

PEARL “Emotional Empathic and Proximal Learning-Educational Environment” Project

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Abstract

The Erasmus+ KA201 project PEARL “Emotional Empathic Proximal Learning-Educational Environment” (2018-1-IT02-KA201-048515) is a project that aims to develop and validate an educational model, innovative and replicable at an international level, aimed at the very first childhood, 0 – 6 years, which favors the growth of children through an empathic and emotional proximal learning educational environment based on group activities. With PEARL Education Model, it is aimed to develop an emotional, emphatic and proximal learning environment. In this article, The PEARL Education Model, its features and experimental design of the project is introduced. To get more information about the project, visit: <https://pearl-project.org/> webpage.

Keywords: : PEARL Education Model, Preschool education, robot, social and emotional development, group activities

1. Introduction

The project titled PEARL “Emotional Empathic and Proximal Learning Educational Environment” is implemented within the scope of Erasmus+ Strategic Partnership with project code 2018-1-IT02-KA201-048515. The coordinator of the project is Polo Europeo della Conoscenza in Italy. Consejeria De Educacion De La Junta De Castilla Y Leon (Spain), Panevezio Rajono Svetimo Centras (Lithuania), Gazi University (Turkey) and Clementoni (Italy) are among the partners of the project. The lecturers of the Department of Primary Education, Pre-School Education of Gazi University conduct the project as being the Turkish partner. The project started in September 2018 and will end in August 2021.

The PEARL “Emotional Empathic and Proximal Learning Educational Environment” is a project that aims to develop and test an educational model, innovative and replicable at an international level, aimed at the very first

childhood, 0 – 6 years. The project is entirely experimental in nature. The educational model developed in the project takes its theoretical background from the approaches of Piaget, Vygotsky and Montessori. The PEARL Educational Model adopts modern educational strategies such as peer education, cooperative learning, constructivist learning approach, learning with robotics and information technologies.

The project hypothesis is "Group activities enriched with natural materials and robotic coding activities improve social skills, abilities to cooperate and to understand and express emotions in children".

1.1. Project Objectives

The PEARL project aims to develop and test an innovative, high-quality and European-level replicable educational model that is suitable for the development of emotional and empathic skills by supporting the proximal development areas of children between the ages of 0-6. Within the framework of this general objective;

- The sub-objectives of the project include establishing an international network of experts and organizations in close cooperation with academia, educational institutions and teacher training agencies to promote innovative and quality education in early childhood.
- Building a new curriculum for teachers in order to put into practice an experimental educational model for the purpose of developing the necessary skills in early childhood.
- Preparing a White book for public institutions and decision makers at national and European level on educational approaches and models tested in children aged 0-6.

1.2. Theoretical Framework

Discuss the relevant related literature, but do not feel compelled to include an exhaustive historical account. The PEARL is an educational model developed on the basis of Piaget's approach to learning, Vygotsky's zone of proximal development, Montessori's use of materials and the concepts of active learning and knowledge mapping of the constructivist approach.

Examining Piaget's theory, the learning process emerges through the interaction of the mind and environment. The individual makes an effort to explain the situation he/she has just encountered with the schemas he/she created in the past. If a new situation is explained by existing schemes, reinforcement of previous learning occurs, not learning; if a new situation cannot be explained by existing schemes, a new scheme is needed, and the learning process begins. The individual goes through the stages of assimilation, accommodation and equilibration, respectively during the learning process (Bacanli, 2011). When new knowledge reaches the equilibration stage, learning is realized. The individual constructs knowledge with environmental effects and his/her own mental processes (Beilin, 1994). It is aimed in the PEARL Education Model to construct the knowledge that children acquire thanks to their interactions with their environment.

Vygotsky addressed social constructivism. According to Vygotsky, the individual constructs the knowledge by interacting with people in his/her social environment. The person has the knowledge that he/she can construct his/her own. In the zone of proximal development, on the other hand, there is the knowledge that an individual can construct accompanied by a peer or an adult (Vygotsky, 1978). Through the scaffolding method, the individual can also construct knowledge that he/she cannot construct on his/her own. The PEARL Educational Model emphasizes the importance of the zone of proximal development, argues that peer communication and effective teacher support are required for children to fulfil their potentials.

Piaget's and Vygotsky's theories form the constructivist basis of the PEARL model. Constructivist approach clarifies what knowledge is and how it is learned (Erdem & Demirel, 2002). It supports the child constructing the knowledge with his/her own mechanisms in the process in which he/she is involved via living and experiencing, not by memorizing ready-made knowledge (Perkins, 1999). Children's active participation in their own learning processes and constructing knowledge by living and experiencing ensures that the learning is permanent (Cole and Wertsch, 2002). Concrete experiences and well-designed materials facilitate for children to construct knowledge. In addition, advisory teachers who have a good understanding of the scaffolding method aim to support the child's developmental potential. It is essential in the PEARL Educational Model to ensure that all children, regardless of their abilities, are involved in the educational process and reach their developmental potential.

The Montessori approach adopted a philosophy arguing that every child should be given their own domination and freedom. It is a child-centered approach that allows children to learn at their own pace. In the Montessori approach, it is emphasized that the five sense organs must work actively in learning (Koh and Frick, 2010). The PEARL Education Model also gives importance to children's learning by doing and experiencing.

The PEARL education model places peer relationships and the development of empathic emotions at the center of the model, as well as group interaction. Children turn to their peers at moments of difficulty that they face in accordance with their level of development. In relationships with peers, the child can take on different roles, cooperate in a small group, learn the perspective of others and develop sharing skills. Group relationship provides not only emotional development but also cognitive development: solving problems together is internalized by children. In the PEARL educational model, educational robotics and nature activities have been applied to create challenges appropriate to children's developmental levels. The model aimed to demonstrate that these issues, which are generally related to cognitive development, can develop empathic skills such as cooperation and sharing in children when the proximal educational environment is created.

1.3 Teacher in PEARL Education Model

The PEARL education model argues that with its constructivist learning approach, the child's development can be supported by peer interaction and teacher guidance, and this method will be more effective than other teacher-centered approaches. The teacher in the PEARL Education Model;

- Must give children the opportunity to express themselves,
- Must observe their level of development well, and be able to provide the support they need to those with special needs,
- Must provide appropriate support for proximal development intervals,
- Must listen with interest to the solutions the children find in possible problem situations and give children opportunities to try these solutions
- Must create environments where children can exhibit empathic emotions,
- Must create environments where children can solve the challenges they face during the event with their peers in accordance with their level of development,
- Must provide opportunities for children to resolve conflicts that may arise between each other,
- Must recognize and appreciate children's behaviors of sharing ideas, cooperation, and task distribution,
- Must give children the opportunity to try and make mistakes.

2. Method

The PEARL Education Model is carried out with the non-selective semi-experimental research model with the final test control group. The characteristic of this experimental model is the creation of randomly determined experimental and control groups and the determination of the effectiveness of the applied model by the final test (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2016).

2.1 Study Group

Two separate study groups were formed in the project. The first study group is created for the pilot application. In the pilot application, Gazi University Application Kindergartens in Turkey voluntarily participated in the project. In other project partner countries, schools that are also voluntarily involved in the project have participated in the pilot application. In the pilot application, applications were made with 6 children in the age group of 0-2 with the project partners Italy and Lithuania, and 24 children in the age groups of 3-4 and 5-6 in Spain, Turkey, Italy and Lithuania. Thus, the pilot application of the project was applied to a total of 108 children, 12 from the 0-2 age group, 48 from the 3-4 age group, and 48 from the 5-6 age group. Because of the inclusive nature of the project, if there are any children with special needs in the school, they were specifically asked to join the experimental groups.

In the second phase of the experimental application, the PEARL Education Model was aimed to reach more children. For this purpose, applications of project activities have been started in schools that are voluntary. The research is still at this stage.

2.2 Data Collection Tools

“PEARL Child Observation Form” is used to evaluate the effectiveness of the PEARL Education Model.

PEARL Child Observation Form:

Measurement tools that serve to collect quantitative data are used to evaluate the effectiveness of the PEARL Education Model. “PEARL Child Observation Form” was prepared by Gazi University project team in Turkey, one of the project partners.

In light of this information, categories have been determined to be able to write the items to be considered in the PEARL Child Observation Form. These categories are defined as ;

- communication,
- group communication,
- cooperation,
- expression of feelings,
- expression of self,
- solidarity
- dealing with challenges
- strategizing
- following the instructions,
- achieving the goal,
- understanding and managing positive and negative emotions.

For the specified categories, items suitable for the age group 0-2, 3-4 and 5-6 were written and an item pool was created. Then the observation forms were presented to the project partners and their opinions were taken in terms of scope, layout and appearance validity.

Adjustments were made to the form, taking into account the feedback of the project partners on adding items related to educational emotions (well-being, motivation, expressing emotions and prosocial behavior) in the observation forms. In addition, demographic questions about the child's age and country were added to each form with the opinions of the project partners.

Observation forms prepared for 0-2 years are as follows:

- Child Observation Form applied by integrating natural materials into a child
- Child Observation Form for the group, which is applied by integrating natural materials into a group of 5 children

Observation forms prepared for 3-4 and 5-6 years of age;

- Child Observation Form of the event applied to a child without a robot
- Child Observation Form of the event applied to a child with a robot
- Child Observation Form for the group, which is applied to a group of 5 children of the event without a robot
- Child Observation Form for the group applied to a group of 5 children of the event with a robot

Thus, a total of 10 observation forms were developed, two for 0-2 years and four for 3-4 and 5-6 years. Observation forms contain at least 9- at most 51 items. Some of the items contained in the forms are intended for positive-desirable, and some are intended for negative-undesirable behaviors. All items in each form are graded with likert type between "0" and "10". Absence of a behavior is evaluated as "0", and execution at the highest level is evaluated as "10". For example;

"He invites his/her teacher to join the game." If 0 is marked for the item, the child has never invited his/her teacher to the game; if 10 is marked, it means that he/she has invited his/her teacher to the game quite often.

2.3 PEARL Education Activities

Preparation of activities for the PEARL Education Model was carried out in several stages. At the first stage, project partners held online meetings and discussed the features that educational activities should carry. In the light of the literature and within the framework of the theories on which the project is based, it was determined as the first feature that the activities should be prepared in accordance with the children and conditions of the country involved in the project. The active participation of children in the activities and providing an opportunity for teacher guidance were among the priorities. In addition, the importance of implementing activities both in a group environment and individually was emphasized.

After determining the main characteristics for the activities, each country that is a partner of the project has prepared examples of activities for each age group of children with its own team. These prepared activities were presented to the opinion online. At this stage, each country has been evaluated in terms of compliance and applicability to the basic criteria by examining the effectiveness prepared by the other partner countries. As a result of evaluation, the activities with the highest score according to the scoring of all partners were selected to be applied in the project. The activities prepared by the Spanish and Lithuanian teams were re-submitted to the revision of the teams for application in the project. The revisions were discussed at online meetings and the activities were finalized.

There are two separate versions of the 3-4 age and 5-6 age group events: “with robot and without robot activities”. The theme of the event does not differ according to these two versions. In the activity where the robot is not used, the activity process continues routinely and ends. At the activities where the robot is used, the robot is included in the activity process in the last part of the activity; at the beginning of the activity, children are expected to perform the tasks that they perform themselves, this time through the robot. For example;

In the 3-4 year old robot unused activity, children try to create sentences of three words with picture sentence cards. In the 3-4 year old activity with robot, after studying with sentence cards, a robot platform consisting of picture sentence cards is revealed, and children are asked to code the robot and collect the picture cards related to the specified sentence on the platform via the robot.

In the 5-6 age group activity with robot, children collect cards with a numbers and a Dino images representing that numbers. For example, by showing the card with 8 Dino pictures on it, they answer to the question "Which Dino cards we bring together will we reach 8 Dino?" by trying to find the relevant Dino cards. In the with robot version of the activity after collecting exercises with Dino cards -a robot platform with the robot and Dino cards with some numbers on it, for example, by coding the robot to create the 8 Dino cards- the children are expected to collect them on platform via the robot.

In 0-2 age group activities, the robot is not used. Children carry out activities integrated with nature in open spaces.

2.4 Educational Tools in the PEARL Education Model

Robot Doc produced by Clementoni, one of the project's partners, was used to give children robotics and coding skills. It is known that robots help improve numerical thinking skills (Bers, Flanney, Kazakoff, & Sullivan, 2014). PEARL Training Model also argues that robots can develops skills such as group sharing, social and communication skills, empathy, creativity, personal expression, etc. Robots are used to develop prosocial skills and values in this project.

2.5 Experimental Application

Experimental applications in the development of the PEARL Education Model were carried out in two stages. These stages are; 1. Pilot Application, 2. Secondary Applications.

2.5.1 Pilot Application

In the pilot application, a separate experiment and three control groups were created for the, 3-4 and 5-6 age groups. For 0-2 age group there is one experimental and one control group. Experimental group in 3-4 and 5-6 age groups, are children that were involved in activities with the robot. Children who were involved in the single child with robot, single child without robot and a group of children without robot constituted the control groups. The robot did not take part in the activities of children in the age group of 0-2 years. In this age group, children who participated in group events with materials with nature content created the experimental group, and children who participated in individual events created the control group. The experimental and control groups created at this stage are listed below:

For 3-4 and 5-6 age group:

- Application of the activity to a group of 5 children with a robot (Experimental Group)
- Application of the activity to a single child with a robot (Control Group)
- Application of the activity to a single child without a robot (Control Group)
- Application of the activity to a group of 5 children without a robot (Control Group)

For 0-2 age group:

- Application of the activity to a group of 5 children with natural materials (Experimental Group)
- Application of the activity to a child with natural materials (Control Group)

During the pilot application phase, the activities were applied twice a day apart.

2.5.2 Second Application

In the second application phase after the pilot application is completed, experimental and control groups were established in the countries of the project partners for the 0-2, 3-4 and 5-6 age groups. These groups are:

For 3-4 and 5-6 age group:

- Application of the activity to a group of 5 children with a robot (Experimental Group)
- Application of the activity to a group of 5 children without a robot (Control Group)

For 0-2 age group:

- Application of the event to a group of 5 children with natural materials.

In the second application phase, unlike the pilot application, activities were applied to children in the experimental and control group once.

2.5 Application of the Activities

The activities prepared under the PEARL Education Model are first translated into each country's own language. In the first phase, Robot Doc was provided to the schools where the pilot application would be applied and the practitioner teachers at the schools were given an online training and informed about the activities and the implementations. Then the teachers applied the activities with the children. While the activities were being applied, video recordings were taken. In each of the partner countries, two field experts have been identified to fill out the observation forms. The field experts then watched video recordings of the activities applied in their country and filled out observation forms.

The second phase also took place with schools volunteering to participate in the project. Activities suitable for the experimental groups of the second phase were again explained to the teachers with an online training meetings. The project is still ongoing at this stage.

2.6 Analysis Of The Data

Data will be analyzed using appropriate statistical methods. The project is in the second phase of experimental application.

3. Results

In this study, PEARL “Emotional Empathic and Proximal Learning Educational Environment” 2018-1-IT02-KA201-048515 project was introduced within the framework of Erasmus+ Strategic Partnership. The experimental work created within the scope of the project is still being applied.

At the end of the project, the data obtained from the project will be discussed and evaluated through a network of international institutions and experts. In line with the results, a White Book on educational models and approaches will be created. Those who want to reach comprehensive information about the project can access the <https://pearl-project.org/> page.

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