

Eszterházy Károly Catholic University

Doctoral School Of Education



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**The role of environmental education packages and experiential
methods in sustainability education**

Theses for doctoral thesis (PhD)

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1. Introduction and rationale for the topic

Nowadays everyone hears about pollution in some form, sustainable living, the concept of ecological footprint, the day of the overfishing, Earth Hour, changes in the weather. In fact they are affected by these things, whether because of the uneven distribution of rainfall or temperature extremes but they do not think they should necessarily do more or change their habits. This is clear not only from talking to children, but also from reading social media platforms and is cumulatively true among adults. This is why there is a need to enable students to acquire knowledge on the topics themselves, using appropriate methods, tools and opportunities, thus developing their critical thinking, which is essential to manage the opportunities available in their everyday lives.

In my dissertation, three studies are connected. With the first, my main research my aim is to show how experiential, activity-based environmental education is implemented in a teaching package for primary school children. It'll be demonstrated whether such aids can have an impact on the size of the ecological footprint, the ecological literacy and the environmental habits of students. In connection with my main research, the measurement of the educational package, I consider it important to not only get to know the environmental attitudes, ecological literacy, knowledge and habits of the fifth graders who used the educational package in the study and served as control groups but also to cover a national measurement which is connected to an ecological and carbon footprint study that provides tangible figures for the students.

This is the second research. This will not only measure the ecological and carbon footprint of Hungarian fifth-graders and thus their families, but also their views on sustainability habits and attitudes towards environmental protection. We will see whether the use of an experiential, activity-based, year-round curriculum can have an impact on these issues. It will help to identify areas of environmental education that could be better addressed at a given age, and possible gaps in students' knowledge that could inform future curriculum, resource and package development.

As a third research project I present some other domestic environmental education teaching packages, in addition to the one in my main research, as they all contain experiential methodological options that can help successful environmental education work. In order to get a complete picture, my aim is to show to what extent teachers in Hungary are currently using environmental education teaching packages, which ones they are familiar with and what they think about the teaching aids. I discuss why they use or do not use the currently available

teaching aids, what experiential and activity-based methods they use in practice, what they know and how their institution and their own environmental education work is.

2. Research objectives, research questions and hypotheses

I defined the objectives of my research as follows:

- To investigate work supported by an experiential, activity-based environmental education teaching package
- To measure the effectiveness of methods that support direct sensory experience in children's environmental education
- A national ecological footprint survey of 5th grade students
- Finding out teachers' views on the environmental education package

Based on prior knowledge, research materials and the results of my own measurements, I have identified the following research questions:

Q1: What is the impact of using an environmental education package on the change in ecological literacy of fifth grade students?

Q2: What are the relationships between the frequency of experiential methods and positive changes in the environmental attitudes of the fifth grade students in the primary school studied?

Q3: How does the ecological literacy of the pupils in the study change with age when the environmental education package is enriched with practice-oriented methods?

Q4: To what extent does the knowledge of environmental awareness and sustainability acquired through practice contribute to an increase in the number of environmentally conscious activities per school year?

Q5: What is the impact on students' ecological footprint of studying in an institution with an eco-school title?

Q6: To what extent do teachers use educational packages in their environmental education work? Is there a correlation between the use of a mix of experiential environmental education methods in environmental education work?

Based on the research objectives and questions, I have identified eight hypotheses. The hypotheses are built on three pillars. The first pillar is a set of hypotheses related to the educational package among students. The second pillar is a set of hypotheses for the ecological

footprint measurement among students, one of which is also related to the tutorial package measurement. The third pillar is a set of hypotheses related to the measurement of the educational package knowledge among teachers.

Hypotheses related to the research on the student tutorial package (H₁):

H_{1a}: The ecological literacy of students (grade 5) who use the environmental education package will change positively over one academic year.

H_{1b}: The ecological literacy of students in classes (grade 5) using the experiential methods instructional package is more prominent in relation to sustainable living than their counterparts not using the instructional package.

H_{1c}: The environmental attitudes of students (grade 5) using the study package are more positive after one school year than those of students not using the package.

Hypotheses related to research on the ecological footprint (H₂) of students:

H_{2a}: The students in the research (5th grade) have the knowledge to reduce their ecological and carbon footprint.

H_{2b}: Students in the study who attend eco-schools and their families (grade 5) have a smaller ecological footprint than their peers and families who do not attend eco-schools.

H_{2c}: The ecological footprint of groups that have previously used the educational package is smaller than that of their peers that have not previously used the educational package.

Hypotheses for the research on teacher training packages (H₃):

H_{3a}: The majority of the teachers in the study do not use an environmental education teaching package.

H_{3b}: Two thirds of the respondents do not use environmental education kits because they do not have access to them.

3. Research methods and sample

The study used both quantitative and qualitative methods, as well as exploratory and analytical methods. I used inductive and deductive methods to achieve the research objectives. For the exploratory method, I used written and oral interviews, while for the analytical method, I used quantitative research methodology and one- and two-sample comparisons, among others. The results were analysed using Excel and SPSS 10.0.

Measurements among students: Environmental education package measurement

The method of the investigation is a questionnaire survey, supplemented by an interview. The primary measurement took place in the first half of the school year 2020/2021, the secondary measurement at the end of the second semester of the school year 2020/2021. On both occasions, 433 pupils from 19 groups of 8 institutions completed the questionnaire. Four schools in Budapest and four in rural areas participated in the survey, with 213 students in Budapest (49%) and 220 students in rural areas (51%). All students (N=433) were in fifth grade at the time of the survey. Their average age at baseline was 10.7 years. 205 boys (47%) and 228 girls (53%) participated at the beginning and end of the school year. The students studied from the same families of textbooks. The study included metropolitan, country, urban and communal institutions.

Measurements among students: Ecological footprint measurement

The 2020/21 measurement included 5th graders from all areas of the country, with and without a learning package, matching the national learning package measurement of 1519 students. The survey was conducted in the 2020/21 school year using an online survey. The questionnaire was completed in class in the presence of a teacher. The questionnaire included the WWF's official ecological footprint measurement¹ tool. After providing the size of their ecological and carbon footprint, they were asked to describe their ideas on what they and their families could do to reduce it using an open-ended question.

The survey included 52.5% boys and 47.5% girls. By type of municipality, most respondents were from the capital. 106 primary schools and 10 eighth-grade secondary schools participated in the survey. Of the respondents (N=1519), 49.1% studied in Budapest, 19.0% in a county town, 26.7% in a city and 5.2% in a village². The respondents were from all counties in the

¹ <http://www.labnyom.wwf.hu/hu/index>

² The categories were defined on the basis of Act CLXXXIX of 2011 (on Local Self-Governments in Hungary), but the study does not make a difference between villages and large urban areas.

country. 64.7% of the students were studying in an eco-school or a perpetual eco-school, while 35.3% were studying in a traditional institution without an eco-school title.

Teachers using the environmental education package

The online questionnaire was completed by 1910 people. 17% of respondents were male and 83% female. The majority of respondents (N=1910) were residents of Budapest (43%). There were also respondents from all counties of the country, municipalities (497, 26%), cities (483, 25%), counties with city status (112, 6%) and the capital (818, 43%)³. In terms of occupation, 87% of respondents were teachers, 7% were heads or deputy heads, 3% were teachers, 2% were pre-school teachers and 1% were other, working in universities, college and developmental education. Most (61.6%) are teachers aged between 21-30 and 31-40.

4. Research responses, hypotheses interpretation

Hypotheses related to the research on the student tutorial package (H₁):

H_{1a}: ✓

H_{1a}: The ecological literacy of students (grade 5) who use the environmental education package will change positively over one academic year.

The hypothesis had been proven to be true, as the children who used the educational package showed an mean score of 2,6 ($p < 0,05$) at the primary measurement, but 4,1 ($p < 0,05$) at the secondary measurement at the end of the school year. In the primary measure, both groups still scored similarly on the living things topic, yet this score was only half the score of the answers judged to be scientifically correct. At the end-of-school-year secondary assessment, the children who participated in the environmental education work with the teaching package scored significantly higher on both scales than their control group peers. The reasons for this may include the difference in the method of delivery, the regularity, the variety of practical examples and exercises, the increased effectiveness of knowledge consolidation through easier differentiation of interests, and the accumulation of sustainability and environmental education experiences in one school year.

³ The categories were defined on the basis of Act CLXXXIX of 2011 (on Local Self-Governments in Hungary), but the study does not make a difference between villages and large urban areas.

H_{1b}: ✓

H_{1b}: The ecological literacy of students in classes (grade 5) using the experiential methods instructional package is more prominent in relation to sustainable living than their counterparts not using the instructional package.

The hypothesis had been proven to be true, because although in the primary study the students in the control group scored higher on the sustainability scale, this score decreased in the secondary study by which time the groups of students using the training package scored higher. By the end of the school year, the scores of those in the control group had dropped and they were unable to maintain and increase their knowledge. In contrast, the children who used the package increased their average score from 3,6 to 5,7 which is very high compared to the 4,3 of the control group. The reasons for this result may include the extensive inclusion of sustainability programmes in the content of the tutorial package, thus supporting differentiated knowledge transfer and acquisition through experiences. Their responses reflect the existence of their own experience and the evolution of their thinking.

H_{1c}: ✓

H_{1c}: The environmental attitudes of students (grade 5) using the study package are more positive after one school year than those of students not using the package.

The hypothesis had been proven to be true, as the total attitude scale showed an increase in environmental attitudes among those who used the training package, while those in the control group did not change their environmental attitudes during one school year. Of the three themes, children who used the package increased in behaviour and animals, remained unchanged in water, while there was no improvement in any of the three themes, and a decrease in water and animals.

Hypotheses related to research on the ecological footprint (H₂) of students:

H_{2a}: ✓

H_{2a}: The students in the research (5th grade) have the knowledge to reduce their ecological and carbon footprint.

The hypothesis was proven true, as all the children who took part in the survey wrote at least one example of a way to reduce their ecological and carbon footprint, 60% wrote two ideas and nearly 20% wrote three or more. Composting and switching off the electricity were the most common, but also promoting renewable energy sources, using recyclable materials and

optimising water use were among their examples. Almost 12% of respondents thought there was nothing they could do to improve their ecological and carbon footprint, which they clearly expressed in their words, rather than just leaving the answer blank. All of these children were educated in a traditional, non-eco-school education.

H_{2b}: ✓

H_{2b}: Students in the study who attend eco-schools and their families (grade 5) have a smaller ecological footprint than their peers and families who do not attend eco-schools.

The hypothesis is proven, there is a significant difference between the ecological footprint of children attending eco-schools and those attending non-eco-schools, but there is not a large difference between the two types of schools. While children attending an eco-school use an average of 1,906 planets, their counterparts attending a school without an eco-school title use 2,004 planets ($p < 0,05$). The ecological footprint as a measure is influenced by a lot of stimuli, knowledge and information beyond the scope of institutional environmental education, but it is nevertheless important to provide children with knowledge that can contribute to a more environmentally friendly and sustainable lifestyle in adulthood, for which the ecological footprint can be a tangible demonstration tool. The small difference between the ecological footprints of children attending the two types of institutions suggests several things. On the one hand, it is possible that the ecological footprint cannot be influenced by institutionalised environmental education, although in the open-ended questions linked to the survey, pupils attending eco-schools gave more and higher level answers than those attending institutions without an eco-school title. On the other hand, it is also possible that schools without an eco-school title can have as good an attitude-shaping effect and as much impact on children's independent activities that affect their ecological footprint as an eco-school programme.

H_{2c}: ✓

H_{2c}: The ecological footprint of groups that have previously used the educational package is smaller than that of their peers that have not previously used the educational package.

The hypothesis is proven, although there is also a small difference between the children who used the training package and the control group. The children using the education package used 1,5 planets of Earth for their living, while the children in the control groups used 1,9 planets on average. The study showed that it is very difficult to have a real impact on the ecological

footprint at this age, as influencing parents' lifestyle and purchasing habits within an institutional framework has little success. Nevertheless, authentic, age-appropriate, practice-oriented information and knowledge material that they themselves have experienced can support a change in attitude that can provide a good basis for their later independent decisions. The use of an educational package is not the only key to this, but providing experiences can be an important element in deepening lifestyle knowledge.

Hypotheses for the research on teacher training packages (H3):

H_{3a}: ✓

H_{3a}: The majority of the teachers in the study do not use an environmental education teaching package.

The hypothesis was proven. Although the survey shows that 51% use or have used an educational kit, the narrowed down questions show that only 3,9% currently use such a tool in their environmental education work.

H_{3b}: ✗

H_{3b}: Two thirds of the respondents do not use environmental education kits because they do not have access to them.

The hypothesis has not been proved. In today's fast world, there are many options for different environmental education settings, so it is no longer limited to special days, workshops and camps, for which the materials could provide a good basis, but they cannot be widely disseminated. The problem for respondents is not only that they are not familiar with these resources or do not have access to them (44,2%), but also that they are difficult to integrate into lessons (36,5%) and lack the financial resources to purchase them (33,6%). The low circulation of the teaching kit, the lack of knowledge of how to access the online materials and the fact that they are not included in the basic training courses all contribute to the lack of take-up of the content. Solutions to these problems could be to provide adequate funding, promote free options, present the training packages for use in workshops and day-care centres, and make the details of the digital, mostly free, training package widely known.

5. Conclusions - thesis

I summarise the final conclusions of my research along the lines of the following ideas:

The context and connections of the results of the use of the educational package among children in the context of ecological footprint measurement:

- Domestic environmental education packages aim to: raise children's awareness of the need to live a more environmentally friendly life in age-appropriate language, using a variety of methods, examples and solutions, without trying to force the issue on children or inducing anxiety.
- Children showed a similar picture in the areas of ecological literacy and attitudes in the primary assessment at the beginning of the school year. There were no significant differences between pupils from eco-schools and non-ecological schools, nor were there any marked differences in the type of settlement. By the end of the school year, the secondary measures showed a change for students using an educational package and those serving as a control group.
- Through appropriate attitudinal and emotional influences attitudes towards the environment can be influenced both individually and as a group, which may help – if not immediately, then in the long term – to make everyday life more environmentally friendly.
- Action-based teaching methods, illustration, experience and experience can give children the opportunity to enrich their knowledge by actually supporting the information they experience.
- A year of learning through experience and building on their own experiences has positively shaped students' ecological literacy.
- Children in the study are able to identify ecological processes.
- There is a significant difference in the ecological footprint between students from eco-schools and non-ecological schools. The ecological footprint of students in eco-schools was found to be smaller and their responses were more diverse in terms of environmental activities.

Teacher interviews and correlations between results from research on the use of educational packages:

- There are both digital and paper-based tools on a range of topics, catering for all age groups and providing teachers with a rich set of methodological structures.
- 74,6% of the respondents had encountered any kind of environmental education teaching package through self-education, 13,4% through optional training, 11,4% through formal training and 0,6% through other means. Unfortunately, they did not learn about similar opportunities during their studies.
- While 51% of the respondents use or have used such tools in the past, only 3.9% have actively used some kind of environmental education package as part of their work at the time of the survey.
- Among the reasons for not using these tools, 44,2% said they had not heard of them, had no courses or resources to learn about them, and 36,5% found environmental education, despite its mandatory nature, difficult to integrate into their daily lives. 33,6% of the respondents also explained it by the lack of financial resources. 21,9% do not have the time, energy or inclination to deal with environmental education and educational packages in addition to the many lessons, substitutes and curricula. Of those who use or have used an education package, 53,2% do so during day care, 47,7% at the beginning and end of lessons, 46,8% during workshops, 29,3% during theme days and theme weeks, and 1% during forest schools.
- 56,1% use or have used teaching packages in the 5th and 6th grades.
- 98,9% of the respondents perceived the known and used teaching packages as usable. 65,5% had used only some of them, 18,6% considered them very useful, 14,8% moderately useful and 1,2% hardly usable.
- 92,8% of the respondents feel that a training package facilitates their work in environmental education, but they think that their colleagues are not (50,2%) or hardly (43,6%) motivated to try and use any environmental education training package in their work. There were no significant differences in this respect when controlling for age or teacher career model.
- 100% of teachers who use educational packages believe that they can positively shape their students' relationship with the environment and would continue to use them in the future.
- 70,4% say they do not use any experience-based forms of work.

6. Further research possibilities

The environmental education's effectiveness depends on many factors. The patterns, knowledge and attitudes that children bring from home into public education matters. It depends on the personal example and attitude of the teachers, on the modern knowledge, methods and possibilities they use to approach the topics. It is affected by the quality of the institution as a unit, by everyday experience, by the collective attitude, by the importance of sustainability and environmental protection in everyday life. At the organisational level of education, the concept of active learning as a learning activity is an important element in the new NAT (2020), which appears in all natural science subjects and is also a key element in the lower school environmental studies. It also includes the provision of creative applications of knowledge, activity-based forms of work, as well as the possibility of acquiring knowledge in external settings. Experiential lesson planning is also a key element as an expectation. The practical implementation of these could be supported by appropriate training, active involvement in teacher training, and the provision of time to learn the methods. The Green Kindergarten and Eco-School system could continue to provide a solid basis for education in sustainability and environmental protection. Various financial support, resources and tenders could also help to ensure a wider range of experiences, whether through the provision of support materials or the organisation of excursions, forest schools and camps.

A new research area could be to investigate the practical existence of knowledge acquisition and knowledge enhancement through social media, and to explore their use in pedagogical work. The digital knowledge acquisition, the existence of independent, even invisible learning, and their methodological exploration from the point of view of environmental education should open up a new educational platform that is accessible to young generations.

The dissertation objectives were to demonstrate the effects of the existence of experience-based methods through an environmental education package and their relationship with the ecological footprint of sustainability, which is easily understood at the age of the studied age group. To present an environmental education package that supports other practices and activities. Teachers' attitudes to these tools suggest that it would be useful in the future to make them more widely known and to provide more opportunities to learn about them. It would be important to carry out further measurements to examine how children's health behaviour is shaped, and to find out, through long-term follow-up, how their attitudes towards a nature- and environment-friendly lifestyle are changing. More promotion of experiential, experiential

methods of sustainability and environmental education, and more effective use of existing good practices, would be desirable.

The development of teaching aids and the provision of up-to-date and goal-oriented environmental education could be supported by continuous, repeated, representative testing of environmental attitudes, ecological literacy and health behaviour at different ages, and by ongoing participation in international surveys (e.g. PISA). All this could be supported by a series of focus group interviews, interpreting them as a whole, and exploring the links. Experiential, activity-based environmental education could be made more subject-independent for all those involved in education through methodological support, more accessible materials, manuals, trainings and support.

7. Publications

Articles related to the dissertation

1. Krakker Anna (2015): Környezeti nevelés élményalapú módszerekkel. In: *Economica*, Szolnok, pp. 199-207.
2. Krakker Anna (2016): Környezettudatosságra és fenntarthatóságra nevelés élményalapú módszerekkel kisiskolás korban. In: Keresztes, Gábor (szerk.) *Tavaszi Szél 2016 Konferencia = Spring Wind 2016: Konferenciakötet IV. Doktoranduszok Országos Szövetsége (DOSZ) Budapest*, pp. 39-46.
3. Krakker Anna (2017): Élményalapú ismeretszerzés egy oktatócsomag segítségével. In: Keresztes, Gábor (szerk.) *Tavaszi Szél 2017 Konferencia = Spring Wind 2017: Konferenciakötet III. Doktoranduszok Országos Szövetsége (DOSZ), Budapest*, pp. 219-228.
4. Krakker Anna (2018): Környezeti oktatócsomagok szerepe a magyarországi környezeti nevelésben. In: *Módszertani Közlemények*, Szeged, 4. szám pp. 41-51.
5. Krakker Anna (2019): Környezeti nevelési oktatócsomagok Magyarországon. In: Karlovitz, János Tibor; Torgyik, Judit (szerk.) *Szaktudományi és más emberközpontú tanulmányok. International Research Institute, Komárno, Szlovákia*. pp. 44-54.
6. Krakker Anna (2020): Egy környezeti nevelési oktatócsomag és IKT lehetőségei. In: Medovarszki, István (szerk.) *Tantárgy-pedagógiai kaleidoszkóp: 2020 - Tanulmányok a csoportos tanulásszervezés sajátos gyakorlatairól. Magánkiadás , Békéscsaba*, pp. 87-98.
7. Krakker Anna (2020): Egy környezeti nevelési oktatócsomag hatásának vizsgálata kisiskolás korban. In: *Módszertani Közlemények*, Szeged, pp. 35-46.
8. Krakker Anna (2020): Investigation of the effect of a environmental education package at school age. In: *Journal of Applied Technical and Educational Sciences*. 2020/3. pp. 45-59
9. Krakker Anna (2020): Tevékenység alapú környezeti nevelési oktatócsomag hatásvizsgálata kontrollcsoportokkal, területi összehasonlítással In: Karlovitz, János Tibor; Torgyik, Judit (szerk.) *Reflexiók néhány magyarországi pedagógia-releváns kontextusra. International Research Institute, Komárno, Szlovákia*, pp. 91-98.
10. Krakker Anna (2021): Ecological footprint measurement in Hungary. In: *Природничі науки: проекти, дослідження, перспективи = Natural Sciences:Projects, Research, Prospects : Матеріали II Міжнародної науково-практичної конференції*

Старобільськ, Україна, 21-22. XII. 2021 p. = Materials of the 11st International Scientific-Practical Conference Starobilsk, Ukraine (2021) pp. 44-48.

11. Krakker Anna (2021): Egy környezeti nevelési oktatócsomag gyakorlati lehetőségei. In: Medovarszki, István (szerk.) Tantárgy-pedagógiai kaleidoszkóp: 2021 - Pedagógiai, neveléstudományi és szakmódszertani tanulmányok. Magánkiadás, Békéscsaba, pp. 115-126.
12. Krakker Anna (2022): Egy budapesti tankerület ökológiai lábnyomának mérése, illetve eredményének összevetése az országos átlaggal. In: Létünk (Újvidék) 2022: 3. pp. 70-81.
13. Krakker Anna (2022): Környezeti nevelési oktatócsomagok alkalmazási lehetőségei online térben. In: HERA Évkönyvek: A Magyar Nevelés- és Oktatáskutatók Egyesületének Évkönyvsorozata. (2064-6755): Tanuló Társadalom Oktatáskutatás Járvány Idején pp 205-218.

Scientific conference presentations related to the dissertation

1. Krakker Anna: Élményalapú ismeretszerzés egy oktatócsomag segítségével. Tavaszi Szél Konferencia 2017: nemzetközi multidiszciplináris konferencia, 2017
2. Krakker Anna: Környezeti nevelési oktatócsomagok Magyarországon. VII. Neveléstudományi és Szakmódszertani Konferencia, 2019
3. Krakker Anna: Tevékenység alapú környezeti nevelési oktatócsomag hatásvizsgálata kontrollcsoportokkal. VIII. Neveléstudományi és Szakmódszertani Konferencia területei összehasonlítással, 2020
4. Krakker Anna: Környezeti nevelési oktatócsomagok alkalmazási lehetőségei online térben. HuCER, 2021
5. Krakker Anna: Ecological footprint measurement in Hungary. Materials of the 11st International Scientific-Practical Conference Starobilsk, 2021
6. Krakker Anna: Ökológiai lábnyom csökkentő lehetőségek a környezeti nevelésben. XIII. Országos Taní-tani Konferencia, 2022
7. Krakker Anna: Az ökológiai lábnyom mérés új lehetősége. HuCER, 2022

Other Publications

1. Krakker Anna (2019): Gyermektörténeti korszakok kapcsolata a természettel. In: Karlovitz, János Tibor (szerk.) Tanulmányok a tanügy és az oktatástan világából. Neveléstudományi Egyesület, Budapest, pp. 145-156.

2. Krakker Anna (2019): Vonalvezető az online kultúra és társadalom világához. *Korunk (Kolozsvar)* 30: 2 pp. 116-119.
3. Krakker Anna (2020): Magyarországi ökológiai lábnyom mérés a 7-8. osztályos tanulók körében. In: *Tavaszi Szél 2019 Konferencia = Spring Wind 2019: Konferenciakötet III., Doktoranduszok Országos Szövetsége (DOSZ), Budapest*, pp. 375-384.
4. Krakker Anna (2020): Ökológiai lábnyom vizsgálat 12-14 éves korosztály körében. In: *Hideg, Gabriella; Simándi, Szilvia; Virág, Irén (szerk.) Prevenció, intervenció és kompenzáció. Debreceni Egyetemi Kiadó, Debrecen*, pp. 198-211.
5. Krakker Anna (2021): Ökológiai lábnyom vizsgálat Budapest több általános iskolájában. In: *HERA Évkönyvek: A Magyar Nevelés- és Oktatókutatók Egyesületének Évkönyvsorozata. Társadalmi innováció és tanulás a digitális korban. Budapest*, pp. 91-102.

Other conferences

1. Krakker Anna: A környezeti nevelés lehetőségei a Gardner-féle többszörös intelligenciateszt és az IPOO-modell segítségével. *OxIPO Neveléstudományi Konferencia, 2018*
2. Krakker Anna: Gyermektörténeti korszakok kapcsolata a természettel. *Tanügy, Oktatás, Pályakép Konferencia, 2019*
3. Krakker Anna: Magyarországi ökológiai lábnyom mérés 7-8. osztályos tanulók körében. *Tavaszi Szél Konferencia 2019: nemzetközi multidiszciplináris konferencia, 2019*
4. Krakker Anna: Ökológiai lábnyom vizsgálat a 12-14 éves korosztály körében. *HuCER, 2019*
5. Krakker Anna: Ökológiai lábnyom vizsgálat Budapest több általános iskolájában. *HuCER, 2020*