

Project-Based and Task-Based Learning

Project-based learning

MANUAL FOR TEACHERS

Praha **2023**





Co-funded by the Erasmus+ Programme of the European Union



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This publication was developed as part of the “Learning by Doing – Attainment of Basic Competences in ECEC (ABC for kindergartens)” project (2020-1-CZ01-KA201-078464).

This project was undertaken with the financial support of the European Union.

Responsibility for the contents of this publication (communication) lies entirely with the authorial team.

The content of this publication (communication) does not reflect the opinions of the European Commission and the European Commission may not be held responsible for the use which may be made of the information contained therein.

Published by
Dr. Josef Raabe, s.r.o. Publishing House
Husinecká 903/10, 130 00 Praha 3, Czech Republic
www.raabe.cz, email: raabe@raabe.cz
in 2023, 1st edition.

Graphical design, typesetting and layout: Magnus I s.r.o.

ISBN 978-80-7496-524-1 (online; pdf)

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Project-Based and Task-Based Learning in Preschool Education

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Project Authorial Team

Learning by Doing – Attainment of Basic Competences
in ECEC (ABC for kindergartens)





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3. | Project-based learning

3.1 Theoretical background and definitions

Project-based learning has a long tradition in education. It first appeared in the USA in the 1920s and is associated with J. Dewey. He came up with the idea that children learn better at home and at school, if their knowledge is real, meaningful, usable and has a connection to practical life, and he founded his Laboratory School on this principle. Its main feature is its emphasis on a child's own activity and learning based on their own, rather than a mediated experience. The ability to solve specific situations and problems leads to a deep interest in the child, to an increase in their motivation for learning and thus to better educational outcomes compared to traditional methods of education. Under the traditional concept of education, knowledge is passed on to the child by the teacher, where the child is passive or follows the precise instructions of the teacher. On the other hand, an approach in which the child's activity is emphasized is characteristic of reform pedagogy and alternative pedagogical approaches. J. Dewey's ideas were subsequently developed by his student W. H. Kilpatrick, who published an essay in 1918 called "The Project Method".

Project learning is considered a form of situational learning and is based on a socio-constructivist concept of education. Children gain new knowledge and skills **by thinking, finding solutions and using their previous experience** in an effort to solve a real problem or situation. They have to apply a wide range of current knowledge, **requiring the integration of knowledge from different disciplines** and areas of human life. As a result, the child does not learn individual things in isolation, but instead a multidisciplinary, holistic approach is applied. The acquired knowledge is not superficial, instead the child digs down deeper into the knowledge. What the child learns is logically and meaningfully connected for that child. When solving a problem, the child applies their previous knowledge and skills from different areas, enriching them with what is new. The child learns from their **own direct experience**, rather than indirectly.

Project learning is a method of education, **in which children work independently on a complex task** and where **they solve a specific problem associated with real life**. The project is therefore directed towards a goal and at the end of the project there is **an output**. This can take a material form (e.g. an item, object, book, etc.) or an immaterial form (e.g. a theatrical performance, a class trip, etc.). In project learning, children will independently search for ways to solve the problem they have formulated, plan concrete steps and divide tasks. Thus, the activities are not implemented in a way the teacher thinks through and plans in advance. During project-based learning in kindergarten, **the impulse for the project can be the teacher's incentive, the children's proposal or reaction to their current situation** (more on this in the next section).

In current pedagogical practice, we sometimes encounter a misunderstanding of project learning. Some teachers confuse having a project day focused on a certain topic (for example, Earth Day, Milk Day ...), where all actions and ac-

tivities during the day are adapted to this topic, with project learning. Such a one-time project, which is elaborated in detail with assignments and material from teachers, cannot be called project-based learning.

3.2 Types of projects

Projects can be differentiated according **to their duration**; they can **last several months** (long-term), **weeks** (medium-term) **or days or even hours** (short-term). In preschool, short- and medium-term projects are most appropriate, as it is still difficult for such children to pursue long-term goals. In kindergarten, projects that are based on the current situation (e.g. a planned trip) and tend towards the short-term are especially effective. However, a short-term project can grow into a long-term project if the children are interested in an issue and want to pursue it further.

Another way of structuring projects is in terms **of the number of participants**. Here we are talking about **group** and **individual projects**. A group project can be carried out at the children's group level, or it can involve only a certain group of children in the children's group. An individual project is a single-child project.

tip

When deciding on the type of project, it is important to take into account the developmental aspect. At an early age, children are not yet able to sufficiently communicate, plan, agree on and assign roles. For younger children, individual projects or projects for smaller groups are therefore more suitable. At this age, the most appropriate are short-term projects based on a current situation or activity the child is engaged in. When observing the children's interests, teachers can utilise their questions to facilitate the creation of a project (e.g. constructing a kite, building a garage for cars, etc.), and one child's project may inspire and appeal to the other children to join in. For older children or in mixed-age children's group, projects can be carried out by the whole group.

3.3 Educational methods used in PBL

Other educational methods apply to project-based learning, whether verbal, demonstrative, involving practical skills or experimental methods. The basis of every project is a **properly formulated question or clearly-presented problem**. Such a question must be understandable to the children, and it must be possible for them to answer it, such problems must be solvable and interesting to them. At the same time, they must have the opportunity to learn something new, something essential.

The first step is to ask: "What do we know? What can we do?", followed by "And what do we need to know and do?" We use verbal methods – **discussions and brainstorming**, which allow children to formulate ideas, correct them, look for different solutions and make plans for further progress. Out of the verbal methods, we work with text, optionally use simple records and diagrams to provide the children with the necessary information.

Concerning illustrative methods, we can use observations (of objects, phenomena) or look at pictures, photographs or video clips. Methods utilising practical skills include research activities, working with tools or instruments (gluing, cutting, building, etc.), but also artistic and physical activities.

Methods are chosen according to the problem the children need to solve, rather than for the method itself. Each method selected must support the children by allowing them to suggest solutions, plan partial steps, gradually implement things and finally achieve the project output.

3.4 Project preparation

The most fundamental question we encounter in practice is how to teach children through project-based learning (PBL). It is true that young children are unable to work like older children, but children in the 4- to 5-year-old age group are already sufficiently prepared to communicate and gain new knowledge and experience. This is a prerequisite for the proper application of project-based learning.

Project-based learning has **three basic phases: project preparation and planning (phase 1), project implementation with the children or execution (phase 2) and reflection on the project (phase 3)**. All these phases have their meaning and their specifics. Although different classifications of phases are presented in the pedagogical literature, some phases are divided into even more specific parts. For example, Larmer et al. (2015) talk about four phases of PBL:

- Phase 1: Project launch;
- Phase 2: Building knowledge, understanding and skills;
- Phase 3: Product development, criticism and review;
- Phase 4: Product presentation.

Phases 2 and 3 are separated mainly because older learners may decide during the progress of PBL that they need more information and move from Phase 3 back to Phase 2, before moving forward once more. In pre-school education, awareness of the 3 phases will suffice.

Consequently, several key moments occur again and again throughout the course of the project, and these moments are repeated in a spiral:

- 1. Observation, perception of the situation** (the teacher alone, the children together with the teacher, the children alone).
- 2. Reflection on the problem together with the children – searching for a common answer** or answers to questions concerning the achievement of the partial objective of the project and jointly formulating the subsequent steps (the teacher as a facilitator allows the children to formulate questions, find their answers and their solutions).
- 3. Action** – carrying out the activities.

4. **Documentation of one's work** (ideally, the children will prepare this documentation as independently as possible).
5. **Communication** – asking reflective or assessment questions with the children.
6. **Formative assessment** of the process of the phase.

The project scheme can be represented as a spiral – the project runs in cycles as the phases repeat. At the same time, it evolves linearly over time. The task of the teacher is to allow the children to “have their voice heard” as much as possible in all phases of the project – to actively and genuinely participate in the development of the project.

First phase – Preparation

The **topic is chosen** in this phase – the impulse might come from the teacher, from the situation the children are currently experiencing or some topic suggested by children themselves. In practice, there may be a moment when the topic crystallizes out of a joint discussion with the teacher and the children. Project-based learning uses knowledge, experience, abilities and skills to solve a problem. It is the **identification of the problem** that is very important in the beginning. If the problem is suggested by children or arises from joint discussion with them, it will require preparedness and flexibility from the teacher. They should adjust the daily schedule to create suitable conditions for a more specific identification and characterization of this problem or topic.

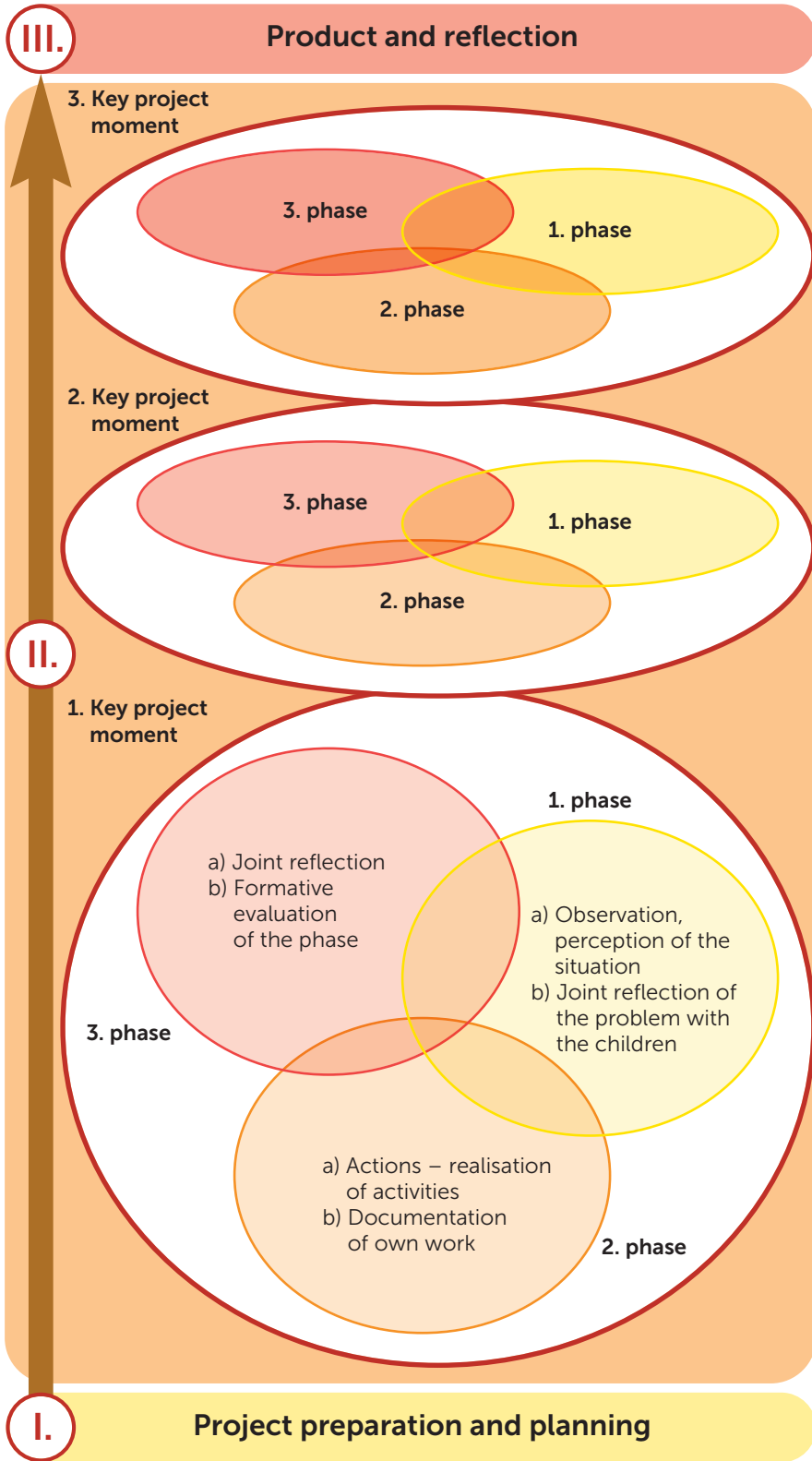
For the proposed topic (or problem), the **goals** will be set, which will be enriched with **tasks** and appropriate **resources**. Based on the mapping of the topic and the expressed interest of the children, a **timeframe** for its implementation will be proposed – the duration of the project. It is up to the teacher to present the basic topic and up to the children whether to accept it. We must not forget the interests of the children; it is in their interest to learn through the project. Getting acquainted with the topic can take several days and only then will a certain project structure be set up. Processing methods will be suggested, which may be modified or changed during implementation. The key points to be determined should be obligatory for the implementers, but they can expand on them during the project. It is good to talk to the children in advance about the process, to agree on strategies together, or suggest possible alternatives.

A project does not have to involve the whole group of children. The composition and size of the group of children involved may change during the project. There may even be several projects running in parallel in a children's group.

Typical activities characteristic of the first phase:

- an “Entry Event” occurs,
- a key question is formulated,
- a list of children's questions is created,
- the main products are discussed,

PROJECT DEVELOPMENT



Spiral project time flow diagram

- the project plan is suggested,
- the first steps are completed and recorded,
- children begin searching, reading (flipping through books, looking for interesting things in illustrations, picture books) or otherwise obtaining primary information.

Entry into the project should be a **special event** that will arouse the children's interest in the activity. For kindergarten children, the event can be divided into several parts over multiple consecutive days. Entry can take the form of: excursions, watching videos, films, the teachers reading interesting provocative texts, discussions, conversations, real or fictional correspondence, etc. The starting point can also be some experienced (unplanned) situation that interests the children, and which can form the basis for further research into a problem and the development of the subsequent parts of the project.¹

The formulation of the **key question** should take place after the Entry Event, and should be formulated together with the children. From the beginning, the children are involved in the entire preparation and management of the project. The question is intended to help the children focus on **achieving their goal during the project**. It has to motivate them.

List of children's questions. Immediately after the Entry Event and the formulation of the Key Question, the authors recommend writing up what we know about the topic and what we would like to know in a single place. If the children are doing this for the first time, we can help them with our own suggestions, give the children time to think, record the questions in their own words. Then we look at what will be the **main output / product** of the whole project. We describe it in more detail so we know what it should look like and together we create a **work plan**, showing how we will proceed in the completion of the project.

Second phase – implementation

The planned model becomes a reality. The goals that arose at the beginning of this project-based learning exercise are slowly beginning to be fulfilled.

However, it is crucial to note that what often happens (especially when the topic is suggested by a teacher) is that there is a mismatch between what we planned and how it how the project will develop. The important thing is therefore to **remain flexible**. The children are the ones completing the given project, and the initial goals are often updated throughout the process.

In most cases, projects designed by teachers are easier to manage than those designed by children or stemming from a joint dialogue. With a teacher-proposed topic (or problem), the teacher can imagine what will need to be pro-

¹ E.g. discovery of the settlement of a colony of bees in the school garden, observation of their capture by a beekeeper and a subsequent project on the topic of bees with children with the involvement of a beekeeper and other external actors, trip to observe bees at a science centre, etc.

vided during the project implementation, long in advance. In the case of a topic (or problem) proposed by the children or emerging from a situation in the classroom, the teacher acts as a **facilitator to help the children** figure out what they will need to implement the project. Together with the children, they will uncover further goals while working on the project itself and they will also need to complete these in order to finish the whole project.

The actual implementation of a project also depends on the experience of the children with their previous exercise in project-based learning. If the implementation of PBL is new to them, it is necessary to spend some time explaining what project-based learning is about, how it takes place and what it requires. If children already have experience with project learning, a good thing at the beginning is to discuss their project implementation experience, what projects they have already implemented and what they learned during that implementation. Finally, we can talk about the ways they can use their previous experiences in the implementation of the current project.

In this phase, the children apply cooperation, work on common problem tasks, use their creativity and imagination, try new approaches, carry out research activities, etc.

In kindergarten, the role of the teacher at this stage is to provide support, help the children find answers to their curious questions, but also support the development of critical thinking, and other problem-solving competencies. Some experienced educators recommend creating a “project wall”, on which they can gather together the information, questions, tasks and, in fact, anything they find, acquire, invent, design or do during the project.

tip

In this phase, it is also very important to continually work with the questions that the children – together with their teacher – determined and wrote down (using pictures and pictograms) in the first phase. During the project, the teacher may feel they have to help the children. One of the basic principles, however, is that in project-based learning, children progress at their own pace and according to their own needs. Therefore, if a teacher is too involved, the children’s perception will be that the teacher is in control of the activity. At the same time, however, teachers should provide sufficient support and ask appropriate questions to guide the children in the appropriate direction towards solving the project.

During implementation, there should also be a phase where we check whether the work on the project (on the final product) is continuing as expected and planned. This can also be a check to see whether the final product has achieved the required level. There are several important reasons to apply constructive criticism in PBL:

- It helps children learn to work independently.
- It helps children determine the criteria for creating a quality end product.
- It supports critical thinking, collaboration and communication skills.

We must not forget the overall assessment. Among the children, we will mainly assess the acquisition of key competencies, which we evaluate on the basis of observation and interviews. We must therefore already consider this during the implementation phase and pay attention to how involved the children are in the solution and what they have each contributed.

The third phase – reflection

The last phase is a grand culmination of the efforts of everybody involved. **It is a significant event** that also requires proper presentation. Usually with the participation of parents and loved ones. But this is also the time for the children to look back and consider what was good in the preparation and implementation, what helped them learn the most. Furthermore, they should consider what became a problem and how those problems were dealt with. Let them explain the procedures they used to complete the project. Children are encouraged by teachers towards self-assessment and reflection on what they have learned throughout the project.

Depending on the project, presentation of its results may be in the form of a public presentation with an audience present. But it can also take the form of a short video that the children prepare in cooperation with the teacher. Or they can present their results in writing, again with the teacher's help. We consider public presentations to be the most suitable for children in kindergarten, where in the presence of parents and other close relatives, the children can talk about their new experiences and the activities that helped them gain their new knowledge. In the preparation of this presentation, the children should also participate and help in compiling the event program, the decorations or refreshments.

After the presentation itself, it is advisable to once more look at the whole course of the PBL and its individual phases. Evaluate what the children could have done better, but also praise them for a job well done, for successful cooperation with each other. An important place in this reflection is leaving enough space for each child to express themselves and also **for everyone to evaluate what they have learned** (this does not have to be exclusively things related to the topic of the project). The teacher can help the children in their self-assessment with appropriately worded questions (What did you do...? What would help you...? etc.). The most important thing is to get answers to the key question. Success should also be celebrated properly. In addition to the children's self-assessment, the teacher also evaluates the extent to which educational objectives have been met in accordance with the curriculum documents – what competencies have the children applied and developed, what have they learned, what areas need to be developed in the next period?

3.5 Advantages and challenges in applying PBL

The advantages of PBL

- Project-based learning **naturally motivates** children to make the effort to solve a specific problem. This leads to intensive learning of new knowledge and skills.
- Learning does not take place in simulated situations or separated from real life, but is **directly connected with something that is close to the heart and meaningful to the child**.
- The child naturally **acquires knowledge from many different fields**, meaning that an interdisciplinary approach must be applied.
- In project-based learning, the child learns to **solve problems, plan and organize time, cooperate and communicate with others and be responsible**. They develop self-confidence in their own abilities and awareness of their own value, because they perceive that they are somehow contributing to the common good.
- **Many competencies** that are necessary for life in society **are being developed** and this development is difficult to achieve within the traditional concept of education.
- Project-based learning also allows teachers to find creative ways of working.
- Project-based learning allows **other partners to be involved** in education, in addition to children and teachers. They can be parents, grandparents, experts in a particular field (e.g. a beekeeper, bricklayer, gardener) or institutions. Children can turn to others for help and to get the information they need. Various people can be actively involved in the implementation of the project, they can, for example, help children with the preparation of materials, researching a phenomenon, etc.

The challenges of PBL

The role of the educator

The teacher plans educational activities based on the interests and needs of children and should be prepared to listen to them and to respond appropriately to their suggestions. This assumes teachers will plan their work based on pedagogical diagnostics; they should know the children very well. By observing the children's needs and interests, the teacher will find opportunities for project implementation. Abandoning their traditional teaching role they will instead take on an advisory role. **The teacher becomes a guide and consultant for the children**, encourages them to be independent, responds to their ideas and becomes a "member of the implementation team". The teacher does not have to think through everything in detail, plan, present it to the children and ensure that the goal of the project is fulfilled. Instead, their primary task is to prepare

an educational environment that will allow the use of project-based learning and help children solve the problem in their own original way.

The teacher should provide the educational goal, which is based on a curricular document, and present it to the children in the form of a specific problem to be solved. The activities performed in solving the problem then fulfil the set educational goals. At the same time, however, the children must be allowed to pursue **their own goal**, which is the output of the project.

Teachers should respond to children's suggestions, **be flexible**, be open to different possibilities and **provide just as much support as the children need**, while keeping in mind the underlying educational goals at the same time as the children's obvious goal (the project output). **The teacher is in the role of advisor**, rather than the role of director. This leads to a fundamental change – the child participates in the management of the entire project together with the teacher. During the course of the project, the role of the teacher may change, from facilitator to helper, from assistant to expert or consultant.

In this context, it should be noted that there are teachers who do not like project-based learning. They prefer traditional methods of education, where the teacher has the educational process under control, carefully prepares and plans everything. The idea that teachers will suddenly "not have the situation firmly in their hands", not be able to predict how the process will develop, can fill such teachers with great uncertainty. They do not feel comfortable taking the role of just another member of the team. For these teachers it can be helpful to utilise their planning habits at the very start of project-based learning, think about possible alternatives in advance and prepare for how the children are likely to solve the problem, what steps will need to be taken and what resources will be provided. They will then be prepared for any situation that the children could come up with regarding a possible solution. Gradually, with increasing experience, they will have more confidence in the children's abilities and will be able to back away from careful preparations.

The role of the children

The key element in the successful application of the project-based method is the child. Using project learning means accepting that this is a children's project – the children should feel responsible and play a key role in successfully managing it. In practice, this means that the child takes the goal of the project as their own (identifies with it) and decides to fulfil it. They take responsibility for the implementation of the project, which manifests in the planning of individual steps, the division of roles in solving each problem – who will provide what input, who will be in charge of what. The child continuously monitors the progress of the solution and responds to new situations as they arise, evaluating the situation, discussing possible solutions, actively making suggestions and arguing for their support. In relation to the teacher, they are in a partnership, but one where communication between the children is at the forefront and the person of the teacher is more in the background.

The role of the kindergarten

For the application of project-based learning, it is important that the kindergarten provides such conditions, that enable teachers to address topics of interest to the children, as long as the needs and interests of the children are met. First of all, is the **kindergarten curriculum**. This should not bind and limit teachers excessively, e.g. by setting the obligation to implement a certain educational topic at a specific time. It should be an **open and flexible document**, so that the teachers can take into account the interests and needs of the children. Secondly, there is the application of a **partnership approach** of the institution towards the family and its own openness to the social environment in which it is located (municipality, institutions and companies in the municipality, etc.).

Before assigning a project activity, it is necessary **to consider the environment** where the project-based learning will take place. It is not necessary to prepare perfect materials for a specific topic, but instead it is better to have helpful basic materials that are continuously available to the children and encourage their creativity. By this we mean sheets of white and coloured paper, wrapping paper, cardboard, crayons, paints, markers, scissors, glue, various stamps... preferably if these are always stored in a single place in the classroom. This can also include various leaflets, newspapers, but also pictorial material, intended for further use. We should also not forget natural materials. Additionally, we might think about supplementing the library section with suitable encyclopaedias and books aimed at different specializations. Nowadays, there should already be a computer in the children's group, or a tablet and a printer available (if the children find something suitable on the Internet or make it themselves, so they can also print out the necessary materials). The material that is used should be neutral to avoid pushing the children's ideas towards a specific project. During the actual implementation of the project, the children can also bring some materials from home or ask the teacher for it. If there is a problem with securing a certain type of material, they can suggest an alternative material or find a different way to acquire it.

3.6 Examples of implemented projects

Project designed by a teacher – A gift for our country

The project was implemented in a class of 4- to 6-year-old children

Partial goals:

- Getting to know the country the child lives in and creating a positive relationship with it.
- Gaining basic knowledge about the Czech Republic and the place the children live,
- Development of the ability to cooperate and participate,
- Acquisition of socio-cultural habits.

Context: A national holiday was approaching commemorating the occasion of the establishment of the republic. The teachers saw this topic as an opportunity to develop the children’s basic knowledge of the country in which they live, while at the same time building their relationship with it. Therefore, they decided to prepare a “gift for the republic” with the children for the occasion, their idea was something like cleaning the public park and taking care of the immediate surroundings of the kindergarten. During the morning circle, they talked with the children about the approaching holiday, which they introduced to the children as a celebration of the day when our country was born.

Key question – project initiative: What gift would you give our country? The children started coming up with ideas (they would sing a song to it, draw a picture, make a card) and finally agreed among themselves to make a large greeting card, on which everyone would have their own message and picture. The teacher suggested that such a large card would not fit in an envelope and therefore couldn’t be sent. **So how do you want the card to get to its destination? And who are you sending it to, our country is not a person, rather it is all of us together?** One boy said the card could be given directly to the president. The other children were interested in this idea, and it was agreed they would make preparations to visit the capital city, Prague. Based on this introductory discussion, the core of the project and its output were formulated.

The core of the project: the production of a joint card and its handover at the presidential office.

Project output: a joint trip to Prague combined with a visit to the Prague Castle and other monuments.

The teachers asked the children **what do we need to be able to deliver the card?** The children began to create a plan of activities:

- Find out how to get to Prague.
- Find out how to get to the Prague Castle in Prague.
- Make the card together.

The teacher then asked, **who can help us with these things and what will we need?** The children suggested asking their parents, going to the library and borrowing some books about Prague or getting a map. They divided their tasks – whoever could, brought pictures or materials from home about Prague, the Prague Castle or the president. The teacher brought a map and a plan of public transport in Prague. Each of the children imagined and drew the message they wanted to send to the country and a joint collage was created from individual wishes. An exhibition about the Czech Republic was created from the materials brought. They started to plan the trip, the children working with the map and plan, and together with the teacher they decided to take a train and the metro. They planned and drew up a list of things they would need (a backpack, drinks, snacks, etc.). One day they went to the train station together to buy tickets. The teacher suggested to the children that once they were in Prague, they could go and see some interesting places. The children therefore began to search for

interesting places on their visual maps, provided by their parents, looked to see what is close to the Prague Castle and created a list of monuments they would like to visit. On the designated day, two of the children's grandmothers went to Prague with children and teachers. The card was handed over to the presidential office and then the children visited some well-known monuments (St. Vitus Cathedral, Golden Lane, Petřín).



*Kindergarten visiting the office of the President of the Czech Republic
(source: author's archive)*

Reflection: The children enjoyed working on the project very much, they were fascinated and remembered visiting Prague even years later. A few weeks after the visit, a letter of thanks was sent to the children from the presidential office, which was an unexpected surprise for the children. The children also showed an interest in finding out more information about Prague – the teacher told or read them various legends (e.g. about the Hunger Wall, about the construction of the Charles Bridge). The whole project lasted for almost three weeks. In the first phase, the challenge for the teachers was to abandon their initial idea (cleaning the park) and subsequently to accept the bold new plan. However, it was not an unrealistic idea with the support of the parents, so they agreed and started the preparations. It was necessary to ensure safety, so the families of the children were asked to cooperate and help organise the trip to Prague. After the project, the teachers stated that the children had learned much more than they had originally intended.

What the children learned:

- They remembered the name of the capital city.
- They knew who the president is and where the presidential residence is.
- They were able to name and recognize several well-known monuments in pictures.
- They knew the Czech national symbols – the emblem, anthem, tri-colour flag, they recognised the coronation jewels.

- They were able to orient themselves in a public transport plan.
- They learned to travel by train (buy a ticket, how to behave on the train, stay safe).
- They managed to follow the rules of social behaviour when visiting the mirror maze.
- They were able to look after their belongings independently (backpack with snack).
- Areas of speech, thinking, fine and gross motor skills were developed.
- They were able to have discussions together, make suggestions and create a simple plan of activities.
- They were able to ask their parents for help.

Project responding to the current situation: Gaštanko's (Chestnut's) paper world

The project was implemented in a class of 5- to 6-year-old children.

Partial goals:

- Get acquainted with environmental protection and create a positive relationship with it.
- Gain basic knowledge about the efficient use of materials – paper and discover the possibilities for its use.
- Playfully experiment while developing skills: fine motor skills and visual motor skills.
- Develop and participate in cooperation between children.
- Communicate verbally about working with paper and evaluate individual and group performance.

Context: The kindergarten curriculum has a focus on environmental protection. The children's group has a mascot called Gaštanko (Chestnut). He accompanied them throughout the school year, on the topic of environmental education. When they talked about cutting down trees in the town and the subsequent processing of the wood, the discussion revealed that one of the products made from wood is paper. The children were interested in the topic. They looked for different types of paper and tried to fold it into the smallest possible pieces. This event laid the foundations for a new subproject – Gaštanko's Paper World.

Key question – project incentive: What are the ways we can work with paper?

The children came up with various ideas – we can draw on it, paint it, glue it, cut it, tear it, tape it. There were many ideas. One of them was the question of how paper is made. The discussion showed that we can also recycle paper and make new paper out of old, used paper. The children really liked this and decided to make their own paper. They agreed with the teacher that they would start by examining different types of paper and with the help of the teacher, they made a table. They came up with a way of marking:

Paper	Draw	Crumple	Glue	Tear	Bend	Fold	Cut
Office paper							
Newspaper							
Drawing paper							
Crepe							
Recycled paper							
Thin cardboard							
Thick cardboard							

- ■ ■ yes, easy,
- ■ yes, but harder,
- no or very difficult.

Children put pictures next to the words in the table, so that they knew what each word meant, e.g. cut=scissors and similar. Of all the types of paper, they were most interested in newspaper. Everything was easy to do with it while re-searching. It was also interesting that each page of the newspaper was a different colour. They said that it was easily accessible and that they wanted to continue working with it. They were fascinated by the paper production process and began to look for things that could be made from it. They agreed they would make a new Gaštanko doll out of paper. They also expressed interest in seeing how paper is made in a factory. They immediately expressed ideas about how to get to the factory and who they should contact. The kindergarten is located in a town which has had a paper factory for several decades. The core of the project was planned as well as the outputs.

The core of the project: working with paper and paper production.

Project output: Joint excursion to a paper factory.

- Find out how to make paper at home / the kindergarten.
- Find out what can be made from the produced paper and how.
- Produce the Gaštanko doll together.
- Plan their trip to the factory and back.

The teacher told the children a story about a girl who was making paper at home and when she didn't know something she asked and her loved ones to help her. The teacher then asked the children what is needed for paper production and the children suggested that they look in encyclopaedias at home and, with the help of parents and older siblings, look up picture instructions on the Internet. They divided up their tasks, who will focus on which part (paper production – supplementary image material, the apparatus for paper production, the route to the factory). Some skilled fathers made frames with a sieve, the children brought newspapers and also found the necessary tools for paper

production in the kindergarten. They repeatedly explained the process of working with the materials used to each other.

The paper production took two days. The children tore up the newspaper into a large plastic container, poured water over it (the best ratio was about 30 sheets of paper, 20 litres of water, mixed well with their hands), they prepared this mixture on the first day. The next day the teacher, with the assistance of children, mixed the paper, creating a mixture that they could work with. First, they put the paper pulp on a frame and then carefully removed it after it had dried. The teacher and her assistant then ironed the paper, giving the class another piece of paper material in the classroom – their own. After the initial work with the production of their own paper, they began to experiment with the material. They found that if they wanted to make a larger figure, they needed to



Working with the paper Gaštanko (Chestnut) (Source: author's archive)

make its frame out of something more solid. In a box of waste materials, they found wire and wooden sticks among other things. Using ropes and with the teacher's help, the construction was finished. The children added the paper material, stretching it into the necessary shapes of the Gaštanko doll. The children took turns assisting each other at work. After drying, the Gaštanko doll was finished with a layer of paint.

Meanwhile, the children planned a route to the factory (on a map – they marked where the public transport stop is, they marked how many stops there will be before the factory). At the factory, they learned new words, such as cellulose and paper pulp, and what it is used for. They had Gaštanko with them and took photo documentation of the excursion. The children had many questions and were amazed by the large machines. The next day, they went to the town park with books and compared the trees in the pictures with those in reality. With the help of the teacher, they figured out the trees' names and discussed their protection. A few days later, a large package containing various types of paper awaited them in kindergarten for processing. Photographs and works were displayed in the kindergarten and at the end of the project they presented all of their findings to their parents.

What the children learned:

- They remembered the names of different types of paper.
- They learned how to make paper.
- They adopted another type of recycling.
- They developed the ability to work together.
- They developed fine and gross motor skills.
- They were able to orient themselves on public transport lines.
- They followed safety procedures during the factory tour.

- They were able to take care of their personal belongings outside of the kindergarten building.
- They were able to ask the factory employees questions individually.
- They learned new tree names and how to take care of them.
- They developed their presentation and communication skills during the presentation.
- They developed digital device and visual motor skills while creating the photo documentation of the excursion.

Project designed by children – Wedding

The project was implemented in a class of preschool children, aged 5–6 years, implementation time 1 week.

Partial goals:

- Getting to know family structures.
- Development of feelings of belonging, mutual respect and assistance.
- Development of the ability to cooperate and participate.
- Acquisition of socio-cultural habits.
- Development of fine motor skills.

Context: At the beginning of the school year, the thematic unit My Family was implemented in the children’s group. While telling the children about their families, the teacher mentioned that she would be getting married soon. The children spontaneously reacted that they would also like a wedding. They asked the teacher who can get married with whom, and what if someone doesn’t want to get married? The children suggested that whoever wanted could get married, and those who didn’t could be guests at the wedding. Everyone agreed.

Key question – children’s initiative for the project: Can we have a wedding in the kindergarten?

The teachers agreed and asked the children if they knew what such a wedding looks like and what is needed for it. The children started coming up with ideas and also with a proposal to involve their parents – at home, each of the children should find out something about weddings and how their own family was formed. Based on the information obtained, the children, together with the teachers, planned all the things they had to prepare and who they would ask for help.

The core of the project: The children’s wedding at the kindergarten.

Project output: A wedding ceremony at the town hall and a subsequent wedding reception.

Plan of activities:

- Arrange a place for the ceremony – organised by the teacher.
- Arrange for formal clothes – the children ask their parents.
- Arrange for a wedding cake – the children will ask the school cook.
- Arrange decorations.
- Provide rings, flowers for the bride and write the wedding vows.
- Choose the wedding music.

Gradually, preparations began. Based on an agreement with the town hall, the date of the ceremony was set. The children agreed amongst themselves who will take what role. The children asked for kindergarten cook about the wedding cake and their parents promised to make the wedding snacks at home with the children. In the kindergarten, the children began making paper flowers, folding napkins, listening to instrumental songs and choosing the music. They wondered what a wedding vow should look like – they discussed what is the most important thing in relationships, how to treat each other, how to make their friendships last. The result of their discussion was written down by the teachers. On the morning of the wedding day, the children decorated the classroom, changed into formal clothes they had prepared from home, and went to the town hall. Here they made and signed marriage vows and exchanged rings. In the kindergarten there was a wedding photo shoot, the cutting of the cake, a banquet.



Wedding in the town hall



(Photo: author's archive)

Reflection: The whole week the children were very happy and they were absorbed in the realisation of their project. In the process, they came up with other ideas (each couple made their own wedding invitation, for example). An exhibition of the wedding photographs of the children's parents was created in the kindergarten. The parents were also very interested in everything that was happening in the kindergarten, getting involved in the preparations (arranging for the rings, clothes, the banquet), some of them took time off work and came to see the wedding ceremony at the town hall. The children went to the same children's group together for the third year in a row, so they knew each other very well and the formed pairs that corresponded to their friendships. The children's group climate was very positive, the children helped each other, they

were attentive, the children's group was cohesive. They often remembered the wedding day, even after that school year. The teachers admitted that they would never have thought of preparing a similar event themselves and at first they were worried how everything would go. But the children's interest exceeded expectations. They appreciated the impact it had on the children's social development – thinking about friendships, help, support and responsibility manifested itself in the children's mutual relationships. The children were willing to engage in activities that it would otherwise be difficult for teachers to motivate them (e.g. the boys made paper flowers for their brides).

What the children learned:

- They started thinking about how we treat others and how important this is.
- They learned the history of their family.
- They became acquainted with an important building in the town where they live.
- They were able to discuss, negotiate and plan together.
- They were able to complete the work they had begun.
- They were able to take responsibility for their part in the task.
- They developed in the areas of speech, thought, fine and gross motor skills.
- They learned how to sign their name.
- They were able to control their behaviour (not to interrupt the ceremony, wait for their turn, follow the instructions).
- They learned some elements of etiquette (to offer and accept an arm, help a lady sit down at a table, to hold a door).

3.7 Summary

Project-based learning is a challenge not only for the child but also for the teacher. Joint project-based learning can inspire the children who might surprise the teacher with their creativity. Every child is different, with a different knowledge base, so they can enrich other children with their observations. Their work can be an inspiration to others. It is interesting to observe the children's thought processes and associations. The mutual learning and complementarity. We can see the basics of cooperative work. We know that children are curious from an early age. Therefore, learning should be meaningful, and every child should feel their importance in project-based learning.

PBL allows them to discover something new about the world and about themselves. Children ask questions, they want to know more – healthy childhood curiosity is encouraged (they learn to ask questions, make associations). On the positive side, relationships are established with the closest social environment and the child is also introduced to the wider social environment. This project-

based learning exercise lasted several weeks, not just a single day as is usual for ordinary everyday projects. This is not a one-time activity. It goes deeper, developing the thought patterns of the child, it develops the child himself.

Project-based learning allows children to develop their decision-making skills while taking responsibility for their decisions. At the same time, it leads them to develop their own autonomy in the context of a social group of children. Children learn to speak up for themselves, to formulate and promote their own ideas, but also to take responsibility for them, to register and respond to the wishes and needs of other children and adults. Herein lies the power and relevance of the PBL method, because it develops precisely those skills that many children in contemporary society lack, and which are crucial for raising a child in a democratic society.

Keywords: Brainstorming, Objectives, Facilitator, Curriculum, PBL, Planning, Presentation, Project-based Learning, Spiral Diagram, Reflection

3.8 Questions for the teacher

1. Does the problem solved concern the children's real life?
2. Is the formulation of the main problem or question understandable, solvable and interesting for the children?
3. Have I prepared situations that allow the children to think, find and propose solutions to the problem independently, using their previous experience?
4. How well do I manage to avoid interfering with the children's decision-making during the project implementation?
5. As a teacher, am I really taking the role of an advisor and consultant or do I tend to manage everything and control the progress of the project too much?
6. Do I purposefully support and create situations where children can communicate their ideas, opinions and advance the solution of the project?
7. Does the goal of the project correspond with the goals of the curricular document that governs the educational work of our kindergarten?
8. Do I allow the children to pursue their own goals in the project, leading to the output of the project?
9. Do I use different educational methods in the project to meet the various needs of all the children?
10. Have I integrated knowledge from various disciplines into the project?
11. Am I adapting the current project intention sufficiently to the children's previous experience with the project method – am I helping them learn to be active in project planning, to respect the opinions of other children and adults and look for common solutions?
12. Do I create conditions for all children to be able to express their opinions and participate in the planning, implementation and reflection taking place during individual parts and phases of the project, in individual activities?
13. Do I provide girls and boys with enough materials and equipment to enable different types of activities and to follow their interests?
14. Can I observe that the children feel responsible for the successful management of the project?
15. What assessment methods should be used for PBL?
16. How do I manage cooperation with other teachers in the classroom and kindergarten in the various phases of the project?
17. Have I considered, together with children, involving other people in the project in addition to the children and teachers in the kindergarten (e.g. parents or other individuals and institutions)?

| Glossary of terms

adaptation	Adjusting to a new environment or social group.
alternative	Choice, other option
competency	A set of knowledge, skills, abilities, positions and values allowing one to carry out a certain activity correctly and efficiently.
conception	Concept, model, notion, basic viewpoint, leading idea, framework for thoughts.
constructivism	Based on the idea that knowledge is acquired by construction (connection of the new with the previous, creation of meaningful structures).
conversation	Human communication with a mutual exchange of information, which can take place either "face to face", or via electronic media.
coordination	Mutual harmonisation, placement at an equal level, optimum cooperation.
creativity	A set of abilities that allow us to create or utilise things in a unique way, the ability to form original or uncommon thoughts.
critical thinking	Recognition of the premises or assumptions that frame our thoughts and determine our actions, verification of the degree to which these premises are accurate and valid, contemplating our own thoughts and decisions (intellectual, organisational and personal) from various viewpoints.
didactic strategy	A comprehensive set of educational methods chosen by a teacher to achieve specific educational goals.
educational goals	Intended (or expected) changes in a child in the area of values and attitudes.
facilitator	Supporter, guide, helps control the process.
formative assessment	The evaluation of a child's individual development and progress in order to support their further education. Formative assessments provide useful information on a child's current state of knowledge and ability (for pre-school children this is usually expressed verbally or in a written form with photographs). This information can form a basis to guide subsequent teaching.
holistic education	An approach to child rearing and education that seeks to achieve the full development of the personality.

intelligence	A set of predispositions for thought, learning and behaviour.
interaction	The mutual effects that individuals, groups or large societies have on one another.
internalisation	The incorporation, adoption and acceptance of values, norms, thoughts.
intervention	Intervening, taking action with the goal of positively influencing a given situation.
motivation	An internal or external force acting to energise an organism, channelling our behaviour and actions to achieve a set goal.
motivational factor	A source of motivation.
motor skills	Separate sets of internal requirements for an organism to carry out certain movement activities.
PBL	Abbreviation for project-based learning – a type of educational activity during which children work individually on a complex task, solve a specific real-life problem; the output of a project is a specific product (of a material or intangible nature).
physiological development	Natural development corresponding to the healthy maturation and growth of a child.
pictogram	A graphical symbol representing a concept or message.
potential	The cognitive, affective and practical predispositions required to achieve something.
predispositions	Required abilities, proclivities.
project	A complex, real and meaningful task (problem, topic) that the child identifies with and takes responsibility for, whose result is a specific output (product).
reflection	Evaluation of what has just occurred, with the goal of summing up and interrelating the experience and information gained, in order to support further teaching and direction of activities.
relevance	Severity, significance, importance.
self-concept	The relation or stance that a human individual takes towards themselves; one's self-image.
self-reflection	Evaluation of one's own behaviour, contemplating oneself, one's own motivations, actions; a requirement for the development of responsibility.

self-regulation	The ability to control one's instincts and impulses in favour of more long-term goals.
social communication	The transfer of information between individuals; understanding and mediating meaning between individuals.
social interaction	The process of reciprocal influence exercised by individuals over one another during social encounters.
social learning	Ways of acquiring patterns of behaviour and appropriate conduct for a given social situation, learning social roles.
stimulation	Supporting, exciting, inspiring, external motivation.
TBL	Abbreviation for task-based learning, activity learning – teaching based on the completion of tasks.
zone of proximal development	Refers to the period directly preceding a new developmental stage, when the organism is highly sensitive to new stimuli; the space between the level of a child's current ability and what they are capable of achieving with the support of a more experienced person (such as a teacher or other child).

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Photo

The photos were taken in partner project kindergartens and are used with the consent of the children's legal representatives.