GAP | |
| | | UNECE Batumi Declaration in 2016 | |
| | Inner context (national level such as: social, cultural, political, and media) | NGOs urge schools and the education system to learn more about nature, and to learn by community actions | Social – NGOs influence on ESD implementation by teaching ESD in schools |
| | | Eco-schools and eco-school leaders are interested in maintaining their special recognition originating from their eco-school certification | Environmental degradation – the media, which started to deal with environmental issues, increased public awareness about the environmental crisis |
| | | The educational central administration accounts and reports the eco-school network as an important ESD achievement of the country | Financial investment in ESD programs and the eco-school process, by the Ministry of Environment |
| | | General sustainability consciousness and dissatisfaction derived from media | A school training program funded by the Ministry of Environment |

Education usually recommends that schools participate in the eco-school program, without providing tools for schools to implement ESD programs. Furthermore, the Ministry of Education requested and later required that schools should to participate in many projects indirectly contradicting the eco-school program. For example, the Ministry of Education requires high achievement in national and international tests such as Programme for International Student Assessment, without requiring enough hours of ESD (Negev, Sagy, Garb, Salzberg, & Tal, 2008). Another barrier that hinders schools to implement the eco-school approach is the complicated bureaucracy, which discourages some schools from participating (personal communications).

The inner context for change in Hungary was to a great extent formed by a background institute of the Hungarian Ministry of Education, which was motivated by an intensive international educational researchers' network. Other actors in the inner context are NGOs that consult or guide school activities. The work of the background institute was supported for some years by European direct funds for improving the eco-school program. The environmental administration also supports a few environmental programs in schools. The European Social Fund and European Regional Development Fund supported a few improvements in eco-school programs, mainly in the field of pedagogical

materials and teacher training. These agents were part of the inner context that drove change. Another change driver in several cases was the application for eco-school certification of nearby schools, which affects other schools in the region as the certification can be considered to be a marketing advantage for schools.

Minor differences in application and implementation can indicate national influences. The criteria were created by schools and external experts in Hungary as well as by external experts in Israel. Later, the ministry became responsible for the criteria revision in education in both countries. There are criteria in both countries that are easy to implement (e.g., modifying the school documents, introduce waste separation, and decoration of the classrooms), and others that are hard to implement (e.g., improve the infrastructure or the offer of the school canteen in an environmental-friendly way). If there are differences between the countries, causalities can probably be described among infrastructural and cultural features.

Reaction to change – Reaction to ESD and eco-school implementation

Reaction to change relates to the way recipients – school leaders and the whole-school system – react to the change required for implementing the eco-school approach as a way for integrating ESD into educational practice. The following characteristics implied for both countries: the reaction to change can be different in the cases of the three types of schools: schools that adopted early, schools that adopted late, and schools that did not adopt. This “internal” organizational characteristic has impact on school culture and politics. One important internal factor in an organization is a leader who is deeply invested in the subject. Such an actor will help a school implement change more effectively. In Israel and Hungary, schools with engaged leaders in sustainability were those that modeled the eco-school program. This is one of the characteristics common among each school that was an early eco-school adopter. There are schools in both countries where there are only 1–2 teachers’ commitments behind the eco-school program. Their individual qualities and their commitment can lead to eco-education in both directions: downward or flare-up. There are similar patterns of how Israeli and Hungarian eco-school change agents can motivate principals and other decision-makers to implement ESD. One or two teachers in a school are usually not enough for implementing their eco-school agenda, unless there are committed principals. Experience and leadership of school administrators and the benefits they perceive from the process are also important aspects of the reaction to change.

Another level of analysis could be observed according to the consequences associated with participation in change (i.e., reaction to change), which can be examined at the school leader level of the inner context. School leaders in both countries occurred to be a barrier to change in some cases, when they do not personally acknowledge the value of the

certification. However, many school leaders see the benefits for schools from the recognition associated with certification. Simultaneously, school leaders are often afraid of the time requirements and other practical constraints of the central requirements (like performing high achievement on competence tests and early school leaving), and they are also afraid that they will not be able to meet the achievement requirements set by the certification systems.

Another risk in Israel relates to the fact that eco-school certification may involve significant expenses and school leaders or local educational governing bodies are not always willing to take this risk, or do not have the resources to carry out the change. Administrators are often hesitant to spend money on outside resources, such as NGOs to implement ESD programs, if they do not receive direct benefit from this expense. Sometimes, without more external support, Israeli schools cannot afford to be certified. Furthermore, administrators who would like to implement ESD with its own staff often need to deal with a lack of experienced teachers in ESD, which creates challenges for schools that wish to implement this process. Moreover, in Israel, teacher resistance tends to increase as their role in ESD programs becomes larger. These are just some of the reasons why only 25% of schools in Israel have participated in this process.

During its 14 years of operation, the biggest achievement of the Hungarian program is the involvement of almost 30% of students (1,000 schools and dorms, 360,000 students). The running monitoring system proves that more than 80% of the schools reported a significant quality improvement in its ESD activities after joining the program. Schools reported a normal and continuous evolution and fulfillment of their eco-school work and commitments. School maintenance and school leaders are most supportive of the eco-school application and eco-school work. Even a quarter of parents are supportive to it. The most common complaint is that there is no possibility for environmentally conscious renovation or climate-related energy upgrading. They can best change their pedagogical practice and communication. Every school, including eco-schools, likes to follow its good practices and renews only 1–2 things in a school year (Könczey, Varga, & Saly, 2017).

Reaction to change was especially positive in those schools that participated in ESD before the eco-school process began in both countries. These schools exhibited positive changes in beliefs, feelings, school culture, and pro-environmental behaviors. In these success stories, positive change is observable throughout schools' communities. On the contrary, there are schools that would like to satisfy only wishes of the local or national governments by applying for the eco-school certification, and do not have a genuine desire to participate in ESD. In these schools, which are usually later adopters, changes in beliefs, school cultures, and pro-environmental behaviors are not very deep, and probably not enduring. These may explain the existence of many schools that applied for the eco-school

certification just once and have not continued the process later on. It can be stated that many of the change recipients (i.e., schools) implemented the change process (eco-school certification) because they were influenced by the context (i.e., national and local agenda), but did not fully adopt the ESD content and its change in pro-environmental behavior and works to some extent as stowaway eco-school in the system.

Discussion

The following SWOT analysis provides information about the strength, weaknesses, opportunities, and threats of the Hungarian and Israeli way of the whole-school approach as part of eco-school program implementation. An aim of this analysis is to give a framework for reflection of the above-presented results and another is to answer the research questions formulated in the beginning of the study. Providing HRAS insight about the possibilities of improving the implementation process of ESD is a third objective.

Content

From the viewpoint of content, the most important aspect of ESD is that it requires deep and continuous change in schools, in the whole educational system, and also in society (Lindberg, 2015). The deepness of the required change could be an explaining factor for more statements in the SWOT table (Table 4). If this deepness is taken seriously, significant extra work is unavoidable for schools. This extra work could easily generate a continuous feeling of frustration in many schools. This frustration could cause to accept a more superficial approach of ESD, especially if schools do not receive significant professional support for the change and compensation for their extra work. This superficial approach could appear in many aspects of the school life, but it is most often observable at the infrastructural developments of eco-school. The majority of the eco-schools has implemented selective-waste collection systems but just a few of them has taken more serious steps toward more sustainable infrastructures without extra financial resources. In a different level, teachers of a school react in diverse ways for the changes, and this diversity could make the change within the school uneven and at least partly superficial, e.g., deep changes in the science curriculum but no changes in the social curriculum of the school. In summary, the superficial approach to ESD as discussed above could also create uneven implementation of eco-school system in the school level. Some of the schools are deeply involved in ESD and others are not, which also create frustration among participants because they get the same certification.

The biggest challenge for educational policymakers is to develop processes and frameworks making the deepness of change required by the eco-school processes manageable for schools.

Table 4. SWOT analysis of eco-school implementation in Hungary and Israel

| Strengths | Weaknesses |
|---|--|
| Involvement of the quarter of the schools | Extra work (which is not recognized enough) for applying schools and later for teachers coordinating the eco-school annual plan |
| Attracts all kinds of schools, administrators, and teachers | Lack of full in-situ and online monitoring system gives an opportunity for stowaway schools |
| Flexible framework for implementation (only Hungary) | Unstable support for the networks emerging regional and local network hubs (only Hungary) |
| State acknowledgment of ESD effort | Lack of flexibility in the framework for implementation (only Israel) |
| Raising respect for the ESD work in schools | The eco-school title itself does not lead to a real and deep change in every titled school (in school culture for example), it creates a change focusing on recycling |
| Emerging regional and local network hubs (only Hungary) | Except the \$3,000 (Israel), the eco-school process is not including the budget for required sustainable infrastructures for real changes (e.g., solar panels, energy-saving, and environmental design of the school building) |
| Sustainable education knowledge and innovation centers emerging continuously from the best eco-school teacher communities | |
| Opportunities | Threats |
| Eco-school as ESD basis schools for implementation of whole school approach of ESD | Melting the network because of the diminishing motivation of members |
| Integrating the main messages and criteria of the Eco-school system into the state inspection system and so make them compulsory to apply for all schools | The network and the whole school approach of ESD lose its respect because of the growing number of stowaway schools |
| Change in the educational system approach for integrating diverse pedagogy and promote the education of the 21st century | Further increase of the network of eco-schools can cause an elimination of the title system. If everyone has the title, that means nothing anymore |

Process

One of the aims of the eco-school certification processes is to initiate organizational change. Organizational change as it is known from the literature is not always successful in many organizations and schools as well. The eco-school movement is an example of a change process that did not reach all schools in the system in both investigated countries. In our findings, we see that in even many eco-schools the change is not deep enough and does not include the ESD characteristics of pro-environmental behavior and some eco-schools that do nearly nothing and surviving as stowaways in the eco-school systems in both countries (Fullan, 1993; Tubin & Ofek-Regev, 2010). On the other hand, there are a few almost perfect “whole-school” ESD schools without eco-school title. There are even cases when school principals are studying the criteria of the eco-school certification systems and lead changes in their schools accordingly without applying for the eco-school title because of extra bureaucracy.

In spite of these contradictions, the SWOT table shows that the process element is an important factor of the strength of the eco-school movements in Israel and Hungary. The process of eco-school certification is successful in many aspects; it helped to involve a significant amount of schools into the change process for ESD, attracts all kinds of school administrators and teachers, and raises the respect of the ESD work in schools. One of the key motivating and transformative aspects of the eco-school systems roots in their participative policy: participation is accounted on all possible levels. Students can participate in the process of their own learning from the selection of the focus of learning to the evaluation of their learning results and in Hungary they could even participate in the environmental decision-making processes by joining the Green Student Parliament movement (see Figure 5). On the level of the school staff participation means that each employee of the school could be involved in the development of the vision of the school. The main organizational change in Hungary on the school level, which demonstrates the participatory aspect, is the establishment of the eco-school working group in eco-schools, which coordinates the implementation of annual eco-school working plan and consists of different employees of the school. Participation on national level means that schools directly or indirectly through their feedbacks are involved in the development of the system of the national eco-school program, and could contribute to the development of the certification system. This participatory approach raises the motivation of the stakeholders and gives momentum to their transformative initiatives.

In summary, it can be stated that there are a growing number of evidence showing that this success of the eco-school certification processes has a great potential to initiate school changes on different level in ESD but have their own limitations. More than a decade of eco-school certification was not enough to reach the majority of schools nor in Israel nor in Hungary. The existing phenomenon of stowaway eco-schools also demonstrates that



Figure 5. Pupils participating in the session of a local Green Student Parliament – a participatory activity of Hungarian eco-schools for negotiating local environmental issues with local politicians

the process of eco-school certification itself could not be enough to mainstream and manage the implementation process of the whole-school approach of ESD in a whole national educational system. Therefore, other elements of the wider context should also support the aimed implementation process of the whole-school approach.

Context

The results of this study proved that in spite of the great geographical, political, and cultural differences, there are many similar elements of the context of eco-school movements in Israel and Hungary. The initial motivation for creating the eco-school scheme and the later development of them were accidentally and unexpectedly similar in the two countries.

The SWOT analysis has pointed out that the contextual factor is crucial for the survival and for the further developments of the eco-school systems in both Israel and Hungary. The threats identified by SWOT analysis are context-dependent to a large extent. The motivation of the school for applying for the eco-school title is determined by factors, which could not be affected directly within the application process. The motivation of schools will increase if the stakeholders of the educational system will expect the school to apply and will support the application efforts of the school. Contextual factors like the raising of environmental awareness of stakeholders and the establishment of a professional control mechanism to assess the practical work of eco-schools could help reduce the phenomenon of stowaway eco-schools and therefore decrease the possibility of losing respect and the consequent network meltdown.

One of the most interesting features of the analysis of the contexts of the two studied eco-school systems was the recognition how similar they are in spite of the differences of their history and of their national, political economic contexts, and educational organization. This similarity provokes the hypothesis that similar attributes could be found if other eco-school systems would be involved in the analysis. To prove this hypothesis is a task for further research.

Conclusions

At first glance from the result of this study, two successful eco-school systems can be seen in the two different countries. Both systems are run for more than a decade. Both systems have reached several hundred schools, providing them a motivating state-level recognition and acknowledgment of their high-level whole-school approach ESD work. The solid governmental background and the continuous presence of newcomer schools suggest that these eco-school systems may survive for another decades. However, the analysis revealed some weaknesses within the eco-school networks and pointed out that eco-school systems alone were not enough neither to scale up the whole-school approach of

ESD nationwide nor to ensure the deep changes needed for the success of ESD. Eco-school systems could be a useful tool for ESD implementation later on if eco-school teachers continue innovation, collective learning, and if they do not lose their credibility. To achieve this continuous renewal of the basic components of the eco-school movements, a critical review of eco-school certification processes and criteria is needed. The critical review should focus on strengthening elements of eco-school movements, which can contribute to deep organizational change in schools.

From the educational policy perspective, eco-school systems have a few very strong positive characteristics in both studied cases. They proved to be very attractive for decision-makers. In some cases, they have even changed the attitude of policymakers, as the very complex issue of ESD has been transformed into manageable official processes producing quantitative and easily communicable results, proofing the commitment of the governments toward ESD at international level. Briefly, eco-school systems create high visibility for ESD from teacher level to international policy level.

Because of this multilevel existence of the eco-school movements, the content of the eco-school concept should be redefined on all involved levels.

If schools just follow the central guidelines without their own reinterpretation of the concept, it leads to a superficial adaptation of the eco-school concept and so a lack of motivation for deep implementation of ESD principles. Although this is not the intent of the eco-school approach, this superficial adaptation could also be considered a better-than-nothing solution of implementation of ESD in schools.

Our results are consistent with the results of previous studies (e.g., [Hope, 2005](#)) that also pointed out that to reach a deep organizational change there must be a person, a “change agent” in each school dedicated to the whole-school approach of ESD. These principals or committed teachers are the “cornerstone” of the change in their schools and ministry of education or regional authority of education in Israel and in Hungary are providing help for the work of these change agents by running the eco-school systems.

A combination of different support and control mechanism is suggested to further increase the effectiveness of the implementation of ESD in the educational systems:

- beside certification process enhancing networking among eco-schools,
- monitoring of whole-school ESD performance of all schools and teachers,
- best-practice database and teaching aid development to disseminate the practices of best performing eco-schools.

All three proposals would recognize the role of change agents and so support their committed work.

However, our findings suggest that running eco-school systems should not be the only way to fully implement ESD in our educational systems; ESD is a way to reduce the environmental crisis and eco-school systems are useful tools for ESD implementation in schools.

Acknowledgements

The authors would like to express their acknowledgment for the Israeli and Hungarian Governments for making this research possible and for all the eco-schools, school leaders, and teachers providing data for our previous researches. Israeli authors received no financial support for the research and/or authorship of this article. R K's research was supported by the project EFOP-3.6.1-16-2016-00001 "Complex development of Research Capacities and Services at Eszterházy Károly University." All authors declare no conflict of interest.

About the Authors

Dr. DG is an environmental education researcher and lecturer at the Kibbutzim College, Israel. Her research interests include environmental education, education for sustainability, multicultural education, transformative learning, and leadership in higher education and non-governmental sustainability organizations. Her academic practices in the education field are devoted to sustainability implementation in both the college sector and in Israel. She was also involved in study concept and design, analysis of Israeli data, and interpretation of study concept and design.

Dr. AG is a PhD in zoology and teaching in the science department at Kibbutzim College. He teaches a variety of courses for undergraduate and master's degrees in the areas of environment and sustainability. He has led environmental education programs in Israel for more than 20 years and also taught in elementary schools for the past 12 years. Recently, his research interests include studies of sustainability, self-efficacy for teaching sustainability, and sustainability and multiculturalism. He was also involved in study concept and design, analysis of Israeli data, and interpretation of data of this paper.

RK, a biologist, an evolutionary ecologist, and a sustainability educator, is coordinating collaborative research projects in the field of environmental education, sustainability science, and working on her PhD thesis in the Hungarian Institute for Educational Research and Development at Eszterházy Károly University. Besides being involved in the development and implementation of several governmental strategies for environmental protection and environmental education in Hungary, she is the author of a handbook on everyday environmental practices, and a board member of the Hungarian

Society for Environmental Education. She was also involved in analysis of Hungarian data and interpretation of data of this paper.

AV, PhD, is a senior researcher and a team leader at the Eszterházy Károly University – Hungarian Institute for Educational Research and Development, working in the area of development of ESD. He worked as the coordinator of the Hungarian Eco-school Network and the Hungarian national coordinator of the international ENSI network for a decade. He has participated in several international co-operations aiming at promote school development and researches mainly in ESD (e.g., EU Comenius SUPPORT project). Recently, he is a supervisor of the Educational Doctoral schools of ELTE and EKV universities and member of the editorial boards of educational journals: JATES and New Pedagogical Review. He was also involved in study concept and design, analysis of Hungarian data, and interpretation of data of this paper.

All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of Kibbutzim College and the Hungarian Institute for Educational Research and Development approved the study.

References

- Affolter, C., & Varga, A. (2018). *Environment and school initiatives lessons from the ENSI Network – Past, present and future*. Vienna, Austria/Budapest, Hungary: ENSI/Eszterhazy Karoly University. Retrieved October 18, 2018, from http://ofi.hu/sites/default/files/attachments/lessons_from_the_ensi_network-book_web_0905.pdf
- Breiting, S., Mayer, M., & Mogensen, F. (2005). *Quality criteria for ESD schools*. Vienna, Austria: Austrian Federal Ministry of Education, Science and Culture. Retrieved January 26, 2018, from <http://www.ensi.org/global/downloads/Publications/208/QC-GB.pdf>
- Burke, W. W. (2008). *Organization change: Theory and practice*. Thousand Oaks, CA: Sage Publications, Inc.
- Cseh, Gy., Lőrinci, J., & Tóth, L. (2016). *Környezeti nevelési projekt eredményességének és hatásosságának értékelése: országos kérdőíves felmérés és monitoring* [Evaluation of an environmental education project national questionnaire survey and monitoring]. Manuscript, Qualitas Kft, Szeged, Hungary.
- EU. (2010). *Council conclusions on education for sustainable development: 3046th Education, Youth, Culture and Sport Council meeting, Brussels, 18 and 19 November 2010*. Retrieved from https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/educ/117855.pdf
- Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. School Development and the Management of Change Series: 10. Retrieved from <https://files.eric.ed.gov/fulltext/ED373391.pdf>

- Goldman, D., Ayalon, O., Baum, D., & Weiss, B. (2018). Influence of 'green school certification' on students' environmental literacy and adoption of sustainable practice by schools. *Journal of Cleaner Production*, 183, 1300–1313. doi:10.1016/j.jclepro.2018.02.176
- Hope, M. S. (2005). Developing strategies for creating an environmental focus in a school: Narrating the change process (Master thesis). Rhodes University, South Africa. Retrieved from <https://core.ac.uk/download/pdf/145046251.pdf>
- Kézy, Á., & Varga, A. (2007). Az ökoiskolák szerepe a közoktatás reformjában [The role of eco-school in the reform of public education]. *Új Pedagógiai Szemle*, 57(12), 41–53. Retrieved on September 11, 2019, from <https://folyoiratok.ofi.hu/uj-pedagogiai-szemle/az-okoiskolak-szerepe-a-kozoktatás-reformjában>
- Könczey, R. (2014). Közösségi kutatás – A fenntarthatóság tanulásának eszköze [Community research – A tool for learning for sustainability]. *Új köznevelés*, 70(10), 38–39.
- Könczey, R., Saly, E., & Varga, A. (2017). Az egészintézményes megközelítés fókuszai az iskolákban [Foci of whole school approach in schools. In J. Kerülő, T. Jenei, & I. Gyarmati (Eds.), *XVII. Országos Neveléstudományi Konferencia: Program és absztrakt kötet Nyíregyháza* [XVII. National Educational Conference: Program and abstract volume] (p. 441). Hungary: MTA Pedagógiai Tudományos Bizottság, Nyíregyházi Egyetem.
- Kurland, N. (2011). Evolution of a campus sustainability network: A case study in organizational change. *International Journal of Sustainability in Higher Education*, 12(4), 395–429. doi:10.1108/14676371111168304
- Lindberg, C. (2015). Perspectives on ESD from a European member of UNESCO's high-level panel, with particular reference to Sweden. In R. Jucker & R. Mathar (Eds.), *Schooling for sustainable development in Europe, Schooling for Sustainable Development Volume 6* (pp. 71–86). Cham, Switzerland: Springer International Publishing.
- Ministry of Environment. (2009). *Green all over: From kindergarten to university*. Israel Environment Bulletin, 30. Jerusalem: Israel Ministry of Environmental Protection.
- Ministry of Environment. (2010). *About green schools in Israel 2004–2009*. Retrieved from <http://www.sviva.gov.il>
- Ministry of Environment. (2012). *Green school certificate*. Retrieved from <http://www.sviva.gov.il>
- Mogensen, F., & Mayer, M. (szerk.). (2005). *ECO-schools: Trends and divergences. A comparative study on ECO-school development processes in 13 countries*. Vienna, Austria: ENSI. Retrieved July 16, 2018, from <https://www.ensi.org/global/downloads/Publications/173/ComparativeStudy1.pdf>
- Moore, J. (2005). Is higher education ready for transformative learning? A Question explored in the study of sustainability. *Journal of Transformative Education*, 3(1), 76–91. doi:10.1177/1541344604270862
- Negev, M., Sagy, G., Garb, Y., Salzberg, A., & Tal, A. (2008). Evaluating the environmental literacy of Israeli elementary and high school students. *The Journal of Environmental Education*, 39(2), 3–20. doi:10.3200/JOEE.39.2.3-20
- Pizmony Levy, O., & Gan, D. (2011, April). *Green school certificate in Israel: Social predictors of early adoption*. Annual Meeting of the 94th American Educational Research Association (AERA), New Orleans, LA, USA.

- Rickinson, M. (2001). Learners and learning in environmental education: A critical review of the evidence. *Environmental Education Research*, 7(3), 207–320. doi:10.1080/13504620120065230
- Shay-Margalit, B., & Rubin, O. (2017). Effect of the Israeli “green schools” reform on pupils’ environmental attitudes and behavior. *Society & Natural Resources*, 30(1), 112–128. doi:10.1080/08941920.2016.1171939
- Szabla, D. (2007). A multidimensional view of resistance to organizational change: Exploring cognitive, emotional, and intentional responses to planned change across perceived change leadership strategies. *Human Resource Development Quarterly*, 18(4), 525–558. doi:10.1002/hrdq.1218
- Szabla, D. B., Warner, L., Stefanchin, J., & Robinson, M. (2011). *Organizational change content and change leadership strategy: What is the connection?* Paper presented at 2010 New Horizon’s Research Conference, The George Washington University, Ashburn, VA, USA.
- Thomas, D. (2006). A General inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237–246. doi:10.1177/1098214005283748
- Tubin, D., & Ofek-Regev, N. (2010). Can a school change its spots? The first year of transforming to an innovative school. *Journal of Educational Change*, 11(2), 95–109. doi:10.1007/s10833-008-9100-z
- UN. (1992). *Agenda 21*. Retrieved from <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>
- UN. (2002). *Johannesburg declaration on sustainable development*. Retrieved from <http://www.un-documents.net/jburgdec.htm>
- UN. (2015). *Transforming our world: The 2030 agenda for sustainable development, or the agenda 2030*. Retrieved from https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E
- UNECE. (2005). *UNECE strategy for education for sustainable development*. Retrieved from July 15, 2019, from <https://www.unece.org/fileadmin/DAM/env/documents/2005/cep/ac.13/cep.ac.13.2005.3.rev.1.e.pdf>
- UNESCO. (2016). *Global Education Monitoring Report 2016: Education for people and planet. creating sustainable futures for all*. Retrieved on July 15, 2019, from <https://unesdoc.unesco.org/ark:/48223/pf0000245752>
- Varga, A., & Havas, P. (2018). ENSI and its impact on the Hungarian educational system. In C. Affolter & A. Varga (Eds.), *Environment and school initiatives lessons from the ENSI network – Past, present and future* (pp. 142–148). Vienna, Austria/Budapest, Hungary: ENSI/EKE-OFI. Retrieved on November 10, 2018, from http://www.education21.ch/sites/default/files/uploads/pdf-d/news21/Lessons_from_the_ENSI_Network-book_web.pdf
- Varga, A., Könczey, R., & Saly, E. (2017). Értékelés a magyar Ökoiskola-hálózat működéséről, monitoring megközelítésben [Evaluation of the Hungarian Eco-school network. Monitoring approach]. *Új Pedagógiai Szemle*, 67, 9–10. Retrieved November 9, 2019, from <http://folyoiratok.ofi.hu/uj-pedagogiai-szemle/ertekeles-a-magyar-okoiskola-halozat-mukodeserol-monitoring-megkozelitesben#main-content>
- Weick, K. E., & Quinn, R. E. (1999). Organizational change and development. *Annual Review of Psychology*, 50(1), 361–386. doi:10.1146/annurev.psych.50.1.361
- Wu, Z. (2002). Green schools in China. *The Journal of Environmental Education*, 34(1), 21–25. doi:10.1080/00958960209603478