



Plants and Play Promoting Universal Skills

National Adaption Plan

Summary Report – Key findings of Desk & Field Research

(AT, CZ, HU, PL, SK, UK)

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Aim of the Summary Report & National Adaption Plans

Aim of the National Adaption Plan (NAP)

Pappus will explore and bring together an innovative approach through plants and play that develops skills and enthusiasm for the natural world, horticulture and botany in both school practice and informal youth learning settings. This will be reached by the help of two main project results: a toolkit and an online training course. The basis for the development of these products is formed by a National Adaptation Plan.

Research methodology

The University of Gloucestershire is lead partner of the Pappus project and is supported by partner institutions from AT, CZ, HU, PL and SK. The first intellectual outcome (IO1) are National Adaption Plans, which will be informed by diverse sources of information collated by both desk and field-based approaches. Approaches and sources include:

- Initial desk research established an overview and understanding of the following: governmental framework, target groups, challenges and barriers to engagement; typical beneficiaries and effective ways to approach them.
- The desk-based research drove relevant field research carried out in each partner country. A minimum of 10 interviews with a semi-structured questionnaire on a one to one basis or through focus groups discussed the issues and possible implementation of the two products in partner countries.
- Finally, all partner countries will develop National Adaption Plans to specify their respective strategy to reach the aims of the project and discuss them with relevant stakeholders in various Multiplier Events.

Aim of this Summary Report and outlook on final Research Findings

The present summary report is edited as an executive summary of all national reports and provides a brief overview of the results of desk and field research per partner country to date. This is intended to summarise the results in compact form to provide external stakeholders with a rapid overview of the situation in all partner countries. The respective national reports are published so that interested parties can read them in detail. To illustrate the results of our field research more clearly, we publish one user case per country from the interviews conducted at the end of this report.

As a final result of all research activities, the six partners will formulate National Adaption Plans, which should be used as strategy papers for the National Project Implementations. The results of the desk and field research are important in order to adapt the implementation in all partner countries to the existing possibilities and to convince the target groups, beneficiaries and cooperation partners of the added value that the project brings to all those involved.



Summary Report Austria

Key findings of Desk Research

Through the PaPPUS project we want to inspire and motivate teachers, children and young people to learn in, with and from nature. The results of desk research have shown us that experts in the field - but also teachers, students, and parents - are convinced of this added value. However, we must find a way to create space and time for learning in/from nature despite overloaded curricula.

Regarding **Institutional frameworks in Austria** the basic decree "ENVIRONMENTAL EDUCATION FOR SUSTAINABLE DEVELOPMENT" is to be mentioned, which is obligatory for all school levels of all school types. This decree stipulates, among other things, that nature encounters and nature education (in the forest, on the meadow, by the stream, in the city, etc.) must be implemented as a learning process. In this context, the ÖKOLOG programme and network is important, which aims at an ecologically, socially and economically sustainable design of the school environment. There are numerous public and private institutions in Vienna and Lower Austria which pursue similar goals.

The PaPPUS project in Austria focuses on **the target groups** of teachers, pedagogues, social workers and leisure-time pedagogues. During the research for this desk study we realized again how important time out in nature is, especially for children. We have mentioned numerous studies, books, initiatives and projects that emphasize that healthy development of children is closely linked to the experience of nature. Regular encounters with nature and personal experiences of nature also lead to better learning outcomes.

The main beneficiaries of the PaPPUS project in Austria are pupils at primary level (9-10 years) and secondary level (10-14 years). We decided for a regional delimitation for the following reason: Since many studies show that the federal capital Vienna has the most need for action, we are concentrating on the city of Vienna and the neighbouring province of Lower Austria.

Our "hooks", with which we want to convince our target groups and beneficiaries, are based on the following background idea: 1) The demands of our technology burdened world do not even stop at children and therefore it is all the more important to allow them regular time in nature. 2) The topic of "learning to learn" currently plays a major role in the Austrian education system. We will try to connect the topic "learning with, in and about nature" with various other approaches. 3) Throughout Europe, the issue of environmental protection has come to the forefront - not least through the "Fridays for Future" movement. The PaPPUS project can also make a valuable contribution in this respect: children who feel connected to nature will also protect it. 4) Last but not least, we are concerned with giving children an understanding of plants, botany, gardening or healing through plants. "Old knowledge" should become "cool" again and be communicated in a playful way.

Finally, we have collected some **key messages** to support the persuasion of teachers, e.g. ("**How to become heroes as a pedagogue...**") and pupils e.g. ("**Life begins outside!**").

Experts agree that children learn primarily through "experience". As Gerald Hüther emphasizes, it is not the acquisition of knowledge about nature that is central, but the experience in and with nature that is made on one's own body. Therefore, it is an important input for teachers, recreational pedagogues and parents to perceive nature again as a place of learning, play and relaxation and to make this "free space nature" accessible to children as often as possible. Please refer to our desk research report for all sources and references.

Please refer to the report 'Pappus Desk Research AT' for more information.



Key findings of Field Research

Field research in Austria is based on the desk research we have conducted earlier for the Pappus project. All participating persons were informed about the results of the desk research and we started the interviews based on the findings it provided. We conducted **a total of 10 one-on-one interviews with students, a mountain guide, afternoon supervisors, pedagogues, and a vegetable grower**, asking them to report on their own experiences and to describe what activities they propose for our project.

Hooks and key messages, that would attract interviewees themselves – after an internal brainstorming session, we divided the recommendations into several topic areas:

- A) Present nature as an adventure to make children and young people familiar with it, e.g. "We need caregiver who goes out with children and invents "little adventures in nature."
- B) The healing effect - on a physical and psychological level - that we can experience through nature: "Picking herbs for tea and talking about which diseases can be cured with them"
- C) Nature teaches us to relax: "Using the power of nature to find peace and stillness."
- D) Recommendations for parents of teenagers: "Invent adventure trails and go in search of clues."
- E) Recommendations for pedagogues, afternoon supervisors and parents: "Do not put the curriculum above the much-needed leisure time in nature."

Hooks and key messages to attract children and young persons: In this summary we choose some examples: "Prepare magic tea with herbs"; "Make a pumpkin explode evenly"; "Cress experiment with cotton wool: Create a video documentary"; "Mushroom, berry and herb hunt with open fire cooking class"; "More adult stress? Join in the outdoor chilling! "; "Enough learning for today: We're going out!"; "If you learn a lot, you need a lot of air... German lesson today in the park"; "What's in a sprout, anyway?"

Good practice identified by interviewees: The participants we interviewed in the area of Vienna and Lower Austria seemed well informed about the local offers. As we have already described good project, initiatives and providers in detail in the desk research, we invite you to refer to it for more information.

When we asked our participants regarding **the Toolkit content** which would assist their work, they came up with lots of ideas. We can summarize them as follows:

- 1) Wishes from our interviewees concerning the topics 'information about new offers', 'networking' and 'further education & training in the field', e.g. "Where can I get information about nature education training?"; "I spend a lot of time researching new offers on the Internet. It would be great if there was some kind of meta-database that summarizes all offers"; "I wish that we could exchange information better across schools".
- 2) Thematic areas about which our participants would like to learn more: "Picking mushrooms - What do I have to pay attention to?"; "Herbology - What do medicinal herbs do?"; "Sowing plants, but when is the right time?"; "Man and nature: making the manifold interactions visible".

The Pappus training should provide our interviewees with themes from "Develop new ideas to arouse children's curiosity about nature" to "Mindfulness training to teach children how important it is to build something with their hands, to perceive smells consciously and to discover materials, plants and animals in a completely new way." So, it is about high expectations that should cover many different areas.

Please refer to the report 'Pappus Field Research AT' for more information.



Summary Report Czech Republic

Key findings of Desk Research

According to our desk research findings we plan to extend the way of gathering competences, knowledge, and outcomes of education, and develop competences specified in school curricula for primary and secondary schools. Project outcomes (an innovative approach through plants and play) will help to develop competences, skills and enthusiasm for the natural world, horticulture and botany in school practice.

With regard to **Institutional frameworks Czech Republic** the main authority for education in the Czech Republic is the Ministry of Education, Youth, and Sports. In the project we will work with the formal educational sector: Primary and secondary schools providing afterschool care for students age 6-15 years. We will also approach the informal sector (NGOs): Organizations and association dealing with children's play, nature, innovative approaches to learning, supporting curricula. The main authorities in this context are the Ministry of the Environment of the Czech Republic, Ministry of Agriculture in cooperation with the Ministry of Education, Youth, and Sports.

In the PaPPUS project we focus on **the target groups** of primary education teacher (teachers from 1st to 5th class) and biology or natural science teachers of 6th to 9th grade), working with children from age (6)10 to 15 years. Alongside these teachers we will work with leisure time educators, biologists and environmentalists dealing with education.

The main beneficiaries of the PaPPUS project are students from 10 to 15 years old (Classes 6-9). But connected with beneficiaries from project CAPS, we would like to deal as well with children in 1st to 5th grade of primary school (aged 6-10). One advantage is, that teachers in primary education are more free to structure school time and implement learning/playing outside. These younger children are also the main users of afterschool clubs.

Our "hooks", with which we want to convince our target groups and beneficiaries, are (some examples): "Learning & Teaching outdoor"; "Free play"; "Planting trees"; "Spider web"; "Picking mushrooms";

One interesting app is "BioLog": The application enables users to locate and describe observations of species directly in the field, to add a photo and to save everything on the mobile device. Then the "story" can be send to the database of species occurrence managed by the Agency for Nature Conservation and Landscape Protection of the Czech Republic, or exported for own use (AOPK - agentura ochrany přírody a krajiny).

Here are some **key messages** we collected: "Research findings support effectiveness of learning outside"; "Being outside is healthy"; "Learning outdoor is fun, adventure and cool"; "Learning outside helps to concentrate and gather knowledge faster"; "Taking care about nature and saving the world is sexy";

Experts in CZ agree on the **benefits of teaching and learning in nature**. There is plenty of research done in the fields of working in nature, with plants or animals. There is a "go back to nature" movement and environmental protection requirements increase significantly. We provide many sources and references in our desk research report.

Please refer to the report 'Pappus Desk Research CZ' for more information.



Key findings of Field Research

Our field research is based on findings from desk research. Following the agreed methodology, we used semi structured interviews (and one focus group session) with 11 participants. Our investigation is limited to our region at School- and NGO sector, but nationally connected with the leading platform on outdoor teaching “UČÍME SE VENKU” (LEARNING/TEACHING OUTDOOR): www.ucimesevenku.cz

The **selection of interviewees** was done with big emphasis on selected areas of PAPPUS implementation. We picked our participants from school environment (2 school’s directors; primary education teacher; secondary school biology teacher, and secondary school teacher – environmental coordinator plus afternoon school club educator), NGO’s sector (leader of outdoor education organization and platform; ZOO director; Environmental ecological organization Sluňákov director; NGO’s therapist) and 3 students of bachelor educational field participated in the focus group.

We summarize here the most important findings from the interviews:

Hooks and key messages we gathered are as diverse as the interviewees themselves. Younger participants, for example, appreciate the combination of experiencing nature and technology (e.g. taking photos & movies in nature, using apps to prepare stories, etc.). Teachers usually have their curriculum in mind and consider how best to incorporate the experience of nature. Here we quote an example that particularly appealed to us and fits very well with the aims of the Pappus project: “We want as many teachers as possible to lead children in their day-to-day lessons to create a nature-friendly society, and as many parents as possible to rediscover the magic of games in nature and to spend more time with their children outside.”

Hooks and key messages to attract children and young persons: Some interviewees stressed that children do not need motivation because it is enough to go out and give them space. Others emphasized the physical aspect and the direct experience of nature: “It must be physical - staying outside (cold, warm, rain). That is the most important thing. It does not matter what you tell them, but they are in nature without a PC. It is necessary to get children to talk to each other, to think and to make mistakes. It is a process of adventure.”

Good practice identified by interviewees: Desk and field research in the Czech Republic showed already existing platforms and organizations dealing with topic of outdoor learning/teaching. These activities -mostly connected to environmental topics, experiential pedagogy and inquiry-based learning – are known by interviewees. The important role of our PAPPUS project is it to bring in a new point of view and to extend the topic.

When we asked about **the Toolkit content** which would assist their work, the interviewees would like to receive information concerning their particular field of activity: Starting with organizational information (“How do I plan learning outdoors?”), questions about how the activities could be linked to the curriculum, and safety issues (“What should an afternoon supervisor bear in mind when undertaking outdoor activities?”). They also asked for tips, methodology, didactics and materials for subjects connected with plants and play. Most of the interviewees would like to get online information on courses and offers and ask for professional quality reviews of proposed activities.

Our interviewees are interested in **the Pappus training**, but in different ways. On school level they would prefer a combination of online learning and face-to-face units. The interviewees are willing to include weekends as well as participating in the online course.

We are happy that we were able to arouse interest in the Pappus project and have already received so much positive feedback in the course of the surveys.

Please refer to the report ‘Pappus Field Research CZ’ for more information.



Summary Report Hungary

Key findings of Desk Research

We believe that the formal educational sector in Hungary is a good ground for the PAPPUS project. At this point we imagine this project very much to start from forming the attitude of the teachers and through the teachers the attitude of the students. We would concentrate on reintroducing plants and nature to education through everyday activities like planting, watering plants, watching and touching nature, using our fantasy to reconnect with the natural world.

Regarding the **Institutional framework in Hungary** it is to be emphasized that most of the public schools are run by the centralized system KK (Kétszemes Központ). The Hungarian National Core Curriculum provides National Curriculum Framework, which covers almost every part of education and schools have only 10% in the local curriculum where they have the autonomy to manage the timeframe of compulsory and optional subjects and activities. Our choice for PAPPUS is the formal sector, especially the traditional schools. The reason for this is that alternative/private schools, as well as the informal sector is generally more open to innovative educational methods, and therefore they do already promote our key messages.

The PaPAPPUS project focuses on **the target groups** of a) Headmasters: They are key persons especially when it comes to implementation and b) Head teachers, who can introduce the positive attitude to nature and plants using the time spent with their personal and social education classes where any kind of topics can arise; c) Teachers of elementary and secondary schools of any subjects and d) Teachers of biology and nature, who can go deeper into certain topics using their own knowledge and incorporating playful connection to plants and nature.

As main beneficiaries of the PaPAPPUS project we chose students between the age of 12 and 18. We chose this age group because in lower classes children are still closer to nature. At higher classes (from ages above 12) nature sciences are usually divided to specific subjects, namely: physics, biology, geography and chemistry. At this point both teachers and students tend to lose close contact with nature and academic progress becomes a priority. We concentrate on pupils living in areas less access to nature but who already have basic knowledge of the natural world & biology.

The "hooks", with which we want to convince our target groups and beneficiaries, are e.g. "School gardens are interactive educational spaces"; "Part of Steiner schools' curriculum is Gardening". There is a labelling system in Hungary called "Eco Schools", managed by the Ministry of Human Resources and the Ministry of Agriculture. This label is quite well-known and valued.

Finally, we have collected some **key messages** for teachers, like "Exposure to natural environment reduces behavioural problems" and "Caring for plants can lead to positive emotional and social change". We want to attract youngsters with these messages: "You learn while being outside of the classroom!", "Taste the result of your work!" or "You learn by not even realizing you are learning!".

Experts opinion: Mustapa and Co. has conducted an extensive literature review of studies from the mid 1990s to 2013 on the topic of the benefits of nature to children's developmental needs. They identified five different domains that are mentioned multiple times in the scientific community with regards to the benefits of nature for children. These domains are cognitive development, physical, social, emotional and spiritual. They list a wealth of evidences for all five domains.

Please refer to the report 'Pappus Desk Research HU' for the list of literature and more information.



Key findings of Field Research

After an introduction to the PaPPUS project and a brief introduction to Rogers Foundation when needed, we invited our interviewees to a short voyage to their childhood. They remembered and relived their relation to nature and plants and we were just listening and let them talk for a couple of minutes. The interviewees themselves and we as listeners found that **connection to nature in the very early childhood was the main point that almost all the persons we asked**, mentioned in the first place. All of them had the possibility to play in nature and among plants in their childhood even those who lived in the town have memories of climbing trees in the parks or blowing pappus found among the grass. In total we reached 11 persons for whom we held 4 meetings: 3 online and one personal meeting as well as 2 online interviews.

Since two of our interviewees were active landscape designers who are busy with harmonizing nature and built environment in town, we had the opportunity to talk more thoroughly about the environmental side. May it be man-made or a natural setting or a combination of the two. With our playful approach and our firm belief in free play we tried to find activities that are not only playful but are actually played inside nature, done with strong connection with plants in a way that the plants are not so much subjects, but rather substantial parts of the child's activity.

Hooks and key messages in order to reach the above mentioned aims are the following: "We have to provide opportunity to be in nature and among plants – with particular regard to the environment that surrounds us every day"; "One of the most important things is to have an authentic and heartfelt relation to nature – as our attitude is transferred to the students no matter if we want it or not"; "The chance for free exploration is crucial. Let the children watch the plants. Do not teach every moment it's not necessary that they know every scientific detail of a certain plant. Maybe it is enough to admire it"; "It is advantageous if children can follow whole processes so that they have a picture how a plant is formed until it eventually consumed – in the case of eatable plants";

The hooks which attracted the interviewees themselves in their childhood are presumably similar to the **hooks that attract children and young people** nowadays. However, the world has changed in the last few decades and we have to be aware of that new (technical) attractions. Here are the ones still working following the experience of horticulture teachers: "Every kind of physical contact with nature is valuable"; "Kids like touching, using their senses. They are grateful if we use much humour when offering activities for them"; "Let them do creative activities with plants. Preparing artistic works is a good idea".

Good practice identified by interviewees were already listed in the Desk Research and most of our interviewees are familiar with these projects and initiatives, like "Zöld Zugoly program at a Hungarian Art festival", "Bees for school programm" or the "participation walk" from the Ecosychology Institute in Hungary.

Some hints for **the Toolkit content** we collected: "We can make seed ribbon (several type of seeds are glued on a ribbon) and plant it into the soil"; "In wintertime we can go in the woods trying to identify plants from the branches and tigs that remains bold during the winter"; "Collect fiber-plants like cotton, flax, hemp, jute... of which it is possible to make a net or even sandals"; "We can collect interesting plant names that have other meanings as well, or draw attention for the origin of the name (it very often comes from what the used the plant for)".

The Pappus training: All our interviewees would be happy to participate in a training. Most of them could travel abroad for a couple of days. We also asked if an online training would be a good idea, but they usually think that this kind of activities should be done in person and that outdoor training activities can be included.

Please refer to the report 'Pappus Field Research HU' for more information.



Summary Report Poland

Key findings of Desk Research

The greatest challenge in Poland is the fact, that teachers have a lot of work to do with the extensive core curriculum. The programme for schools is very overloaded and does not offer too many spaces for innovation, because it is focused on memorizing facts and drilling maths and language skills.

Institutional frameworks: The Department of Social Development is an institution responsible for public schools in Gdańsk. They are responsible for psychological-educational counselling and educational institutions, such as primary schools, secondary schools, and sports championship schools. We would like to focus upon basic subjects connected with nature from official curriculum for Geography, Biology, Chemistry but also Maths and Polish. Informal sector: The natural cooperation with an NGO would be for us the Polish Academy of Kids (PAK), where children and scientists work together. Cooperation with higher education institutions and the Board of Trustees (Superintendence) may be crucial for the integration of the materials prepared in the PAPPUS project into the curriculum.

The PaPPUS project in Poland focuses on **the target groups** of biology teachers from primary schools in Gdańsk, working with children from 9 to 14 years old (classes 4-8 in Poland). The experience we have gained while working with teachers showed, that there are many of them open to change and innovation. They are open to new approaches and see the need for changes in our education system.

The main beneficiaries of the PaPPUS project in Poland are students aged 9-14 (Classes 4-8 in Polish school system). But considering the great interest in innovative projects among teachers from grades 1-3 (children aged 7-9), it is also possible to invite them to cooperate and use elements of the course to work with younger children. The second idea is to organize additional activities within special-interest clubs, which can be organised by trained teachers after school classes.

Some example of "hooks", with which we want to convince our target groups and beneficiaries: "Every form of greenery determines the existence of many organisms, and offers man the necessary contact with the environment"; "The idea of the Reserve for wild children derives from the definition of play as the free action of children"; "The Sensory Garden is an open-air therapeutic room, which can be divided into the following zones: taste, touch, smell, hearing and sight, where thematic divisions are introduced".

Finally, we have collected some **key messages** for teachers: "Low Childhood Nature Exposure is Associated with Worse Mental Health in Adulthood"; "20 min walk everyday lowers level of cortisol"; "Time spent outside is beneficial for all age groups". We want to attract students by these messages: "Time spent outside helps you with test results"; "Playing in nature improves social skills"; "Free play is crucial for self-regulation".

Experts know about the importance to be connected to nature. The Movement in Nature project is one interesting example, which aims to draw special attention of adults to the importance of the environment as the first and most important place for education and full psychophysical development of children.

In the last chapter of our desk research we have collected some white papers on interesting initiatives and projects and compiled a list of further literature. Please refer to the report 'Pappus Desk Research PL' for more information.



Key findings of Field Research

Our field research in Poland is based on the desk research we have conducted earlier for the Pappus project. All participating persons were informed about the results of the desk research and we started the interviews based on the findings it provided. We conducted **a total of 12 interviews with 9 teachers, 1 headmistress, 2 authors and 1 methodologist.**

All interviewees were keen on going into nature. Most of the teachers mentioned using natural materials as tools (stones, branches, seashells, leaves...) during their lessons. Many of them are familiar with the technique of free play and the pedagogical background of playing. The general focus of the group of interviewees was laid on the advantages and benefits from contact with nature, like getting in a state of mindfulness, stimulate creativity or animate others to discover nature.

Hooks and key messages, that would attract interviewees themselves: “Become aware of the physical and psychological benefits of contact with nature”; “Discover the variety of materials, possibilities, and methods nature offers”; “Create opportunities to play in nature”; “Find a way to run classes according to national curriculum in nature”.

Hooks and key messages to attract children and young persons: “It's time to rest from desk”; “Find freedom outside the classroom”; “Enjoy beauty and inspiration of nature”; “Be creative by using natural materials” or “Learning is easy when you have been outside before”.

Good practice identified by interviewees: “Always look up at the sky and describe the clouds. What do they depict? Exercise your creativity and become aware of different perceptions of the world”; “Kids are mirroring our behaviour – if I'm enjoying a trip, they will enjoy it too”; “Every year, we perform with the students of class 6 a series of lessons called "art in public space": Students transform the area around the school by creating sculptures, installations, movable objects, make murals, build monuments, dress trees, paint pavements, hang decorative elements in the form of nets, etc. All this is documented by photographs and then left untouched until time and weather transform our activities.”

With regard to the toolkit, the interviewees 1) would like to receive suggestions on how to make optimal use of materials from nature. 2) A variety of possibilities for those who want to be inspired and those who are focused on the curriculum but still want to get in touch with nature. 3) An introduction to the benefits (physical, intellectual, and psychological), both for students and teachers. 4) Suggestions for free play in nature.

The Pappus training: Some of the respondents are open to participate in the training, but they claimed, that it would have to take place during working hours and organized in a way that teachers could leave their schools for a few hours a day. Such a model would work well for teachers but for logistical reasons it may also be difficult to organise in Gdansk. The second option is a training that would take place at weekends, on a day off - some people would be interested in taking part in it. Finally, it all depends on the motivation and determination of the person.

Specific attention should be drawn to the legal aspects of going out into nature and the associated regulations, which often discourage teachers from leaving classes.

Please refer to the report ‘Pappus Field Research PL’ for more information.



Summary Report Slovakia

Key findings of Desk Research

Desk Research in Slovakia shows that the biggest need for the project is in the formal sector. During – and in most cases - also after school hours children spend only little time outdoors. The connection with nature is missing. The programmes offered by the informal sector are facultative, so it only reaches children who – or whose parents - are willing to spend time outdoors.

Institutional frameworks: In Slovakia there is a two-level model of education, which is divided into the State educational programme (SEP) and the School educational programme (SchEP), both based on the Education Act no. 245/2008 Coll. on education and training. This act defines the current valid standard for kindergarten, primary and secondary schools in Slovakia. The National Educational Program (SEP) defines the general objectives, key skills (competencies) of pupils, the framework content of education, as well as the frame model of the graduate, the framework training curriculum and the framework training schemes. However, the law provides schools with the opportunity to be profiled with the School Education Program (SEP), which is the first level of a participatory school management model, considering specific local and regional conditions and needs, e.g. one important educational area is “Man and Nature”, which is interesting for the project.

The PaPPUS project in Slovakia focuses on **the target groups** of teachers in formal education. Our primary target group are teachers in lower secondary level (for students from the ages of 11 to 16 but in terms of efficiency, it may be worth including primary schools as well and to cover age 6 to 16).

The main beneficiaries: Our primary target group are lower secondary students (children from the ages of 11 to 16) but in terms of efficiency, it may be worth extending the project to the whole primary school (6-16 years). So, our secondary target group are the primary students (6-10 years).

Our "hooks", with which we want to convince our target groups and beneficiaries (some examples): “Developing moral behaviour, physical and mental abilities in the spirit of scouting”; “Alternative methods for teachers and students by emphasizing the importance of game”; “Green School, which is an environmental education program”; “

Finally, we have collected some **key messages** for teachers: “Playing in nature plays a key role in the development of pro-environmental behaviour”; “Nature also appears to provide a calmer, quieter, safer, warmer and more cooperative context for learning”. Key messages for students are: “You will feel calmer and more relieved”; “You can find secrets and discover interesting connections”.

In Slovakia, many teachers complain about having to deal with a high number of students suffering from attention deficit, lack of concentration and lack of motivation. In our view, the project makes an important contribution to changing teachers' views and improving the students' situation.

Many experts agree on the fact that nature may promote learning by improving learners' attention, levels of stress, self-discipline, interest and enjoyment in learning, and physical activity and fitness, which means that spending time in nature is both mentally and physically valuable for students.

Please refer to the report ‘Pappus Desk Research SK’ for more information.

Key findings of Field Research



We conducted the field research based on the findings of the desk research and by using semi-structured **interviews with 10 people**. It was important to us to find interviewees with different connections to nature, following various professions, in order to get a clearer picture of the actual Slovakian situation and about the possibilities of the further adaptation of the project. We picked our interviewees from different parts of the country. Interviewing pedagogues and educators from the formal sector as well as professionals from the informal sector proved to be worthwhile. It has been ascertained that despite of the huge amount of the projects already offered concerning nature there is still need for **the Pappus project because it is unique by offering a toolkit and an online training course** on the topic.

Hooks and key messages to attract children and young persons: **“Spending time outside is an adventure”**: In today’s world, children are exposed to a lot of stimuli. We have to show them, that the nature is full of adventures. **“Teach each other, help each other without a teacher”**: The opinion of their age group and the feedback of their peers are important for young people, especially for teenagers. The opinion of the others is not only important but can be easier acceptable for them too. That is the reason why they dare to ask questions much more from each other. **“Connect the virtual word and the nature”**: We have to face the fact that today’s young people cling to their smartphones and smart devices. But we can use these devices as a tool to connect them with nature. **“The nature is full of mystery, lets discover it!”**: Teenagers like mystery and secrets. It could be a great hook to motivate them! According to the interviews, **we have found one, let’s say a ‘hidden’ hook**, which is **the commitment of the teacher**. If the teacher is fully identified with the topic and is self-motivated, this will be transferred to the students and they will be enthusiastic about the topic themselves.

Good practice identified by interviewees: 1) “The importance of the experiential learning: Tell me and I will forget, show me and I may remember; involve me and I will understand.” 2) “The best way to motivate a child is to praise the child.” 3) “We are part of the nature, that’s why we have to find our roots again!” 4) “If we want teenagers to listen, we have to make what we say “sexy”. All interviewees agreed that **the main goal of being in nature** is its positive effect on our mental and physical health. We described more good practice examples in detail in our report.

We have created a kind of wish list for **the Pappus Toolkit** with the respondents and summarize the most important results here: 1) Teachers feel overloaded, but, with a well-prepared toolkit content we can catch them. 2) What can be really useful for teachers is the preparation of material, they can easily apply during their lessons. 3) One participants suggested to imagine toolkit, as a description of a game: He proposed to create the toolkit in the form of a game manual, e.g. for what age, how many players can participate, what are the rules and how long does the game last.

Pappus training: Some of the interviewees were open to participate in the training. However, they emphasized that their participation in training depends on the duration and location of the training, because it is hard to find the time for it. Regarding the content of the training the interviewees mainly mentioned these fields of knowledge: How to collect mushrooms; how to plant plants, herbs, spices; how these plants and herbs can be used, and what for; how to organize an eco-camp and how to learn more about the protection of nature.

To motivate students is very important to show them the benefits of being outside, not verbally, but rather by experience.

Please refer to the report ‘Pappus Field Research SK’ for more information.



Summary Report United Kingdom

Key findings of Desk Research

The environmental sector in England, and the outdoor learning sector are closely aligned and have a long history of working together to drive environmental education in schools. Consequently, there are many organisations and initiatives providing information to schools, and we must ensure Pappus doesn't replicate these, but instead adds value and brings new and unique approaches for schools.

Institutional framework in England: The Department for Education (DFE) is a national government department with responsibility for formal education in English schools. It devises the National Curriculum (NC) which is followed by state schools between Year One (rising 6) and Year 11 (rising 16); it also publishes the Early Years Foundation Stage (EYFS) framework, which all Ofsted registered pre-school providers (children aged between birth and rising 5) are required to follow. Ofsted is the government body that inspects state funded English schools and will introduce a new inspection framework in September 2020, and this presents opportunities for Pappus, as schools will be reviewing their work in the context of the new framework.

The target audience in England, for the materials generated by PAPPUS is made up of the adults who teach or facilitate formal or informal learning, and out-of-school play or recreational activities, and we view these as our main stakeholders: a) Teachers and teaching assistants (TAs) delivering the English national curriculum, in mainstream schools; b) Support staff in schools with responsibility for emotional wellbeing, special educational needs and disabilities (SEND) and children in receipt of Pupil Premium (PP); c) Adults working with children in Alternative Provision (AP), Pupil Referral Units (PRUs) and Special Schools.

The ultimate beneficiaries of this project, in England, are children and young people engaged in formal and informal learning and accessing play programmes. In particular, our focus is on children and young people aged between 9 and 13, as this can be a period during which children become disengaged from mainstream formal education: a) Children aged 9-11 are in the Primary phase, in Years 5 and 6; b) Children aged 11-13 are in the Secondary phase, in Years 7 and 8. Learning outside in England becomes less of a priority as children move through the age groups.

Given that our target group and beneficiaries comprise a broad spectrum, **the hooks will be different for each group**, and we will research and focus our material more specifically as Pappus progresses. In our desk research we offered a brief snapshot into some of the programmes and approaches school and out-of-school providers are already familiar with, e.g. "Wildlife Trust: 30 Days Wild Challenge".

Finally, we collected first **key messages**, which will become clearer and more purposeful as work in our focus groups and conversations with participants continues: "Pappus is primarily an outdoor programme and lends itself to the acknowledged need to get children more active and connected to the natural world"; "Pappus will offer you an opportunity to engage with environmental and conservation issues in a practical and enjoyable way".

A multitude of studies and evidence demonstrate the positive benefits of the natural world on children's mental health and wellbeing. However, teachers tell us that it is often too difficult to find the time in a busy school day to take the children outside more regularly, unless this is related to a specific learning outcome. So, we have focussed on evidence linked to the academic attainment of children, to support our aim to make a compelling case that children should learn outside much more regularly, and not just as part of special 'one off' projects or specific subjects.

Please refer to the report 'Pappus Desk Research UK' for more information.



Key findings of Field Research

Field research in England is based on the desk research we have conducted earlier for the Pappus project. We conducted **a total of 17 interviews with various institutions**, like the Royal Horticultural Society – RHS, SEND outdoor learning, Playwork Foundation and Primary and Secondary Schools. We summarize here the most important findings from the interviews:

Hooks and key messages, that would attract interviewees themselves: “The hooks would need to address the concerns of teachers who may feel that there is too much curriculum pressure to spend time outside regularly for core subjects. Specifically, apprehension as to how to manage this in the school day and the impact on resources needed, medium term planning, workload, tracking and recording evidence of learning outcomes.” “Practical curriculum linked tasks that also offers physical development”; “Mindfulness is another important hook for teachers.”

Hooks and key messages to attract children and young persons: “Young people’s interest in global issues of climate change and conservation are good hooks”; “For young people, they need freedom, chance to explore, they are keen on environmental issues- saving the planet and understanding it. Other hooks include food- cooking and growing”; “Challenges to children over the weekend to find something that the Head did not know what it was – special prize given. Good motivator!”; “The abstract theories students are being taught can give them a better learning experience if we can embellish it with examples of real practical application, stories, fact, studies from the plant world.”

Good practice identified by interviewees: “There are many examples of good practice with ‘project’ based activities, ‘out of school learning’, sensory gardens and food growing, but fewer ideas about ‘everyday’ core curriculum tasks for outside.”

“Pappus would need to show case areas of the curriculum where outdoor learning is successful, and these need to be highlighted, shown as very practical examples, with easy preparation and logistics, straightforward evidencing and assessment. Show a progression of activities that are not daunting for a teacher who lacks confidence.”

Inputs for the Pappus Toolkit:

- Few teachers or TAs have a specialisation in botany or plant sciences; resources need to be easy to understand, deliver and incorporate into lessons.
- Digital and online resources will be used more than books and paper handouts, but use of tech for this project by the children should be minimal.
- For schools, a close connection to the curriculum subjects is most desirable, but health and wellbeing are also of increasing importance.

The following suggestions and wishes were put forward for the Pappus Training:

- Targeting teaching assistants rather than teachers might be preferable.
- Obstacles to learning outdoors must be addressed as part of Pappus, e.g. teachers’ ‘fears’ about taking children outdoors for learning, need to be tackled head on, and solutions offered.
- If Pappus requires significant additional time to deliver, it is unlikely to be sustainable.
- Some interviewees believed extra-curricular projects would be most valuable.
- Releasing staff for training is expensive (needing supply cover) and therefore the total cost needs to be considered, not just a ‘fee’ for the training event / course itself.

Please refer to the report ‘Pappus Field Research UK’ for more information.



Sample User Cases

In the Pappus project partners from Austria, Czech Republic, Hungary, Poland, Slovakia and United Kingdom (coordinating institution), conducted **more than 60 interviews in the course of the field research**. These were partly organised in person, by telephone or other communication tools. In some countries focus groups with several participants were organized.

We have already **summarized the key findings per country above** to give you a quick overview. If you would like to read further into the topic, please refer to the complete reports of the individual partners. To make the goals of the Pappus project more tangible and to share with you how the interviewees reacted to them, **we present individual user cases** on the following pages. We would like to emphasize that the selection of the user cases was made subjectively, and the respective examples are not representative for a whole country.

Despite all the differences that may exist in the participating countries, the studies have shown that **teachers in all countries are very challenged by the need to adhere to the respective curricula** - especially at secondary level - and it is therefore difficult to devote themselves to new projects. In terms of content, almost all teachers have agreed that a combination of nature and learning is desirable, that students (as well as teachers) should spend more time outside, and that the study of plants in general is very valuable for experiencing and imparting knowledge in many subjects. Nevertheless, it is to be accepted that teachers in public schools have much less freedom than in some alternative school forms, e.g. Waldorf schools, where learning in and with nature is already a fixed part of the curriculum. A number of examples were given which show that even in public schools there is a rethinking process and a gradual attempt is being made to allow more freedom for teachers and students.

In any case, **we recognized the importance of structuring the project results very well**, preparing all learning materials transparently and designing the training units efficiently to make it as easy as possible for the teachers to participate in the project.

When **selecting the user cases**, we have deliberately chosen those interviewees who are not directly involved in the public-school system, thus having more freedom and can thereby bring in other points of view. The examples should serve as **inspiration for others and motivate them** to be part of the Pappus community. We look forward to the successful implementation in many schools in the participating countries!



1. User Case “Vegetable Grower” (AT)

Sociodemographic data

- Gender: male
- Age group: 19 - 35 years old
- Role: Vegetable cultivation
- Other criteria: New ways of communicating nature

Description of situation

Fabian (pseudonym) completed his studies at the University of Natural Resources and Applied Life Sciences and decided against a classical career in this area. He talks about the fact that road construction and house building seal so much soil that the natural balance is thrown off course. This has concrete effects on the heat radiation, the quality of the soil as well as on the water quality. Another issue that he is very concerned about is the spraying agents used in agriculture, which enter our food chains directly and cause great damage to the soil. Fabian deliberately chooses a different path: he currently cultivates a large field in his hometown and specialises in vegetable cultivation. His aim is to start small, which means that for the time being he will only be working a field that he can cultivate by hand. Fabian pays great attention to a natural and local cycle, which starts with the selected seeds and ends with the supply of farm shops in the vicinity.

Objective: This is important to me

Fabian tells us that the knowledge of nature is an important concern for him: "Pay attention to your surroundings, because everything you know you treat with more appreciation". Recently he invited the children and teachers at the local school to a workshop on the topic "What do I eat?" to share his experiences with them. For Fabian, it is important not to lecture, but to let the children make their own experiences. He mentions a quote that could come from Gerhard Hüther: "You remember only about 5% of the things you hear, the rest of the learning takes place through experience." Fabian criticises that in our school system too much emphasis is placed on formal learning and that active learning is not given enough attention. Because real learning can only take place through the combination of ratio and emotion. When he does workshops for children, he wants them to experience nature "up close and personal": kids can cut up a carrot and pick to pieces a sprout in order to experience haptically how the vegetables feel. Kids experience what the plants need to grow and how they taste.

Methods & Instruments to achieve these goals

- Appreciation for each other and for nature (this is closely linked)
- Making nature tangible and experienceable for children
- To make feelings of happiness tangible through experiences of nature, e.g. by working in the field or garden, actively experiencing and appreciating nature with all its wonders
- Not teaching but living the connection with nature with all its consequences and letting others share in it
- The best method is to be in nature, observe it and learn from it

Hooks:

- "Are my carrots ripe for the picking? Let's have a look"
- "What's in a sprout, anyway?"



2. User Case “Natural Philosopher” (CZ)

Sociodemographic data

- Gender: male
- Age group: 50+ years old
- Role: Director of an NGO Environmental organization
- Other criteria: Natural philosopher, enthusiastic for spreading awareness of nature

Description of situation

As an urban child, he spent his entire vacation with his grandmother in the countryside and did not want to return to the city. And here, according to him, it all started. He studied ecology and has a doctorate in sociology and environmental political science. He worked as an ecologist in an agrochemical company, then as an official in the environmental department, but that did not fulfil him. He started with environmental education, but did not want to go to schools, to their classes. And so, he established his own garden in the middle of the city. In 2007, thanks to his enthusiasm, he managed to build a unique Ecological Activities Centre. This centre runs several courses for children and adults. Experience is always the first priority.

Objective: This is important to me

He is not primarily concerned with nature, but mainly with man and his experience in connection with nature. "Nothing against the wilderness, but you would rather stop at a chapel or obelisk beautifully integrated into nature. Baroque nature humanizes man. It is a concept of natural philosophy and psychology in the context of nature through experience."

Methods & Instruments to achieve these goals

- Children do not lack biological education but rarely go out. It is necessary to bring nature closer to children so that they perceive that it is important for them, and this only goes through experience.
- It must be physical - staying outside (cold, warm, rain). That is the most important thing.
- It doesn't even matter what you tell them, but that children are in nature without a PC.
- It is necessary to get children to talk to each other, to think and to make a mistake. It is a process of adventure. If something is wrong then lead the child to understand how good it is, but let it figure it out on its own.

Hooks:

- Finding adventure, change and freedom in nature motivates children.
- There is no need to say what to do, just let them find a stick and run with it.
- Invite children to nature and leave them as much freedom as possible. They will learn.
- The role of the teacher is important: Kids have to feel, that he/she has fun too.
- Parents' role is of course important: They should be in nature with their kids whenever possible.



3. User Case “The multifaceted Agronomist” (HU)

Sociodemographic data

- Gender: female
- Age group: 19 - 35 years old
- Role: Multifaceted Agronomist
- Other criteria: and owner of their family ranch, teaching horticulture in a school

Description of situation

Rosa (pseudonym) and her husband have their own family farm in South Hungary that they run according to permaculture. This has three main principles: protect men, protect nature, protect human relations. She has a different history than most of our interviewee. She told that she had grown up in an environment where she hardly had the opportunity to play and she still feels the drawbacks of this childhood. She raises her children in freedom and in close contact with nature.

Rosa gives horticulture lessons in a Waldorf school in their vicinity. She claims that 1,5 hours for such a lesson is too short (this was mentioned by the other horticulture teacher as well). After all, she states, that it is easy to find a lot of interesting activities.

Objective: This is important to me

- **Observation** – this is very important and can be done almost anywhere. What kind of flowers are blossoming, how they look like, what kind of differences we can find on the level of species? Structures of flowers, etc. These kinds of observations are usually good activities for the older students as well.
- **Here and now** – to be where we are. Getting out of the virtual world and arriving at the present moment.
- **“The enthusiasm of the teacher** is an essential thing. This is the most important thing, what is actually transferred to the students and leaves a lasting impression.” – she claims.

Methods & Instruments to achieve these goals

- Children enjoy walking. We can walk down the same path in each season and observe how the nature changes around us.
- We can connect with folkways which are related to seasonal changes.
- Making nature tangible and experienceable for children.
- The best method is to be in nature, observe it and learn from it

Hooks:

Rosa has already set out **the idea of a board game about conscious agriculture**, and she is seeking for partners for the realization. We were talking about a possible collaboration in the frame of the PaPpUS project.



4. User Case “The Author” (PL)

Sociodemographic data

- Gender: male
- Age group: 50+ years old
- Role: Author
- Other criteria: Let children discover themselves through nature

Description of situation

Interdisciplinarity and to some extent improvisation - reacting to what happens in the environment and children's interactions with their environment. As far as the former is concerned, regardless of the discipline and the initial topic, it is worth noting the links between different fields of science, art, perception - with a particular emphasis on nature. I would also draw attention to the children's awareness of how the circumstances in which the classes take place affect them. A side effect, but an important one, is also a positive impact on health - for example, due to breathing (assuming that there is no elevated level of smog in the area – but this is a separate problem).

Objective: This is important to me

The most important educational goals for me are strengthening the sense of subjectivity and self-esteem, development of imagination, self-awareness and independent thinking, attention, healthy emotional development, supporting empathy. Deep contact with nature is very conducive to achieving such goals.

Methods & Instruments to achieve these goals

- For example, by arranging situations in which the observation of nature, various kinds of sensual experiences move the imagination, arouse emotions, willingness to act and create.
- It is important to leave a large margin of freedom and at the same time not leave in a sense of helplessness - to show the different possibilities of action that are actually attractive for contemporary children, taking into account their experiences and needs.
- It is important to be aware of all the parties involved: that the participants have a sense of subjectivity and fun, I - that I - have a sense of the meaning of what we do and that nature really is the essence of this relationship, not just a background or a prop.

Hooks:

“I participated in a project aimed at sensitizing children to nature by discovering the closest surroundings: lawns, parks, city trees, insects, etc. The first stage was a playful training of attention, changing the priorities of perception, paying attention to what is under your feet and right in front of your nose. Recording it in any way you want - mainly through drawings and descriptions, and then developing it creatively - creating stories, further sequences. Whatever motive or essence they encounter, they want to tell me what their story and message is. The children's ideas were very important, there were no detailed instructions for action because the project had a rather open structure and it was not aimed at achieving specific effects.”



5. User Case “The innovative Tour Guide” (SK)

Sociodemographic data

- Gender: female
- Age group: 50+ years old
- Role: The innovative Tour Guide
- Other criteria: pedagogue and afternoon supervisor in public school

Description of situation

Let us call our innovative afternoon supervisor “Aneta” (pseudonym). She is an afternoon supervisor in elementary school. ‘It all started with organization excursions in the nature’ – she said. ‘I have organized different kind of tours, for example ‘deciduous tour’, or ‘bud hanging’ tour with the biology teacher at our school.’ They organized these tours in the afternoon hours or on the weekends. As it took part in the children’s free time, these events were always optional. Their goal was to introduce children the beauties of the city and the environment. After that came the idea to create gardens in the school yard, because they have a big and nice school yard.

The first garden Aneta created together with teachers and kids got the fantasy name ‘Island of peace’. Now, they are creating another garden, the so-called “Garden of health”. She told us that the gardens were implemented by the money, they won from various projects and from donations of parents and other people. They got material for free from local entrepreneurs and the parents were also involved in the implementation process.

Objective: This is important to me

Aneta told us, that each class has a rock garden too, and they have to take care about the planted plants. They also take advantage of the Earth Day to beautify the garden to do the necessary work. In this day there is no teaching for the students, so they can spend the whole day outside. She emphasized that the teacher’s commitment is determinative. If the children see that the teacher is enthusiastic and committed to the topic, they will also be more willing to get involved in the work.

Methods & Instruments to achieve these goals

- We had no money, but we were creative and involved people outside the school.
- They created their first gardens with old well rings (which was a donation).
- Teachers and Students together decorated the well rings with mosaic tiles.
- Later they designed furniture made of palettes, where students can spend their free time or they can spend the lesson too.
- Students always have a chance to decide whether they want to collaborate with the others or just observe from outside the others gardening. The usual experience is that sooner or later all the students join the work.

Finally, Aneta told us about the future plans: ‘One of the parents is a professional gardener and she is very creative, so she helps me and supports my work. We are planning to create a study trail too. We will ask each class to choose one plant they wanted learn more about and according to their decisions we will realize the study trail.’



6. User Case “Naturalist with visions” (UK)

Sociodemographic data

- Gender: male
- Age group: 50+ years old
- Role: Retired Head of a Middle School
- Other criteria: Naturalist with plant specialism, who claims thinking out of the box

Description of situation

Our interview partner, we call him “John” (pseudonym) is a naturalist with plant specialism and responsibilities for vascular plant records in his region. He is a retired middle school principal with many years of experience in the education sector. John sees the Pappus activity as vital for helping children think out of the box and states, that the current education system is beginning to mirror Chinese formulaic learning (strict sequential learning). He misses the traditional approach in building experiences that can inspire future interests and learning in more of a positive way.

Here we give an example that was brought in by another interviewee, but which fits very well with this topic: “Most children will say that plants are important from the viewpoint of Trees, CO₂ – well established in school science and embedded in children’s heads. But if you ask them how you maintain and sustain it or what’s the relationship between the vegetables you get in the supermarket, they don’t make those connections. They have no clue whatsoever. You might have the food you want now but if you don’t take care of your natural environment then it might not be as easy to come by or be there for you in the future. Thus, for those schools in an urban environment it would be helpful for them to appreciate that the reason why their urban environment works well is because the wider rural environment is healthy enough to provide them with what they need. If they understand that inter-connection then they will appreciate it and protect it fully.” (Operations Head at a Secondary School).

Objective: This is important to me

John further emphasizes that the work with plants can intensify both the experience inside and outside the classroom and can be seen as outstanding by Ofsted. He recommends that Pappus needs to be using the right language, phrases and description of outcomes that get attention of teachers. John further states that we should keep in mind that the implementation creates additional school workload that compensates for removing children from class to go on a trip. He felt Pappus may work if extra-curricular.

Methods & Instruments to achieve these goals

- Daily nature table within each classroom and show and tell during assembly. Challenges to children over the weekend to find something that the Head did not know what it was – then a special prize is given to the student, which is a good motivator.
- Making nature tangible and experienceable for children.

Hooks:

- “Think outside the box”
- “Invent challenges to motivate students”