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

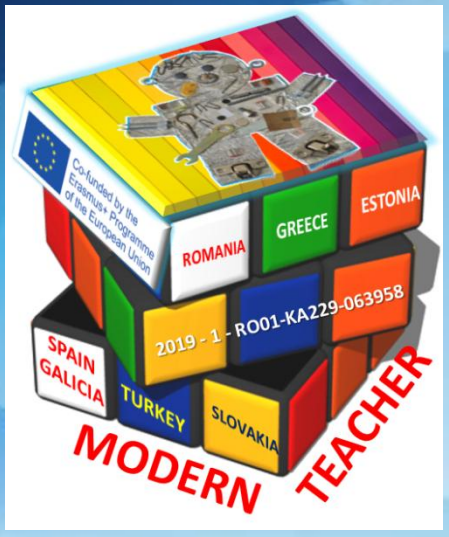
METHODOLOGICAL GUIDE

THE GUIDE OF THE MODERN TEACHER

REALISED UNDER THE ERASMUS+ STRATEGIC PROJECT FOR EXCHANGE OF GOOD PRACTICES

"MODERN TEACHER"

2019-1-RO01-KA229-063958



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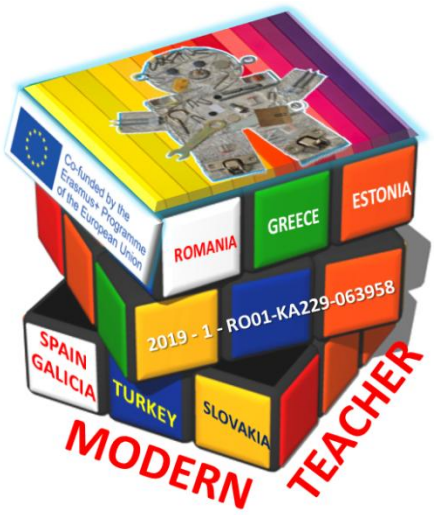

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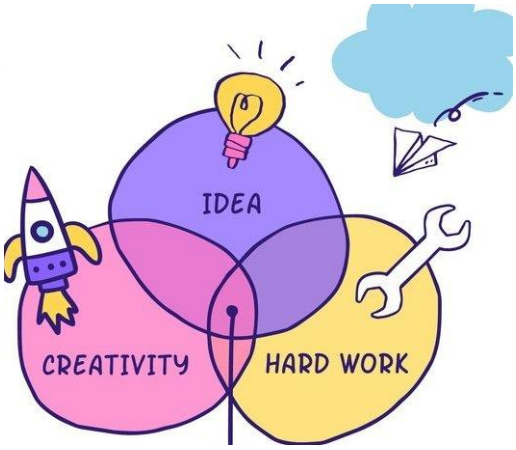
CHAPTER 1

Developing the creative thinking through modern methods and techniques. Examples



1.1. Modern methods and techniques in ”Dumbrava Minunată” Kindergarten

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

Petruța-Raluca Suditu

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We think that in order to identify the best methods and techniques for developing critical thinking, it is necessary to have a very good understanding of this notion.

What is critical thinking?

Critical thinking is the ability to think clearly and rationally, to understand the logical connection between ideas. Critical thinking has been the subject of much debate and attention since the time of the great philosophers of ancient Greece, such as Plato and Socrates, and has continued to be a topic of discussion in our modern age. Critical thinking can be described as the ability of an individual to engage in reflective and independent thinking.

In essence, critical thinking involves the ability to reason. It is about active learning rather than just being the recipients of information. Those with critical thinking research, rigorously question every idea, every hypothesis, instead of accepting them at face value. They will always try to determine if the ideas, arguments, and findings are true to the whole picture, and at the same time they are open to find out that they are not true. They will identify, analyze and solve problems systematically, rather than through intuition or instinct.

Those with critical thinking skills can:

- understand the connections between ideas;
- determine the importance and relevance of arguments and ideas;
- to recognize, construct, and evaluate arguments;
- identify inconsistencies and errors in reasoning;
- address issues in a coherent and systematic manner;
- reflect on the justification of one's own assumptions, beliefs and values.

Critical thinking is a special way of thinking in such a way that we arrive at the best possible solution in the circumstances that are provided to us. In everyday language, it is a way of thinking about

everything that concerns your mind today, so that you can reach the best possible conclusion. In order to develop critical thinking in kindergarten children, it is necessary to complete the following steps:

1. Evocation stage: the children are asked to remember what they know about the topic to be addressed;

2. The stage of realizing the meaning (understanding): it is the stage in which the children integrate the given ideas in their own schemes of thinking in order to give them meaning;

3. Reflection stage (fixation): is the stage in which they critically analyze what they have learned, receive feedback from colleagues and the teacher, solve work tasks.

Examples:

A. The method of the Pyramid or the **"Snowball"** is based on the interweaving of individual activity with that carried out in groups. It consists in incorporating the activity of each member of the team in a broader collective approach, meant to lead to solving a given task or problem.

Steps:

Introductory phase: the problem data are presented by the teacher.

Individual work phase:

- within five minutes, each student tries to solve the problem by thinking / working alone;

Pair work phase:

- the children form pairs and discuss the solutions identified in the previous stage;
- the children ask their colleagues for answers to the previously identified questions.

Larger group meeting phase:

- the pairs come together and form two large groups, with an equal number of participants;
- the solutions of the identified problem are discussed in the third stage;
- can be found answers to the unanswered questions.

Collective reporting phase:

- the solutions found are analyzed, at the level of the whole class;
- the found solutions can be written on the board by the teacher and represented through images so that it can be seen by every child and compared with each other;
- unanswered questions are answered, this time with the help of the teacher.

Decision-making phase:

- the most appropriate solution to solve the problem is chosen;
- the conclusions are formulated regarding the students' approaches.

Benefits:

- develops cooperative learning;
- stimulates the manifestation of team spirit;
- develops communication skills;
- develops the capacity of analysis, critical thinking and argumentation;
- increases self-confidence.

Fig.a. The method of the Pyramid – the Snowball applied on numeration and spring flowers

B. The Cube method

This method took its name from the main object (a cube) through which it conveys the tasks to the students. It is a way of teaching-learning that capitalizes on the resources of children to consciously participate in discovering the knowledge and relationships between them. It is one of the clearest methods for developing **critical thinking**. Structuring learning based on solving the six tasks (corresponding to the six sides of the cube) challenges students in principle along the entire path of cognitive levels proposed by Bloom, within its taxonomy. The method is used when we want to find out as much information as possible about a phenomenon, a theory, etc., looking at them from various points of view.

How is this method applied?

The teacher prepares a cardboard cube on the six sides of which he writes / represents through images or numbers, six tasks: describes, compares, associates, analyzes, applies, argues. If he designs his lesson based on this technique, he has the opportunity to use it either frontally (presents a cube face, reads the task and debates; with the whole group), or individually (turning a cube face and proposing the task to the children as an independent activity) or can group children in pairs or teams of 4-5 each receiving one of the six tasks for solving. From the reporting that each team does, a common sense of learning is actually built.

The approach of the content to be studied can be done, on the one hand, in an order of complexity of the tasks that resume the natural path of the production of scientific knowledge as follows:

1. describe - the students fulfill this task researching how it looks, what characteristics has the object to be studied;

2. compare - causes students to notice similarities and differences (with what / who is similar and from whom / what is different?);

3. associate - students respond to this challenge by looking for analogies, correlations with other experiences or phenomena; The support question might be: "What do we mean when we talk about ...? ";

4. analyzes - refers to the mention and "dissection" of the component elements: "What is it made of?", "What does it contain?", "What stages does its development include?";

5. apply - "How can it be used?", "What can we do with ...? "What is its use?";

6. argues (for or against) - "Is it good to use ...?", "Is it good or bad? "Dangerous or not?", "Why?".

As a natural conclusion of the approach, it is considered necessary a quick assessment by a test containing tasks from the six items suggested by the faces of the cube.

The above order is not fixed. The same content can be approached randomly, in the order in which the faces of the cube appear, after it has been rolled on the chair.

The method proves, like the others, formative virtues also focused in the following directions:

- children activation and awareness
- initiation in rational argumentation
- ability to collaborate, to build a constructive dialogue
- take on group tasks
- training both intellectually and socially

Fig.b. The method of the Cube applied on Geometrical figures

C. The method of thinking hats

It involves stimulating the critical thinking, the creativity and is based on the interpretation of roles, depending on the chosen hat. Children are divided into six groups for six hats. The distribution of children depends on the studied material. For the success of this method it is important that the teaching material is rich in content and that the hats are colored to attract students.

The Blue hat is the leader. It is the hat responsible for controlling the discussions, drawing the conclusions - clarifies / chooses the correct solution.

The White hat has information on the topic under discussion, makes connections, provides information exactly as received. It is neutral, the participants are taught to think objectively - it has accurate information.

The red hat expresses the feelings towards the characters it meets, it transmits emotions.

The black hat is the critic, presents the possible risks, mistakes in the proposed solutions, expresses only negative judgments - is the pessimist.

The green hat offers alternative solutions and generates new ideas. Lateral thinking is specific to him.

The yellow hat - is the creator, the symbol of positive and constructive thinking, optimistically explores the possibilities, creates the end and shows that the effort brings benefits.

Students need to know very well the meaning of each color and present their perspective according to the color of the hat they are wearing. It's not the hat itself that matters, it's what it is.

Fig.c. The Six Thinking Hats Method applied on fairytales

D. The Starburst Method

Derived from the English language (star = star, burst = to explode), the term designates a method similar to brainstorming, with which it is not confused. It involves organizing the group of children into smaller groups and stimulates the creation of questions by questions, as brainstorming develops the construction of ideas on ideas.

Basically, the idea or problem to be debated is written on a piece of paper or represented through an image, and then as many questions related to it are listed around that concept. We recommend, for the beginning, the usual questions, such as: Who ?, What ?, Where ?, When ?, Why ?, which may later give rise to other questions, some even strange but welcome (through them following-there are, in fact, unexpected interpretations of the literary work, or the finding of seemingly surprising analogies between literary works, their authors or characters).

Steps:

- Propose the problem / the story / the theme;
- Organize the class into several groups;
- Develop, in each group, a list of various questions related to the topic to be discussed;
- Communicating the results of the group activity;
- Highlighting the most interesting questions / answers and appreciating teamwork;

Benefits:

- is one of the most relaxing and enjoyable teaching methods;
- stimulates individual and group creativity;
- it is easy to apply to any type of student body, regardless of the age or individual characteristics of the students;
- develops the spirit of cooperation and competition;
- develops spontaneity and group creativity, but also teamwork skills;
- emphasizes the stimulation of each participant in the discussion;
- does not require too much time for prior explanations, as it is very easy for all students to understand.

Optionally, you can also develop answers to some of the questions.

The starbursting method is easy to apply to any age and a wide range of fields.

It is not expensive and does not require detailed explanation. Participants quickly get caught up in the game, which on the one hand is a way to relax and, on the other hand, a source of new discoveries.

Fig. d. The Stelar Burst applied on ”The Very Hungry Caterpillar” by Eric Carle

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1.2. Developing the creative thinking through modern methods and techniques. Examples

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

Paula Mª Souto López

Soraya Remuiñan Barca

In thechanging world in which we find ourselves, it is important for the school to foster skills such as creative and critical thinking, communication, collaboration, problem solving, working from a competency approach.

As an educational center we find really important to promote the creativity of our students since it allows them to develop their own ideas, value their products, face challenges in a wide range of ways, always with an open mind to different ways of seeing things, achieve autonomy and independence.

Through this "Modern teacher" project, we had the opportunity to use different resources that allowed such thinking.

Below we refer to the different methods and techniques used throughout the program.

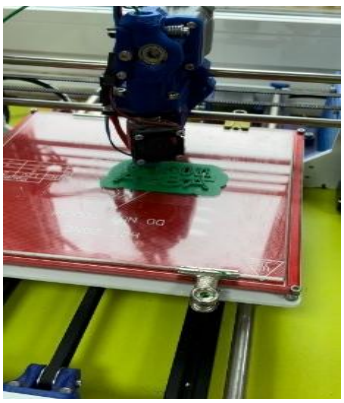
Microscope area, allows the kids to investigate different elements found in the immediate environment and thus learn from observation.

Light table area: through this material curiosity is stimulated, it is attractive and arouses the interest of the child, it also enhances creativity and improves concentration.

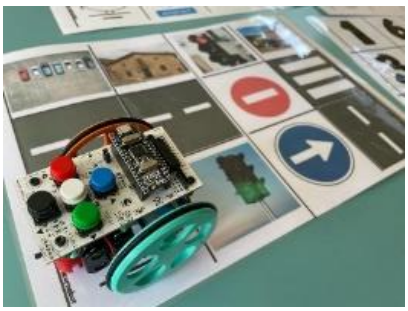
Experimental table allows autonomous exploration with different materials and experiments from which they can make hypotheses and approach scientific thinking.

Augmented Reality and 3D glasses: This resource stimulates the child's curiosity and interest by being able to see things in 3D that they do not have in their next reality.

3D pencil and 3D printer: stimulates creativity as our ideas and creations can be turned into three-dimensional objects.



Rat, Scornabot, Beebot, Mtiny, Matatalab: different types of robot that allow students to get closer to the world of robotics, working on programming and basic concepts of spatial orientation



1.3. Modern Methods and techniques in Tallinna Lasteaed Südameke

Tallinna Lasteaed Südameke, Tallinn, Estonia

Mirjam Saia

Janika Oleinikova

Ülle Mägi

Larissa Malõševa

Estonian national curriculum for pre-school institutions combines different child-centred active learning methods such as “Step by Step”, the Montessori method, the Waldorf method of teaching, Reggio Emilia, language immersion as well as research, entrepreneurship and outdoor learning.

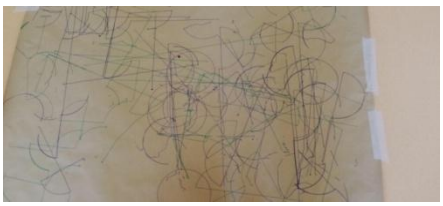
These methods allow us to be creative and make our work more interesting for children, teachers and also parents. Institutions along with teachers can try different methods and choose the right one for them.

We use in our kindergarten project based learning that comes from Reggio Emilia and we have language immersion groups. Also we use research, entrepreneurship and outdoor learning. All these methods help children learn basic skills that are needed in modern society.

We especially like project based learning because it gives choice to the children. Children are active while preparing themes, finding or creating materials and creating the result of the project.

Sometimes older children teach new knowledge to younger children or even to teachers.

Example: We taught how to draw with Bee-Bot robots to older children at first and after those children taught it to children from the nursery group and we used their help on a family day event in kindergarten.



1.4. Modern Methods and techniques in Mehmet Akif Ersoy Ilkokulu

Mehmet Akif Ersoy Ilkokulu, Efeler, Aydin, Turkey

Jbdun Uysal

Uğurgül Elen Dede

Hatice Tikveş

We created robots with waste materials using SCAMPER (Substitute, Combine, Adapt, Modify, Minify, Magnify, put to other uses, Eliminate, Reverse Rearrange) and brainstorming methods. With this method, creative thinking skills develop, finding solutions to problems, and different thinking skills are developed

Thanks to the troublesome use of modern methods, learning becomes permanent. As the desired gains will attract the attention of students, it will strengthen learning. It will provide ease of understanding and expression. Modern techniques strengthen and make the teaching and learning process effective. We use these methods to develop creative thinking in the lessons.

These methods enable teachers to be more productive, lessons are more fun and efficient. Students come to school with curiosity, love and happiness.

1.5. Modern Methods and techniques in Mia Fora Ki Enan Kero

"Mia Fora Ki Enan Kero" Private Nursery, Athens, Greece

Vasiliki Sotiriadi

Styliani Sotiriadi

Anastasia Gioume

VasileiaBartzou

Marina Michalopoulou

Dr. Petros Georgiakakis

How young children learn:

- As they see, hear, touch, smell, taste and move in space.
- As they experiment with a variety of materials.
- As they talk, they listen, they ask and they answer.
- As they solve problems and give answers to questions.
- As they test situations and evaluate the results of their actions.
- As they connect things the same and dissimilar.
- As collaborate with adults and peers.
- As they imitate, copy, pretend and try on roles.

Children do all of the above when they play. The game is the context and the medium through which children learn best.

Finally delving into the theory of multiple intelligences, where according to Howard Gardner each person has a different learning style and different types of intelligence. These multiple types of intelligence can be cultivated and strengthened. Based on the above theory, we shape our environment to meet the principles of the theory of multiple types of intelligence, thus unfolding the talent of each young student and giving him the opportunity to cultivate it.

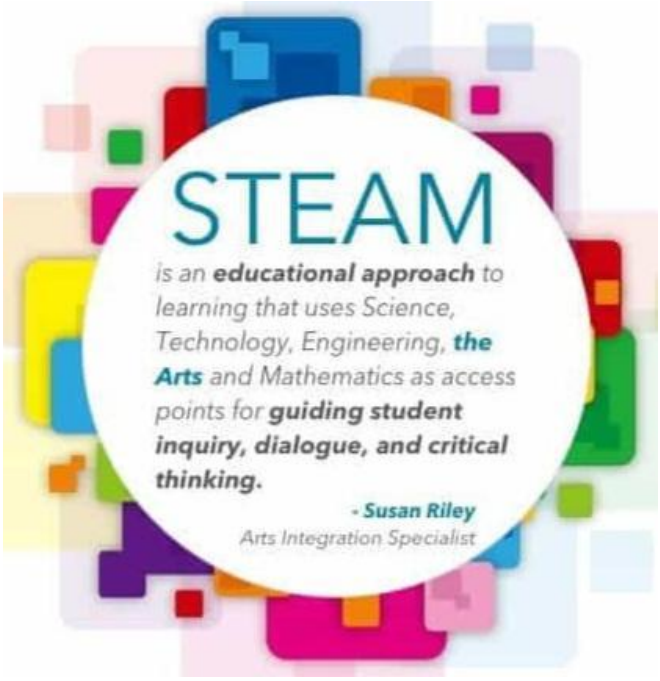
Here our students “think outside the box”.

Creativity meets arts

Nature gives unique shapes and materials to foster curiosity and “produce” innovation

CHAPTER 2

The definition of STEAM. The holistic approach of children in STEAM. Good practices.



2.1. STEAM Curriculum in ”Dumbrava Minunată” kindergarten

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

Petruța-Raluca Suditu

Cătălina-Elena Vîlcea

Daniela-Georgeta Popescu

Maria Antoaneta Marina

What is STEAM Education?

,,STEAM is an educational approach to learning that uses Science, Technology, Engineering, Arts and Mathematics as access points to guide the survey, dialogue and critical thinking of students.

The end results are students who take risks, engage in experiential learning, persist in problem solving, embrace collaboration, and work through the creative process.”

- Susan Riley, Arts Integration Specialist

S.T.E.A.M.

It combines four sciences and the art whose initials make up its name.

S - Science

T - Technology

E - Engineering

A - Arts

M - Mathematics (Mathematics)

The result of this mix of science and art proposes an attractive learning environment for the children in this type of education, where the emphasis is on the application of the methods learned in everyday life.

By integrating STEAM education concepts, assessment topics and standards, we have a way to change the course of the regular learning process.

STEM education refers to the teaching of the four sciences with a common approach, introduces the humanities field, namely the arts, for an improvement and optimization of the learning process.

The arts are a piece that can interconnect the four sciences and allow the integration of several types of people throughout the line of learning.

The arts have the following taxonomy:

- visual arts with reference to painting, drawing, sculpture, media arts, photography;
- visual arts-performing arts related to dance, theater, music, skills and aesthetics;
- humanities and liberal arts.

Why were STEAM programs created?

STEAM programs were created to train future employees to help grow science and technology-based industries.

And, more important, to provide children with a complex education.

For a long time, the four sciences **(STEM)** were taken over and taught to children as separate elements. Then came this kind of education that intertwined them by adding art.

The key to success in society is to provide children with the knowledge and skills they need to cope, even more so, in a world that is constantly changing.

STEAM education focuses on learning as much as on results.

STEAM education incorporated design thinking and the design process to provide a solution based on problem solving approach.

It provides opportunities for experiential learning and gives students the opportunity to **think critically** and to educate themselves.

Children are simply challenged to take on a problem and solve it. Through **critical thinking** they need to ask questions and find answers.

The mistakes are to be appreciated in this process, because they represent the fact that something went wrong and we will have to see "what?", But also to find the right solution. From here we understand that this type of education encourages perseverance.

Children are encouraged to listen to the opinions of others and to share knowledge.

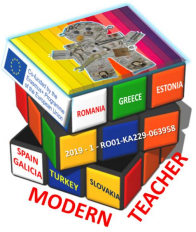
They learn that they can support the world in a positive way through the new knowledge they will put into practice.

Important points in teaching

Teachers who teach this type of education are guided by 6 steps.

1. Focus

In this step, the teacher selects an essential question or problem that he / she conveys to the students. It focuses on whether the question or problem is well focused, clear and with reference to both the STEM side and the arts.



2. Detail

It is the step in the process of finding the answer or solving the problem. Also in this phase there are correlations between several areas and implicitly a lot of information, skills or key processes that students must already address.

3. The discovery

It is the stage in which the teacher can analyze the gaps that students have in their own skills and processes. It is the phase that refers to active research and intentional teaching.

4. Application

The most fun part is applying. Once students have all the information and analyzed the current solutions, they can begin to create their own solutions and processes for solving the problem.

Here he uses his own skills, processes and knowledge that were accumulated in the previous stages.

5. Presentation

This phase of the process focuses on sharing with others. Everyone expresses their opinion, expresses feedback and receives one.

It is time to learn to give and receive contributions.

6. The connection

Refers to the loop that closes the activity. It is meant to give students the opportunity to reflect on their process and the feedback they receive.

Based on this reflection, students will be able to self-correct and improve their own skills, abilities and knowledge.

The benefits of STEAM education:

- arouses students' interest by intertwining science with art;
- intervenes in the development of problem-solving skills;
- students get involved in process;
- share ideas or discoveries with others;
- develops communication skills;
- develops a feeling of empathy;
- develop participants cognitively;
- develops creativity and imagination;
- builds the foundation for a future adult with the skills and solutions;
- forms, "innovators, educators, leaders and students of the 21st century."

The difference between the Traditional Education System and STEAM Education

In the recent decades, there has been an evolution in education systems.

Everything has changed, from the physical environment to the curriculum, teachers, students, teaching and assessment methods, etc.

Parallel between the two methods of education

Traditional Education System	STEAM education
- programs are not integrated. - children take information separately from each discipline and do not always manage to make a connection between them. - students often do not understand what some disciplines help them with - boredom intervenes. - it's a lot of individual work - the skills needed for the 21st century are not being developed. - teachers pass on knowledge but do not integrate it into a broader, multidisciplinary context. - exams depend on memory and there is not enough emphasis on comprehension. - there is no clear connection between classroom knowledge and real life. - the classes are arranged without being based on feedback.	- emphasizes the development of 21st century-specific skills. - encourages perseverance. - proposes entrepreneurship in thinking. - encourages teamwork. - the teacher acts as a mentor who guides the child to development. - the teacher organizes the information he transmits to the students in an easy to understand way. - evaluation is based on projects, teamwork, cooperation during the evaluation. - participants are eager to learn. - they are ready to be the next generation of entrepreneurs.

STEAM education is a structured process of integrating the exact sciences and arts, with the aim of training future intelligent adults, easily adaptable to society and able to highlight the knowledge gained throughout the education process in the future job.

Examples of good practices – STEAM activities:

* The teacher created a coloured pattern on the floor, formed from rectangles;
* Each child will draw 2 tickets from 2 different baskets. One will indicate a color and the other a number from 1 to 5 (for middle group).
* The child will find as many lego pieces (that have the same colour as his ticket) and arrange those near the correct rectangle (color rule).

Based on ”The very hungry caterpillar” story by Eric Carle, the children:
* built the caterpillar using colored balloons;
* cut out different fruits from colored paper;
* threw a giant dice on the floor, they found a number from 1 to 6 and
* counted as many fruits for the hungry caterpillar

* Connecting colored tiles, the children built transportation vehicles;
* Each transportation vehicle required one specific color (yellow –car, blue – boat, green – plane, red – bicycle).

* During the celebration of the National Day of Romania, the children:
* painted circles in the colors of the Romanian flag;
* glued the circles on the floor;
* filled the circles with plastic balls of the same colors (blue, red and yellow)
* learned that Red, Yellow and Blue are the primary colors.

* During the celebration of the 24 of January – Celebration of the Small Union from 1859, the children:
* cut out pieces of paper using the colors of the Romanian flag
* cut out red, yellow and blue objects;
* glued the objects on the colored pieces of paper;
* made sure to respect the color so that the

Based on story ”Pete the cat and his modern buttons”, the children:
* painted Pete the cat;
* cut out colored buttons
* threw a giant dice on the floor, they found a number from 1 to 4 and
* counted and glued as many buttons as the dice indicated on Pete s shirt respecting also the color indicated by the dice.

2.2. STEAM experiments and ALBI Pencil

Examples of good practices

Základná škola s materskou školou, Habovka, SLOVAKIA

Miroslava Mydliarova

Katarina Vrabcova

- Albi pencil offers the children individual exploration of the world.
- For example, a set of books includes books about the universe, pets, forest animals, where the children gain knowledge by clicking a pencil on a given picture in a book.
- The interactive book also offers a variety of tasks and questions that the children answer, and the pencil gives them feedback to verify their accuracy.
- The children learn autonomy, auto correction and self-reflection.

Experiment with shaving foam

We pour some water halfway through the container.

We spray shaving foam on the water.

Using a pipette, the children gradually drop colors and can watch them slowly move to the bottom. A rainbow is created.

The children get acquainted with rainbow colors during the activity.

Experiment with milk and soap

We pour the milk into the container. Then we pour different colors into the milk. We apply liquid soap to the cotton bud stick. The children immerse the soap bar in a container with colors and can observe how the color separates from the milk.

The children consolidate their knowledge of colors during the

Experiment with the sweets Skittles

When discovering colors, the children can track different shades of color through the experiment.

We store skittles on the edge of the plate with water and the children observe how they dissolve, connecting colors and creating different shades.

2.3. STEAM education in ”Mia Fora ki Enan Kero” kindergarten

“Mia Fora Ki Enan Kero” Private Nursery, Athens, Greece

Vasiliki Sotiriadi

Styliani Sotiriadi

Anastasia Gioume

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STEAM Education is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking.
STEAM is an educational approach that incorporates the arts into the more-familiar STEM model, which includes science, technology, engineering and mathematics. STEAM programs can include any of the visual or performing arts, such as dance, design, painting, photography and writing.

The focus has been on STEM fields and education for them since the late 20th century, when the ongoing shortage of technology workers began. Since that time, government agencies in many countries around the world have invested heavily in STEM education and its promotion. The emphasis on fostering STEM skills has inescapably led to decreased emphasis on other subjects in the arts and humanities, with the result that funding for them has dwindled and students have fewer arts-related options.

Exemplary science education can offer a rich context for developing many 21st-century skills, such as critical thinking, problem solving, and information literacy. These skills not only contribute to a well-prepared workforce of the future but also give all individuals life skills that help them succeed.” (NSTA, 2011).

There is a natural match between 21st century skills and the basic tenets of S.T.E.M. Designing 21st century instruction begins with identifying basic themes and concepts that incorporate multiple subject content. Through the integration of science, technology, engineering and technology, a S.T.E.M. curriculum exemplifies the cross-curricular learning that is the foundation of a 21st century curriculum.

To prepare students for their future lives and careers, they need to wrestle with real-life

problems that are engaging and relevant. S.T.E.M. projects require students to be active learners who learn important concepts through creative and innovative projects. Their involvement in the problem-solving process builds a culture of inquiry, in which asking and answering their own questions becomes the centerpiece of the learning process. As problem solvers, students use high levels of thinking as they apply content knowledge in innovative ways

Kids are always open for the unexpected, not afraid to do mistakes, ready to enjoy learning.

Kids always want to “touch” knowledge. For them is a kinesthetic experience a hands-on learning procedure.

2.4. The definition of STEAM

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Mirjam Saia

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STEAM holistic approach combines five different subjects into one whole knowledge. It will lose the idea that some children are more numbers people and some more language people. Children can build or grow their knowledge base, without even noticing that they are actually learning, so it will help to build their confidence.

Good practice: We have children who are really interested in space and are talking about it a lot. They use different types of STEAM block sets to build spaceships and explain to other children how things work and what they are. Older children read from books new things and explain what they learned to others. So STEAM is also a good way to build team-work.

2.5. STEAM Digital Platforms

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Jbdun Uysal

Uğurgül Elen Dede

Hatice Tikveş

Learning becomes permanent and enjoyable with activities that support creative thinking and development in accordance with the level of students on Steam digital platforms. Learning with Steam is fun and permanent. Coding helps them to be successful in many stages, in applying and following the guidelines. Thanks to Steam, their problem solving skills will develop and they will learn to approach events holistically.

Teachers are more effective and successful in education and training.

2.6. STEAM Education – Good practices from Galicia

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

Sara Varela Rama

Marta Varela Rey

STEAM seeks to educate students in the disciplines of science, technology, engineering, art and mathematics; all this in a practical and globalized way. By combining artistic and creative skills through ICT/CT, aspects such as innovation and design are valued, as well as the search for diverse solutions to a single problem.

Regarding the holistic approach, practical training through multidisciplinary projects based on the teaching of STEAM disciplines stands out. In this way, the students work in a real way through experimentation. Application in the classroom and good practices:

Group activities: Looking for common decisions

Development of communication skills

Creative problems solving

Promoting the capacities of the imagination

Active and first person experimentation of learning

Improvement of group and individual self concept

- Children have the need to do things over and over again before learning them. If we start from the game, they discover the world for themselves, doing a self-assessment of the process in a fun and entertaining way, promoting team work. In this case, these educational proposals encompassed under STEAM, aim to achieve and develop learning processes based on:

- Solving problems through logical reasoning.
- Incorporating situations into everyday life.
- The autonomous use of technological tools.
- Repetition of a fact and search for answers through investigation.

CHAPTER 3

About Team-Building, cooperation and learning through discovery and their important role in the inclusion process of the special children

3.1. About the Team-building in preschool and its benefits for the special children

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

Petruța-Raluca Suditu

Cătălina-Elena Vîlcea

Daniela-Georgeta Popescu

Emilia Mihaela Albescu

"Children's games are not games and it should be judged as their most serious deeds."

Michel de Montaigne – Philosopher

In preschool, the main activity of the child is the game so the Team-building process is realized through specific games also.

Children's team games are a recreational activity that promotes collaborative work. The intention is to achieve a common goal at the expense of focusing on competition. This teaching tool is excellent for inducing values in education at an early age. It is also a great way to promote strategies for developing the social skills of future adults.

Children's team games

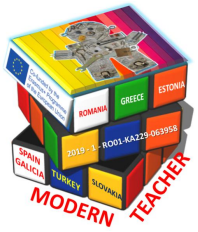
The concept of collaborative or cooperative play aims to be an alternative to competitive games, especially in the Step by step educational alternative that our kindergarten is using entirely, supporting the idea of a relaxed, friendly environment. All children can participate in these team games, without any exclusion or discrimination. Thus, each of them can contribute through their unique abilities.

As we proved during more than a decade of practice, there are many benefits to collaborative play in children. In the short term, this concept contributes to the birth of a constructive educational environment. In addition, in the long run, it improves positive social interaction skills.

Reasons to encourage children's team games

1. Creates awareness, respect and solidarity

Empathy is one of the core values of the collaborative game, the goal being to encourage awareness and respect for others.



First of all, a collaborative game is based on the principles of respect and solidarity. These are awareness-raising games designed to combat discrimination. Team play in children can also be a **bullying prevention strategy.**

Some schools and kindergarten in Romania are already adopting this type of technique that invites children to empathize with their classmates. In this way, they can put themselves in someone else's shoes and realize their options for solving challenges together.

2. Collaborative play is about cooperation and teamwork

This kind of game integrates all participants and invites them to help each other. In fact, it is essential that they find a way to work as a team to solve a challenge. Therefore, in no case can a child win on his own, as happens in many games, because everything is based on collaboration and mutual support.

As you can see, children learn to appreciate each other's special abilities and know when to use them. For example, if a child is good at math but not at sports, then he will not be excluded from the group because he cannot win a race. Instead, he will be responsible for another task in the collaborative game.

3. Improve communication skills

To play this type of game, children need to communicate with each other. Thus, they end up perfecting their social skills.

In order to solve the tests or challenges present in the game, children need to establish good communication with their peers. Therefore, they practice how to express themselves and express their opinions.

At the same time, everyone is learning to listen to each other. This strategy seeks to balance communication between children who speak very rarely and those who speak constantly. Thus, there are equal opportunities for all.

4. Collaborative play is useful for resolving conflicts

Through play, children learn to resolve conflicts without realizing it.

The first step is to learn to express the need to resolve a conflict. Therefore, they observe the effectiveness of this strategy and then transport it to other situations in the classroom or during breaks. Children will also learn to use this skill in their family and work environment as adults.

5. Team play in children builds self-confidence

Collaborative play encourages confidence and self-esteem.

Finally, the concept of collaborative play strengthens each child's self-esteem and self-confidence. Through this activity, children learn to play a key role in a group in order to achieve a common goal. They may even discover talents that they did not know they had after observing their colleagues.

Collaborative play is an excellent teaching tool in any educational environment and at any age. Kids are like sponges because they absorb everything they see. Therefore, they will assimilate all these collaborative values in a spontaneous and natural way.

The advantages of games and team activities for both healthy and special need children:

a) Task solving stimulation is improved due to the presence of others;

b) Group resources (memory, storage, attention) are richer than in individual cases;

c) There is a higher chance that one of the members of the group will be able to discover the solution;

d) Accidental mistakes are compensated. Despite their occurrence, the overall result of the group will be more accurate than that of the individual taken separately;

e) Blind spots are corrected. It is easier to acknowledge the mistakes of others than your own;

f) Stimulating the emergence of new ideas is a result of the cumulative interaction, because each member develops the ideas of the other;

g) It is learned from the experience of others. There is much evidence that one of the most common and effective ways to learn is to observe the work of others in problem solving;

h) Self-confidence, based on self-acceptance;

i) Better, more tolerant relationships with colleagues, regardless of ethnicity, intellectual abilities, physical condition;

j) Better focus on learning and reducing disruptive behavior;

k) Increased motivation for performance and intrinsic motivation for learning.

When can we build a team?

During practical activities

During sport activities

During painting activities

During outdoor activities

During Science activities

During Math activities

During Dramatizations

At the Literacy center

When children assemble a puzzle

During a road education activity

WE CAN BUILD A TEAM ANYTIME, ANYWHERE!

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3.2. Cooperative learning. Classroom applications

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

Maria Victoria Gerpe García

María José Montáns Cousillas

Cooperative learning in our school is essential. We organize the classroom in small mixed and heterogeneous groups where students work together in a coordinated way to carry out educational proposals and deepen their own learning. In this way, the aim is for everyone to achieve the proposed objective, supporting and collaborating with each other, therefore, individual differences are not noticed, because everyone helps each other and all the children feel an important part of the task to be carried out.

This methodology helps to increase efforts to get the group to exceed its objectives, it also promotes positive interpersonal relationships and emotional health.

In addition, in our classrooms we always have significant learning in mind, we start from what the students already know and how they can reach a deepest knowledge. For this we try to personalize each game that we carry out in the classroom, taking into account their experiences, their surroundings, their family, their knowledge, etc.

The classroom climate is essential to achieve our goals, it is necessary to create a safe classroom climate that helps them to have a positive concept of themselves, increasing their self-esteem and improving their self-concept; where diversity is conceived as an enriching element. Working in small groups provides the kids with a calm environment where they have enough time to think and process information and multiple opportunities to receive feedback.

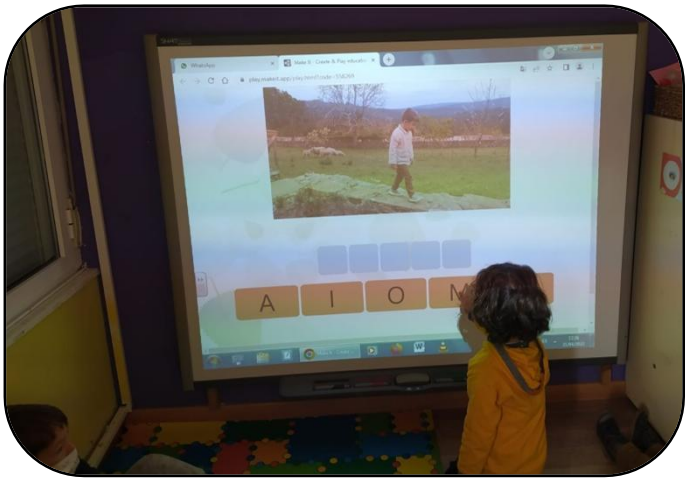
Classroom application

Next, we show what our day-to-day life is in the classroom, explaining with pictures how we work, the classroom climate created, the formation of workgroups, the pursuit of meaningfull earning, etc.

This image, for instance,reflects cooperative work in a small group. On this occasion we are going to work on the different types of landscape and to make this theme more attractive, we use pandita (mTiny coding kit) as a motivating element. In addition, we created and adapted game with photos of the own kids, where they appear in different landscapes

(coastal, mountain, rural, urban, etc.), in this way learning becomes more meaningful.

This activity is extremely motivating and very significant, since they are the stars of the game. The children choose the image of where they want to start and where they want to go, they think about the route the robot has to take and when it reaches its destination, one of the children is in charge of asking the others what kind of landscape it is , if it has natural or artificial elements etc. thus developing oral expression, spatial perception, listening skills and concentration.



In this example,we created a "make it" also personalized with photos of the children to continue with the theme of landscapes. To make the activity the kids have to work as a team. It is a game that allows them to start from their knowledge and personal experiences, and since they are the protagonists of the game, it is much more motivating.

In CRA, learning through contact with nature and with the environment that surrounds us is one of our main objectives. Now and then, we go out to the mountain, together we take care of the environment that surrounds us, we get to know the vegetation of the area and we collect several materials to carry out a variety of activities in the classroom. Team work is fundamental, helping each other, respecting diversity, being patient, etc.

In the classrooms we like to create life, learn through experimentation, and that is why every year we make our own seed beds to transplant them in our garden later on.

The school garden is an essential methodological tool, because in addition to promoting teamwork it also helps to value everyone's efforts, stimulates their senses, encourages care for the environment and helps us understand the importance of following a healthy and balanced diet.

One of the singularities of CRA is the coexistence and learning between kids of different ages, from 4th year of EI to 2nd year of EP.

In this image we can see how enriching this is, because the older ones are encouraged to teach the younger ones, and therefore everyone learns from each other. On this occasion a 2nd grade girl was reading a story to the little ones.

Evaluation

The evaluation in these early stages must start primarily from observation, this being the outstanding instrument. On a day-to-day basis we observe our students, writing down the result of that observation in double-entry tables that are recorded monthly and individually for each of them.

But in addition to individual assessment, co-assessment and self-assessment also become very important many other aspects only visible through reflection, and by generating situations in which the students themselves are the ones who have to think and express their vision of the final work and find out possible improvements, always inviting them to come to self-criticism and accept social criticism.

Also highlight the importance of evaluating the process itself and the approach to the activity, aspects that will be evaluated by the teaching staff, paying special attention to these three points:

• The distribution of the equipment was adequate.

• The organization of the activity and the distribution of time and materials, met the objectives at the learning level and at the motivation level.

• All students were included in the activity regardless of their individual characteristics.

Also point out the importance of not forgetting the formative evaluation process, which will allow us to introduce changes and adapt the activity in its own process depending on the real context.

Finally, it should be noted that the evaluation serves to know the results of the process, but it also plays a very important role in terms of the improvement and adaptability of the methodology to the specific context of our classroom at each moment and situation.

3.3. Team Building, cooperation and learning through discovery

"Mia Fora Ki Enan Kero" Private Nursery, Athens, Greece

Vasiliki Sotiriadi

Styliani Sotiriadi

Anastasia Gioume

Vasileia Bartzou

Marina Michalopoulou

Dr. Petros Georgiakakis

Group games are fantastic for kids; not only are such activities fun and engaging for the children themselves, they're also an opportunity to learn skills such as teamwork, cooperation and creative thinking. Team building activities also give kids the chance to build relationships with each other and develop their social skills.

Experiential training programs for Team Building in kindergarten aiming at:

- The strengthening of the cooperation-teamwork of the members
- Creating a common vision and values
- The development of a common strategy
- Resolving issues that concern the team
- Creating a climate of trust (high trust relationships)
- The strengthening of individual and group Accountability
- Dealing with and managing change (Making Change Happen - Embracing Change)
- Strengthen leadership skills
- Crisis Management
- Enhancing Creative thinking and Problem Solving skills
- Fun and bonding

Team building program full of action, cooperation & quality

3.4. About cooperation and collaboration in kindergarten. Sharing the knowledge

Tallinna Lasteaed Südameke, Tallinn, Estonia

Mirjam Saia

Janika Oleinikova

Ülle Mägi

Larissa Malõševa

Every child is curious and almost every child likes to share their knowledge with others. We have an inclusive education system, so in one group there can be different children, e.g. children with special needs and children with different languages are in the same group as so-called normal children.

Learning through discovery will make all different children work together, despite language or intellectual differences. Sometimes children can explain things better than a grownup can so that new discoveries are more understandable to all.

Example:

We had a sports week event where 96 children from our kindergarten participated. Children from older groups were divided into smaller groups and their first assignment was to learn about a sports app that will save your route into a phone. Some groups even studied maps and planned their walking route, but some groups just went to streets and walked. After the walk all groups looked at the shape of their route from phones and shared the shape to others. All children got printouts of the shapes and had an assignment to make a picture of the shape. Even children from the nursery group could participate that way in the event.

3.5. Responsibility and self-confidence through team learning

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Jbdun Uysal

Uğurgül Elen Dede

Hatice Tikveş

Working by creating groups in the activities in the lessons improves the sense of responsibility and self-confidence by providing cooperation between the students and learning by discovery.

Thematic corners were created through group work. Students enjoyed creating a product by working together. In group work, students with different intelligence types express themselves and cooperate with the group positively. Group work provides the opportunity for students to form a whole by supporting each other in unity and solidarity.

The responsibilities of the members of the group will increase. The permanence of the subject to be taught is ensured. Each student has the opportunity to demonstrate their performance related to their abilities.

CHAPTER 4

Satisfying the visual learning need – Virtual Reality and Augmented Reality

4.1. The exploitation of the New Technologies with the purpose of raising critical thinking, imagination and creativity in preschool

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

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A different reality for preschoolers - Augmented Reality

Education is undergoing rapid change, keeping pace with the amazing technological advances that are being made at a rapid pace.

Incorporating innovative technologies into pre-kindergarten instructional and educational activities means providing better training for children and giving them a real chance to become adults with a full range of skills, able to excel both in the future. both professionally and personally.

Educational institutions and implicitly teachers must keep up with this accelerated digitization, integrating new technologies and educational software in the teaching-learning-assessment process.
Augmented Reality technology enhances the specific features of real-world objects or images with a smartphone, tablet, or i-pad and specially crafted software, adding information through a variety of sensory modes (visual, auditory, sometimes even olfactory).

Augmented Reality allows three-dimensional visualization of objects, plants, animals, beings and phenomena studied, combining reality with virtual space, greatly increasing the degree of interaction of the child with them. This technology offers the opportunity to see a moving animal, planets, dinosaurs, the stages of a plant's development, etc.

The information that the child perceives about the world around him is strongly enriched through this technique, it becomes interactive and can be manipulated (objects can be touched, rotated through the device used for augmentation.

There are currently many Augmented Reality software dedicated to preschoolers: Wow 4D +, Space 4D +, ZappWorks, etc. (https://octagon.studio).

Augmented Reality is currently used globally as a complement to and improvement of the standard curriculum. Texts, graphics, video and audio elements can be superimposed on reality with the help of this technique, providing a much richer experience for children.

Many educational materials (textbooks, cards, brochures) have built-in "markers" that trigger a 3D or 4D experience when scanned with an Augmented Reality device, providing additional information in multimedia format. Children also interact actively with the learning environment.

Currently, this technology is also used in the field of art, piloting, archeology, military, tourism, design, etc. (https://arilyn.com).

Virtual Reality

Virtual Reality is a technology that simulates a real world or, conversely, an imaginary world. At present, it is used in the educational, military, medical, astronomical, etc. fields.

Compared to Augmented Reality, Virtual Reality simulates the child's presence in the virtual environment, offering the possibility to turn 360 degrees and offers the experience of situations that would have been impossible or difficult and expensive to achieve without this technology (visiting museums, cities, outer space, the underwater world, etc.).

The use of Virtual Reality content is usually very closely monitored and short-lived, with cognitive and behavioral effects on children being very different from those produced in adults.

Most virtual media are visual experiences, displayed either on a screen or with special glasses, with or without sound (https://edu.google.com/products/vr-ar/expeditions).

Because it provides a secure environment for learning and experimentation, virtual reality has begun to be used even in the therapy of the elderly with Alzheimer's or in the therapy of children with Autism, as a way to teach and repeat social skills, communication or desensitization and exposure. progressive to various stimuli.

There is a wide range of learning situations to which we can expose our children, without the dangers of the outside world (volcanoes, wildlife, underwater environment, travel).

To date, a number of advantages of using these technologies in the teaching-learning-assessment process have been identified:

- improving social and communication skills;
- developing critical thinking and creativity;
- stimulating long-term memory and imagination;
- enrichment of scientific knowledge;

- behavioral adjustment and adaptation to deal with new situations;
- generalization of learned concepts;
- identifying emotions and developing reactions appropriate to the simulated situation.

Virtual Reality has already shown its positive role in the lives of children with various physical or psychological conditions, giving them the opportunity to live experiences beneficial to their health, experiences that would be impossible without this advanced technology.

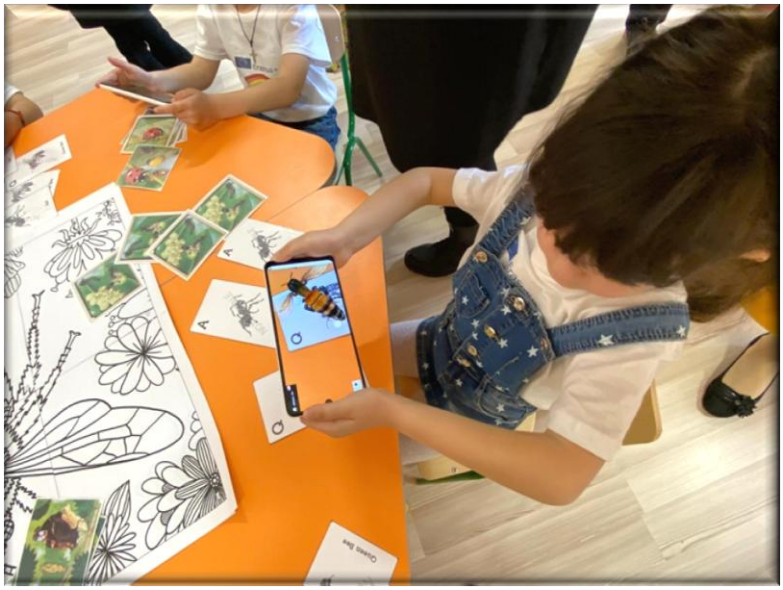
The software developers in the field have made available to children a multitude of applications: Google's Expeditons, Jurassic VR, BBC Earth - Life in VR, Fantastic Contraption, Tara's Locket, etc. (http://www.elearning.ro).

Using Augmented Reality

Augmented Reality is already widely used globally, with a lot of free content and software currently available.

We used the cards and applications Space 4D +, Animal 4D, Octaland 4D, Humanoid 4D, History of Aircraft 4D, Dinosaurs 4D and WoW 4D + created by Octagon especially for preschoolers, with which children could see how animals, planets, dinosaurs and plants come to life when the cards are scanned.

Animals 4D and WOW 4D + applications aim to highlight insects, pets and wildlife alike, allowing children to interact with them, see their usual movements, and hear their sounds.



With the help of the Dinosaur 4D application, preschoolers were able to observe closely different species of dinosaurs, which would not have been possible without the support of modern AR technology.

The Space 4D application is designed to carry the little ones to the edges of our galaxy, providing a unique opportunity to interact with celestial bodies and satellites, rockets or rovers.

Humanoid 4D supports children in exploring the human body. Preschoolers could choose a girl or a boy during the activity, they easily understood the positioning of the main organs inside the body, the role of the sense organs and the skeletal and muscular system.

Various professions and trades were discovered by the children of the middle group with the help of Octaland 4D and the means of transport could be observed through the History of Aircraft 4D application.

Augmented Reality provides real help in preschool education, transforming the themed projects "Dinosaurs", "Magic of the Universe", "Human Body", "Crafts", "Means of Transportation" and "Living Earth" into truly unique, modern and interactive experiences for children.

Children were able to interact with living things and explore the Solar System by understanding certain scientific concepts much more easily than with pictures or encyclopedias.

Augmented Reality aims to increase the current perception of reality and has extended the focus to both healthy children and those with attention or learning disabilities, enriching the content by adding computer graphics, making it possible to study in depth a certain topic and having a very important role in the intellectual and creative development of preschoolers, scientific knowledge and critical thinking.

Using Virtual Reality

Learning situations in which Virtual Reality has brought undeniable advantages:

- Real support for children with special educational needs. It is much more difficult for children with certain conditions to imagine things like space, plant development stages, dinosaurs, a historical event just looking at pictures and listening to information given by the teacher. Virtual Reality transposed them into a world where they could visualize events, beings, outer space, just as if they were real, which is the very purpose of technology - the simulation of reality. For children, what they see or experience is much easier to understand than being told or looking at simple 2D images.

- A better understanding of the contents and the development of scientific knowledge. The children were able to travel without actually leaving the classroom, using content from Google Expeditions, visiting the solar system and the dinosaur era, turning the child into a "time traveler" to be "present" at events that took place. hundreds or thousands of years ago. These activities have contributed to a better understanding of scientific concepts, simulating reality being a much greater support than 2D support images.

The activity took place using Virtual Reality sets, accessible Google Cardboard glasses and 360 video materials, so that the children could explore the world of dinosaurs, an erupting volcano, wild animals, travel by various means of transport, the solar system and the underwater world.

Conclusions

The educational future belongs to a computerized education system, and current preschoolers must step into the future with minimal computer skills, use of modern devices and software.

The information society, progressive is a reality of the present and it remains at our discretion how quickly children can integrate into it, this being an individual need for harmonization.

In the activities carried out with preschoolers, computer-assisted learning, Augmented Reality and Virtual Reality can be used as methods if three essential conditions are met: teachers have the necessary training to allow them to use new technologies, kindergarten has the necessary material basis for assisted activities modern technology, the time allotted to be fully in line with the needs and age level of preschoolers.

In the work with preschoolers, the use of information technology has a positive echo. The preparatory approach starts from the premise that, along with classical teaching aids, modern devices and software are teaching tools that can be used to streamline activities.

The use of new technologies in teaching increases teacher performance, encourages innovation and modernization of the teaching-learning-assessment process, facilitates understanding of phenomena by children, promotes learning through cooperation and their own experiences, developing teamwork skills, creativity, scientific knowledge and creativity, also providing child-centered learning.

Modern devices, through educational software, can also instruct, help solve tasks and create a state of well-being, the educational environment specific to traditional learning situations being replaced by the virtual learning environment.

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5. http://www.elearning.ro

4.2. Virtual Reality and Augmented Reality

"Mia Fora Ki Enan Kero" Private Nursery, Athens, Greece

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Augmented Reality (AR) can take static images off a page and bring them to life. There are a few different ways AR can be activated but most simply, with an AR app, you open and hold your device over a page, the camera screen will open and view your surrounds, the AR activates and a 3D image appears on your screen, superimposed over your surrounds. You can move the screen around to see the object from all angles. It feels like you can touch it. For example, it could be an image of the letter 'T' and in AR it animates into a tiger that roars.

AR brings worksheets or flashcards to life. It can illustrate static images in a magical way while simplifying and visualizing complex concepts, making them easier to understand. For example, a flower bud on a printed page could slowly bloom in AR.

The 3D nature of AR encourages children to work together in groups, it creates genuine cooperation and improves communication. The overlay of reality and fantasy also gets children thinking critically as to how it works and where the augmented object really is. It is easy to use which empowers children and gives them the satisfaction that they are in control of their learning, at home or school. This self-directed learning increases their focus and information retention. It motivates and engages children of all abilities to learn.

Augmented reality (AR) applications have been something almost unimaginable until a few decades ago. However, thanks to developers, augmented reality Apps have found their use in learning, gaming, and everyday life, becoming easily accessible for smartphone users.

Today, augmented reality Apps are one of the hottest trends in online learning and gaming. Various educational augmented reality Apps have gained popularity among children of all ages and their families lately.

What Does Augmentative Communication Mean?

Augmentative communication systems were initially used to aid people who either have limited speaking ability or cannot be understood. Augmentative communication models have since been used to support or complement words that the person can say verbally. Augmentative communication differs from alternative communication, which helps people with no speech and entirely relies on other methods to convey their thoughts, ideas, needs, or emotions.

The 21st-century technologies have brought various electronic communication devices and systems that make augmentative communication possible.

What is AR Effect App?

Augmented reality effect Apps allow users to add effects to their messages, pictures, and documents, from taking photographs with virtual lenses and characters to video calling apps that let users create a preferred experience such as different backgrounds.

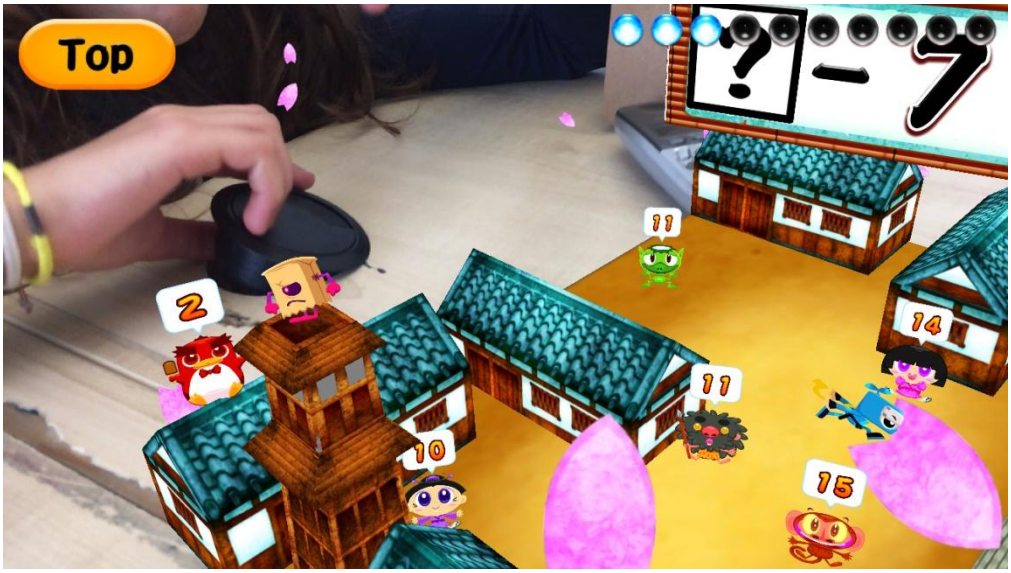
Which App is Used for Augmented Reality?

Augmented reality covers all App genres, from games and entertainment to utility, education, and lifestyle. Lately, however, educational AR applications are the ones that have mainly grown popular among app users. Educational Apps for augmented reality make learning content more interactive, engaging, and interesting, allowing children to develop and learn while having fun.

How Does Augmented Reality Work?

Augmented reality involves an interactive experience that uses multiple sensory modalities to enhance a real-world environment.

Augmented reality Apps use a combination of words, 3D presentation of objects (real or virtual), and real-time interaction, enhancing the real-world objects by computer-generated perceptual information. In other words, in AR, virtual 3D objects are integrated into a 3D real environment in real-time.



MathNinja AR app: Boost Your Concentration and Memory with Body & Brain Activity!

AR apps can bring almost anything inside the classroom

Cards, Books, QR codes can bring into the smartphone or tablet screen real interactive experiences

4.3. Virtual world for children

Základná škola s materskou školou, Habovka, SLOVAKIA

Miroslava Mydliarova

Katarina Vrabcova

Cardboard - Cardboard virtual glasses are designed to convey virtual reality to the children via a smartphone.

In the kindergarten we use these glasses for various activities.

For example, in a game "Guess What", the children carefully study one sport through virtual glasses, then pantomimetically portray it, and other children guess what sport it is. The children develop attention, imagination and they learn to concentrate.

Self-operating virtual reality glasses give the kids the ultimate virtual reality experience. Through the glasses and two separate controllers, the children themselves are transferred to the world of virtual reality.

We use these glasses in kindergarten on various topics such as space, underwater world and many more. The children develop their imagination as well as attention, spatial orientation, gain knowledge from various clouds of knowledge.

Tablet and 3D pictures

Through the app and 3D images the children can explore the solar system, for example.

4.4. Virtual Reality and Augmented Reality

Tallinna Lasteaed Südameke, Tallinn, Estonia

Mirjam Saia

Janika Oleinikova

Ülle Mägi

Larissa Malõševa

Virtual Reality and Augmented Reality will help children see things closer than they normally cannot. We have used augmented reality means for a few years now to make lessons more enjoyable for children. We use thematic augmented reality puzzles from Rolf Education, 4D octagon cards and have tried Mergecube and children love Quiver vision pictures. All of them increase children's willingness to participate and they help them to remember things they have learned better than just listening to teachers would have.

April in Tallinn is also a month that is dedicated to ICT activities. All kindergartens, schools and hobby-school organize different activities all around the city and in their institutions. We had an activity in our kindergarten where older children taught the magic of quiver vision to younger children.

4.5. Visual learners. Virtual Reality and Augmented Reality

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

Maria Costa Pereira.

María Esther Pérez Díaz

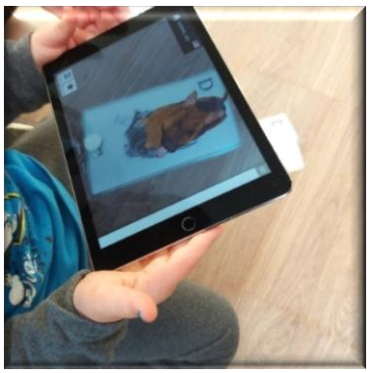
AR is a technology that allows a learning-teaching methodology based on these principles: active learning methodologies based on problem solving, development of personal projects, teaching methodologies based on students understanding. These technologies are mainly focused on the kids experience as the core of the teaching and learning process.

Augmented reality introduces the knowledge that the student has to learn within their real environment. The abstraction of the new knowledge is visible and is in the real physical environment of the student. The kids own experience is facilitating the learning. In addition, the novelty factor, the emerging technology factor and the "reality" factor can lead to an increase in the level of understanding of the students, in the effectiveness of the learning process and in the motivation to learn.

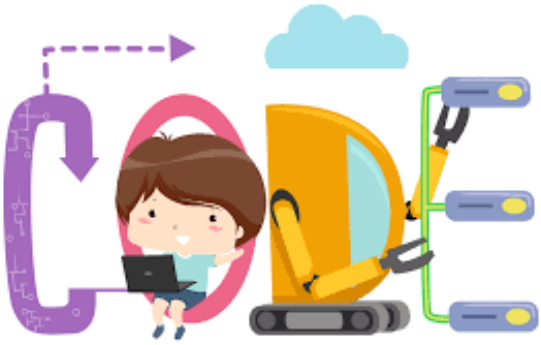
To work on Visual Reality and Augmented Reality, tablets and smartphones we reused in the classroom. We work with Dinosaur 4D+ application, as we consider the theme of dinosaurs something very motivating for the student. It consists of pairing the app with 4D+ dinosaur cards and watching the 3D dinosaurs jump off the cards in augmented reality.

They also worked with virtual 3D glasses where we download a program called inside on the Smartphone and the children can see different applications, games, videos of animals, plants, in virtual reality.

For example:



The results obtained with learning through AR and VR were very satisfactory. We consider that they adapted very well to the ages of all the students, between 3 and 8 years old. It was motivating and something new for them to see the dinosaurs in such a real way, which piqued his interest at all times.



CHAPTER 5

Simple Screen-less Coding for kindergarten

5.1. Basic skills for a constantly changing world

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

Petruța-Raluca Suditu

Cătălina-Elena Vîlcea

Daniela-Georgeta Popescu

Experts in research and education reform say that we need to prepare our children for the challenges of the new century, which are very different from previous years or decades.

Children have been surrounded by technology since birth. The use of info communication tools (eg mobile phones, tablets, computers) becomes a necessary skill during filtering and the consumption of critical information is often more essential than lexical knowledge.

Here are some **important skills** in the 21st century:

* Critical thinking, problem solving, analysis, interpretation and synthesis of information

* Creativity, curiosity, imagination and innovation

* Perseverance, self-discipline, planning and adaptability

* Teamwork, leadership, cooperation, division of labor (virtual)

ICT (informatic communication technology) skills, media and internet use, data interpretation and analysis, computer programming

Analytical thinking, problem-solving, planning, creative and adaptable thinking and teamwork will become essential, and learning computer programming gives us an effective and exciting way to acquire these skills.

What to look for when it comes to children's programming education?

Experienced, playful and successful - we've all heard these terms before, but kids can learn programming if they're interested. It is important that the programming is interesting, colorful and not dry, but it must also be quite challenging for children, but not so much that it cannot solve the problems.

Basic concepts need to be introduced during practice and knowledge needs to be deepened with playful tasks so that it is almost imperceptible.

Without a well-structured and well-thought-out independent system, learning programming cannot be very successful, since it must incorporate the necessary logic, knowledge and mathematical skills. Continuous feedback and a sense of success in solving a task in a creative way can be a much better guarantee of progress than constant learning.

Easy-to-understand language, appropriate for their age (but not oversimplified) and how we explain things are essential in educating children.

Emerging programmers may not learn on their own. In this case, it is important to talk about the importance of the teacher's personality, since a teacher can positively or negatively influence the attitude toward the learner — and our own experiences prove it.

Projects where learning takes place by creating games or programming robots can be even more interesting and can build a community because children can play with the things they created at the end of the project. The feeling of "we created this" is a great motivational force.

Age-appropriate skills - **Children's programming**

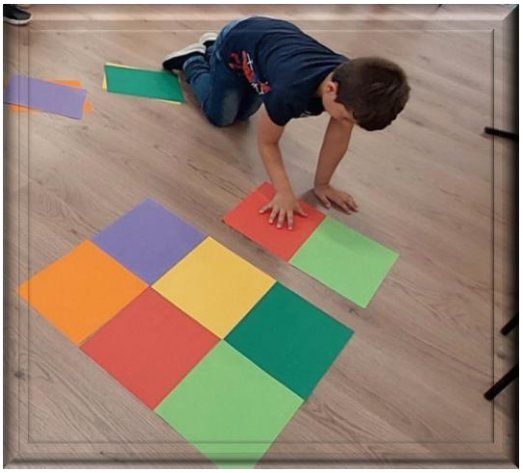
Kindergarten

We may ask, "How can a small child who cannot read and write who does not understand logical operations and basic mathematical concepts learn to program?" Many concepts can be explained using everyday examples. For example, the correct order of dressing or brushing your teeth can lead to an understanding of the algorithms.

Children's programming logic can be very easy developed through screen-less coding games and with the help of STEAM educational robots like: Bee Bot, Matatalab, mTiny, Qobo, Dash & Dot, Sphero Bolt, Bootley, so on.

Examples of good practices:

Screen-less coding games



Using a given pattern of colors, the child must exactly reproduce it using identical pieces of paper. This game helps the child to learn directions, colors and spatial positions.

Based on a created story, the child must ”find the correct road” for the heroes or characters in order to bring those to a certain finish point (home, castle, so on) using colored paper arrows.

Using STEAM educational robots

BeeBot can be a great way to learn for kindergarten and elementary school groups. It is a robot that can be pre-programmed using buttons and can help children learn and develop in many ways.

Children used Bee Bot during their games at kindergarten. The first game s objective was to get the bee from one flower to another and in the second game the child had to move the robot from the start point to the firefighters station. In both cases the preschoolers had to choose the correct directions and to push the arrow buttons on the back of the Bee bot.

Qobo the snail robot

The children selected the cards from the box according to the route they planned for the Qobo Snail. After that, they put Qobo on the map and press the ”Start” button and follow the robot to check if they selected the correct cards.

Qobo is a very funny and happy robot, creating also a cheerful atmosphere in the classroom and positive emotions for the preschoolers.

No matter if we use coding games or STEAM educational robots, the important thing is that we do our best to prepare our children for the bright future that is expecting them.

5.2. Simple Screen-less coding in ”Mia Fora Ki Enan Kero”

“Mia Fora Ki Enan Kero” Private Nursery, Athens, Greece

Vasiliki Sotiriadi

Styliani Sotiriadi

Anastasia Gioume

Vasileia Bartzou

Marina Michalopoulou

Dr. Petros Georgiakakis

Screen-less coding games aim to help children learn coding basics without indulging them on screens. Kids get to complete puzzles and solve problems within to understand the concepts of coding.

The gameplay enables them to create algorithms and sequences. There are libraries of activities kids can pick from. Pick an adventure and start the journey to explore planets, ABCs, colors, plant cells and more. There are also kits coming with robot sand accessories, or the user can also add their own Lego. As the game is not screen-based, it provides engagement and interactivity via sound, motion, songs, and visual feedback

“Searching letters” and combining each letter with words can be an introductory algorithmic thinking activity

"Searching letters" find their words!"

Concentration and pattern matching can be a unique opportunity to raise awareness of computational thinking processes

Patterns can help kids foster their attention and make them understand simple coding procedures

5.3. First steps to become a programmer – Screen-less coding

Tallinna Lasteaed Südameke, Tallinn, Estonia

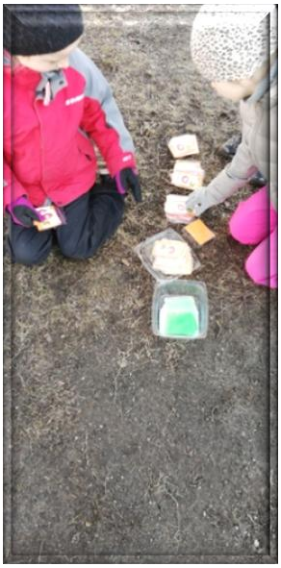
Mirjam Saia

Janika Oleinikova

Ülle Mägi

Larissa Malõševa

Our most popular screen-less coding activity got the idea from our first robots, Bee-Bots. Children can draw Bee-Bot mat with chalk outside and make their own direction cards or we can print them out. We have printed them out and children can use them outside while coding with every kind of weather. It is possible to create different thematic games outside to play with in bigger groups or in smaller groups.



5.4. Cubetto educational robot

Mehmet Akif Ersoy Ilkokulu, Efeler, Aydin, Turkey

Jbdun Uysal

Uğurgül Elen Dede

Hatice Tikveş

In the application made with Cubetto, the children learned the concepts of back, left and direction by practicing, just like children. A different story was created for each student and applications were made. To complete the teaching teacher training in the education of stories. You can ensure that you can provide any assistance that can be applied to your child.

Thanks to the coding studies, I observed that the learning in children is faster and more permanent. In terms of children, I realized that they are more willing to learn, more curious and more interested. This made teaching children easier. Learning has also become easier for children.

5.5. Screen-less coding in preschool

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

María Elena Franco Alvarez.

Paula Castenda Blanco

1. Matatalab and its application in the classroom.

It is an educational robot with programming that encourages the development of problem-solving skills, critical thinking, logical-mathematical thinking, creativity, collaboration through coding games and helps to improve the child's self-esteem through motivation for achieving different goals.

Through its three modes of use: control, coding and sensor, the Matatalab encourages them to learn the basics of programming and also to work on their most creative side with options such as music or drawing.

How it Works

It is a robot without screens that does not need any type of mobile device. The programming is prepared on the white board you have, where the control tower is also placed. Once ready, the orange "play" button is pressed and that is when the control tower connects with the robot and sends the messages of what has been programmed on the panel. Both devices are connected via bluetooth.

The matatalab is very easy to use, it has very colorful illustrations with various scenarios of natural spaces that allows to create stories as well as 46 coding cards to carry out different programming depending on the activity in mind.

2. mTiny

mTiny and its application in the classroom

mTiny is a robot that works with the basics of programming, music, oral expression through the construction of stories, numbering, calculation, sequences, imitation games and socialization.

mTiny is based on the Theory of Multiple Intelligences developed by Howard Gardner, to promote early childhood education through learning by playing, awakening children's curiosity, fostering their critical thinking and motivation to problem solving.

How it Works

One of the most surprising things about mTiny is the programming. From Makeblock (brand of the robot) they have defined it as tap-to-code programming. It is done by "touching" the pencil on the chips and they vibrate a little and make an acoustic signal.

To move the robot around the board we can use the "joystick" of the pencil or its tactile function on the tiles with the directions (right, left, forward and backward),

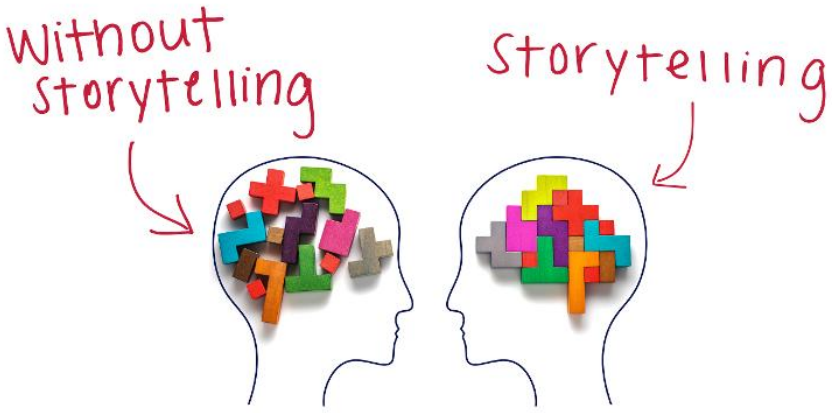
When a story is created we can “animate” it by activating the cards of the faces that express emotions through different sounds (joy, sadness, anger, …).

The mTiny brings with it a large number of resources and materials: Touch pen, coding cards with symbols and colors, an interactive double-sided map ("mtiny and his friends" and "the city where he lives"), two boards (one piano and one alphabet) and destination cards, golf or racing.

CHAPTER 6

Let’s Digital Storytelling!

Stories from the six partner countries



6.1. The World of Stories and Fairytales in a modern era

Grădinița cu P.P. ”Dumbrava Minunată” Fieni, jud. Dâmbovița, România

Petruța-Raluca Suditu

Cătălina-Elena Vîlcea

Daniela-Georgeta Popescu

Maria Antoaneta Marina

What is Digital Storytelling?

Digital storytelling at its most basic core is the practice of using computer-based tools to tell stories. There are a wealth of other terms used to describe this practice, such as digital documentaries, computer-based narratives, digital essays, electronic memoirs, interactive storytelling, etc.; but in general, they all revolve around the idea of combining the art of telling stories with a variety of multimedia, including graphics, audio, video, and Web publishing.

As with traditional storytelling, most digital stories focus on a specific topic and contain a particular point of view. However, as the name implies, digital stories usually contain some mixture of computer-based images, text, recorded audio narration, video clips, and/or music.

Digital stories can vary in length, but most of the stories used in education typically last between 2 and 10 minutes. The topics used in digital storytelling range from personal tales to the recounting of historical events, from exploring life in one’s own community to the search for life in other corners of the universe, and literally, everything in between.

Digital Storytelling as an Effective Instructional Tool for Teachers

There are numerous ways that Digital Storytelling can be used in education. One of the first decisions to be made when deciding to use this tool in the curriculum is whether an instructor will create the Digital Stories or have their students do it. Some educators may decide to create their own stories and show them to their students as a way to present new material. An engaging, multimedia-rich digital story can sever as an anticipatory set or hook to capture the attention of students and increasing their interest in exploring new ideas.

Teacher-created digital stories may also be used to enhance current lessons within a larger unit, as a way to facilitate discussion about the topics presented a story and as a way of making abstract or conceptual content more understandable. While many educators still lack a cohesive plan for integrating multimedia into their instruction, a growing number of teachers are interested in exploring ways to engage their students by including images, audio and video elements in their instruction. Research has shown that the use of multimedia in teaching helps students retain new information as well as aids in the comprehension of difficult material. And Digital Storytelling can provide educators with a powerful tool to use in their classrooms.

Digital Storytelling as an Effective Learning Tool for Students

Digital Storytelling can also be a potent tool for students who are taught to create their own stories. After viewing example digital stories created by their teachers or other story developers, students may be given assignments in which they are first asked to research a topic and then choose a particular point of view.

This type of activity can generate interest, attention and motivation for the "digital generation" students in today's classrooms. The process can capitalize on the creative talents of students as they begin to research and tell stories of their own as they learn to use the library and the Internet to research rich, deep content while analyzing and synthesizing a wide range of content. In addition, students who participate in the creation of digital stories may develop enhanced communications skills by learning to organize their ideas, ask questions, express opinions, and construct narratives. It also can help students as they learn to create stories for an audience, and present their ideas and knowledge in an individual and meaningful way.

The Elements of Digital Storytelling

1. The Overall Purpose of the Story
2. The Narrator's Point of View
3. A Dramatic Question or Questions
4. The Choice of Content
5. Clarity of Voice
6. Pacing of the Narrative
7. Use of a Meaningful Audio Soundtrack
8. Quality of the Images, Video & other Multimedia Elements

9. Economy of the Story Detail

10. Good Grammar and Language Usage

The Salt in The Food
Romanian Fairytale

by Petre Ispirescu

Once upon a time there was an emperor who had three daughters, whom he loved very much. After his wife died, he took a great interest in his daughters' education and granted their every wish. He bought his daughters the most beautiful dresses, the most expensive jewels and the most wonderful books.

The three daughters loved their father more than anything else in the world. But one day, the emperor asked his eldest daughter how much she loved him.

- I love you like honey! replied his eldest daughter.

Her father was pleased with her answer and asked his middle daughter:

- How much do you love me?

- I love you like sugar! answered the middle daughter.

The emperor was touched by so much love and then he asked his youngest daughter.

- And my little one, how much do you love me?

- I love you like the salt in the food, father! replied the youngest daughter.

Her sisters started to laugh at her and the emperor was furious.

- What kind of answer is that? Leave my palace at once!

The youngest daughter was not allowed to give any explanation and was exiled. Her sisters laughed at her stupidity and were pleased that she was leaving because they did not really love her dearly. The youngest daughter dressed herself in some simple clothes.

She left with sadness in her heart and tears in her eyes.

After a long journey, she reached the palace of another emperor and found work as a servant.

She was so hard-working and skilful that before long everyone adored her. She could cook the finest dishes and could make any object shine. The empress heard of this clever servant girl and called her to her. After they had spoken a little, they became inseparable. The girl no longer had to work in the kitchen. Instead she stayed alongside the empress, sewing or painting, and everything she made was

beautiful.

The emperor had to leave for war, taking with him his son. The prince was wounded, and the emperor and the empress were distraught. The empress did not leave his side day or night. And the empress's servant girl stayed with them. She took such good care of the prince.

When he had recovered, the prince went to empress and told her that he wanted to marry. The empress was delighted and asked him if he wanted to marry someone in particular. The prince told her that he wanted to marry the servant girl who had tended to him while he was ill because he did not know a more beautiful or more obedient girl. At first the empress was against the marriage because she wanted her son to have a bride of noble blood. But in the end the prince persuaded her. Together it was not difficult for them to convince the emperor, and a date for the wedding was set.

The young bride-to-be asked her future in-laws to invite a certain emperor, but she did not tell them that this emperor was her father. The long-awaited wedding day arrived.

The bride-to-be cooked for her father separately and told a servant to bring his food to him personally and to make sure that they were not given to another guest by mistake.

From the moment the emperor arrived, he could not stop looking at the beautiful bride. He felt a pang in his heart as he thought how much she looked like his daughter whom he had not seen for a long time.

When the enticing dishes appeared on the table, everyone tucked in – only the bride's father could barely swallow his food because it did not taste right and had no flavor. He asked those on his right and those on his left if their food was good, and everyone replied that it was the most delicious meal they had ever tasted. He took a little from his neighbors with a fork and, indeed, it was very good.

Finally he could take it no longer and stood up. He accused his hosts of making a fool of him.

His host was just about to call the cooks to punish the person who had played the trick on his guest when the bride admitted that she herself had cooked for her father. She had only used honey and sugar. She had even put sugar in his salt-cellar because the emperor preferred honey and sugar to salt.

Her father recognized his mistake and tenderly embraced the daughter whom he thought he had lost. The other emperor was pleased to have such a clever daughter-in-law, such a fitting bride for his son – and the daughter of an emperor on top of it all.

Moral

Each person expresses love in his or her own way. Try to understand this before judging them.

6.2. Digital stories for preschool children

CRA Nosa Señora do Faro, Ponteceso, Spain – Galicia

Rosa Mª Barreiro Carujo

Mª Ivana García Andrade

The story has always been a wonderful methodological resource. The creation of a story with invented characters, by our boys and girls increases their creativity and ability to process ideas. Thus, Digital storytelling is a very simple and creative process through which the students or even the teacher, with little or no experience in computer film-making gain the skills needed to tell a personal story in a twoo or three minute film. These films can then be streamed on the web .

https: //youtu.be/CFtfrsK6SB

Working with digital storytelling in the classroom allows teamwork, as well as the development of creative ideas, coming up with an idea for a story or writing a proposal. Writing a script, a useful resource for developing language competence, teamwork, and see the parts of a story, its characters, their motivations, and how to structure a plot.

It also makes the kids aware that everything starts with just an idea: a topic of a lesson, some news watched on the television or just a whim on the spur of the moment.

Once the script is done, the transition to visual media languages appears almost magically, we mean, how we can translate what is written on a paper to sound and images is an extraordinary process that the kids enjoy a lot.

https://youtu.be/VI7Uirl8a-Y

The process of finding the locations, whether these are at the school or outside, organizing the transportation of the kids and the stuff to the shooting place, implies a lot of energy and hardwork in which the whole community is implied: kids, parents, teachers, city hall, etc. In CRA digital stories run from students who want to communicate their personal understanding of a topic to a more dramatic and artistic facts (stories related with endangered species or sea pollution, among others).

https://youtu.be/kJ17sFigVCc

Digital storytelling is an amanzing tool for students to communicate their personal understanding of a topic. It provides opportunities to express what they know in a 21st century way. In this game changing scenario, communication and storytelling have changed so dramatically that they are shaking up our cultural, social and academic norms.

6.3. The House of candy

Základná škola s materskou školou, Habovka, SLOVAKIA

Miroslava Mydliarova

Katarina Vrabcova

Once upon a time there was a poor father, who had two children, John and Mary. His daily work was to cut wood in the forest. He was very, very poor. He had no one to take care of the children. They were all alone. As he was away all day, he felt that he should marry again, so that the children should have a mother's care.

But the stepmother proved to be a very cruel, neglectful woman, who did not want to work. Not only did she not love the children, but she wanted to get rid of them, so she gave her husband no peace. She made up all kinds of lies about the wickedness of the children and said that he must get rid of them.

She commanded him to take them to the woods and leave them there.

He was afraid of her and at last consented. Therefore one day, he said to the children with a sad heart. "Take your little baskets and come with me to the woods to pick strawberries". They jumped with joy and at once taking their little baskets, they went most happily with their father to the woods.

When they were deep in the forest, the father led them to an open place where there were many berries, in fact the place was red with the luscious fruit.

"Now, dear ones," he said, "Pick all the berries you please, while I am away. As long as you hear me cutting wood, you will know that I am near by."

The children began eagerly to pick berries, and the father went a little ways on, where he bound his mallet on a tree. It swung back and forth in the wind, hitting the tree and making a noise like the cutting of wood. When this had been done, the father returned home, leaving the children in the woods.

When John and Mary had their baskets full of berries, and had eaten their fill, they began to think of looking for their father. They went to the place where they heard the sound of the swinging mallet, but they saw nothing of their lather, only the mallet hitting against the trees. This mallet was a big hammer which he used for driving in the wedges to split the logs.

"Where is father," asked John? "Perhaps he has gone home and forgotten us".

Now Mary had perfect trust in her father. She could not think that he would wilfully desert them. She said to John. "Why do you think that? Surely he is somewhere near and will come for us, no doubt". So they waited for quite a while. They ate from their little baskets, till the berries were all gone. Then they filled them again. And so the time was flying.

Before it grew quite dark, the sound of the mallet ceased and the children began to be frightened. They took their baskets and once more looked for father. The sun had set and evening had come. They called, "Father, where are you"? but no sound came to answer them. Mary who was older and wiser than John, but just as much afraid, would not let him see that tears were so near her eyes. Then she tried to comfort him, by saying. "Wait a minute, I will climb up in a tree from which I can perhaps see a light. Then we will go towards it". Up the tree she scrambled. It was so high that she could see from its top in all directions.

After awhile she saw a light gleaming in the distance. "Oh, John! I see a light! Let's go towards it." Down she came and they started.

Following the light, they came to a tiny little house. It was such a funny little house; they felt of it with their hands and then they saw that it was made of candy.

John was delighted. Now he felt that he could have all the candy he wanted. At once he scrambled up on the roof to break some off to throw down to Mary, who was still afraid that some harm might come to them. But John was already on the roof and had peeled off some candy, which he had thrown down to her.

They went to its little window and peeked in. There they saw an old man and woman sitting by the fire. At first they thought they would knock and ask for something to eat, but Mary was afraid.

The moment the candy was broken off, the old woman said "What is that? I hear a noise. Surely someone is breaking into our house. See who's there."

The old man went out and saw a little girl under their window. "What are you doing here? Are you trying to break into our house?", he asked her.

"Oh, no, Grandfather. It is the wind", said Mary, her childish voice trembling with fear. With this the old man was satisfied, as he went back into the house.

The children had eaten enough, and they nestled to sleep in each others arms, under the window of the house of candy. In the morning, John climbed up on the roof to get another piece of candy. Again the old woman sent the man out to see what was going on.

Mary thought to get rid ot the old man once more, but this time, he saw two children. Then he went back to tell the old woman.

"Quick, quick, dear John", called Mary, "we must run away at once, or something terrible will happen to us," for she had heard the old woman command the man to catch the children, so that she could roast them for her dinner. John leaped down from the roof, Mary snatched his hand and they ran away as fast as they could.

Suddenly John and Mary came upon a woman in a field of flax. Panting and out of breath, "Tell us please, mother, where we can hide. A bad old man from the house of candy is trying to catch us. He wants to take us home, so that they can roast us for their dinner, because we have taken a piece of candy from their roof."

The woman in the field was a good fairy and loved all little children. She determined to help John and Mary, so she said, "Go this way a little distance into the woods. I will see what I can do with the old man." Then she showed the children the path, along which they ran as fast as their little legs could take them.

After a little while, the old man came along, panting and blowing. Seeing the woman in the field, he called out, "Woman, have you seen two children go by and which way did they go?"

The woman pretended that she was deaf, she answered, "I am in the flax field pulling up the weeds."

"Woman, I ask you, if you have seen two children pass this way."

But she continued, "I shall weed the flax, until it is ripe."

Raising his voice, "Listen to me", woman, have you seen two children go by here?"

"When we shall have gathered the crop, we shall clean the seeds, and then moisten the flax", said the woman.

This time the man fairly shouted, "Stupid, don't you understand me? Have you seen two children pass this way?"

"When we have moistened the flax, we shall spread it out in the sun to dry", she kept on.

"Woman, are you deaf? Have you seen two children pass this way?"

"After the flax is dried, we shall comb and then hackle it."

"Don't you hear? Have you seen two children?"

"Then when the flax is hackled, we shall bind it on the distaff ready for spinning."

"I don't care anything about that. Have you seen two children pass by here"? and with each question, he grew more and more angry.

"And after we have spun some fine garters, we will wind the rest of the thread on spools."

"Tell me, woman, have you seen two children pass this way?"

"When we have wound the thread on spools, we shall then weave some beautiful fine linen."

"I don't care any thing about the linen. I ask you again, have you seen two children go by here?"

"When we have woven the linen, we shall bleach it. Then we shall cut it out for little shirts, swaddling clothes, skirts and aprons."

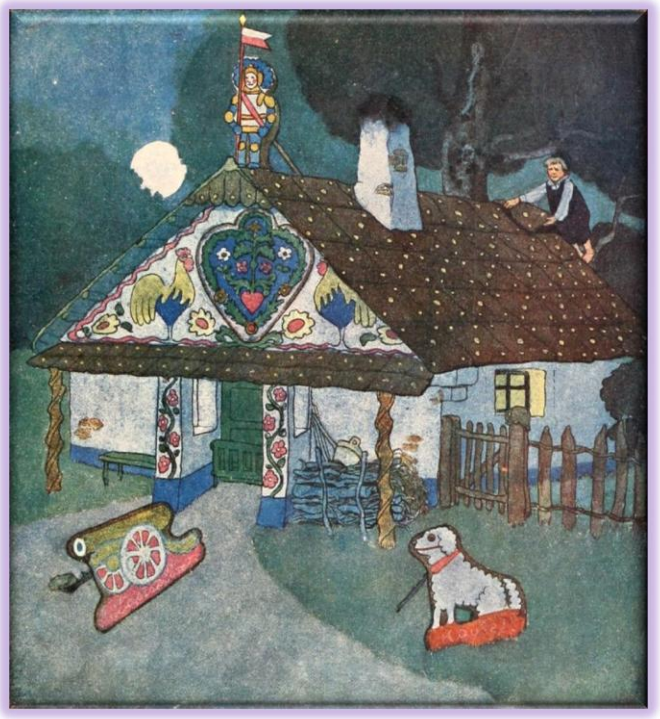
"Are you deaf", he yelled, "Have you seen two children go by?"

"Oh yes, oh yes, what are we going to do with it? Finally we shall make tinder from it. Then the flint, when it strikes will make a tiny spark. The fire of God will not consume it. The fire will become smoke, the smoke wind. That is the end of my story."

"I did not ask you any thing about that", thundered the old man. What I want to know, did you see two children pass this way?"

"Children, children? You should have told me that in the first place. Of course I saw them. They went that way, by the path through the fields, down to the brook where the willows are, but you will never catch them, for they flew like hawks."

At this the woman showed the man the opposite side to which she had directed the children. Then the old man recognized that he had been out-witted. He frothed with rage and turned back home. When he had gone, the woman disappeared from the field and the children reached home in safety. The father was very glad to get them back.



6.4. The Grouchy Fly

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Jbdun Uysal

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The grouchy fly was a member of the crowded fly family. He was not like his brothers. He was constantly arguing with his mother. He wouldn't like the food, he would say he won't eat, he would whine. He would not like his clothes, he would say I will not wear them, he would whine. He didn't pay any attention to his mother's warnings. He would always have a problem because he did not listen to his mother and was stubborn.

Days passed, autumn came and the weather got cold. All the animals began to prepare for winter. The mother fly said, 'We have to get out of here, we need to find warmer places, we need to look for our food elsewhere, we can't stay here, then we'll get sick.

"I'm old enough, I'll stay here, I'll find a warm house, I'll spend the winter here," said Moaning Fly. The mother fly said: If you stay here, you will get cold and then you will get sick. But the grouchy fly didn't listen. His family left, and the grouchy fly stayed there. Time passed and the weather got colder. It got so cold that the houses became unheated. The grouchy fly couldn't move its wings because of the cold, so it couldn't fly. He could not find food. His mother's warnings came to his mind.

Moaning Fly: I wish I had traveled to warm countries, if I hadn't been stubborn, he said to my mother, I wouldn't be cold now, I wouldn't be so sad.

Just then, the weather got cold and the whiny fly was very scared. I wonder if it will snow or rain, he looked at the sky. He saw birds in the sky going to warm countries. He immediately called to the birds.

Moaning Fly: Can I join you too? “Can I go to hot countries?” he said.

One of the migratory birds said: Let me fly you under my wing to your mother before the weather gets colder. The whiny fly jumped up to the wing of the white bird. The white bird was fast. The white bird was flying so fast that the whining fly was hitting one side and another, it was having a hard time holding on. His hands slipped and he couldn't hold back any longer. He suddenly found himself in

space. The weather was very cold and windy. The whiny fly was so sorry that he didn't listen to his mother. He was falling down, just then the white bird came and caught our Moaning fly. They continued their journey with the wrapped wing. They flew, they flew, they flew…

Finally they came to where his family was. Our whiny fly thanked the White Bird very much. His mother was very happy to see him.

The whiny fly hugged its mother tightly. He never left again. He never whined.

6.5. Greek Fairy tales

"Mia Fora Ki Enan Kero" Private Nursery, Athens, Greece

Vasiliki Sotiriadi

Styliani Sotiriadi

Anastasia Gioume

Vasileia Bartzou

Marina Michalopoulou

Dr. Petros Georgiakakis

"Mia Fora Ki Enan Kero" kindergarten is participating in one more Erasmus+ KA229 entitled "Little people for big changes" which reflects today's need for global change, so that our future and our children' one will be safe and healthy. It was born from the need for children to appreciate our environment and to have responsible attitudes and behaviour.

As part of the activities we have implemented during the project lifetime is the use of storytelling methodology which is an important part of teaching in the kindergarten because learning is both more effective and lasting when the lesson is conveyed through a story. In entitled "Little people for big changes" an imaginary story with the character (mascot)"tree Charlie" helps children learn new vocabulary, learn and build important concepts such as respect of nature, of the environment where they live, pollution and manmade harm done to our nature, The mascotis leading children towards a better comprehension, literacy, art, math and science concepts, fine motor skills and the communicative ability.

Teaching and fantasy can happily coexist in order to reach our objective to make children aware of "sustainable development". They will be responsible for the future. All project partners have been involved through events, workshops, games, activities, and shows in order to create a fruitful collaboration network with small pupils.

Greek Fall fairy tales from "Mia Fora Ki Enan Kero" partner (in English)

1. "Charlie and The earth who Loved him" https://online.fliphtml5.com/ruki/grnx/: Introduction of Charlie, our school, our ethics

2. "Charlie meets Pagophilos (pagos=ice + philos= friend)": https://fliphtml5.com/ruki/tikx : Greek Charlie pomegranate tree is experiencing winter and meet water and air elements.Through its

loneliness, a new friend comes and changes completely its feelings about winter. Life is always a way of perspective and Charlie with its friend Eftychis become witnesses of that!

3. “Siggie the worm makes fertilizer for Charlie” https://fliphtml5.com/ruki/vwwi : In this story Charlie meets Siggie the worm and a compost fertilization story reveals how worms can nurture soil!

4. “Charlie, Summer and Water” https://fliphtml5.com/ruki/tgdc : How important is the water for animals and plants, especially during summer!

5. “Charlie understands pollution” https://fliphtml5.com/ruki/jyzo: Charlie and Siggy travel in the future and see how the pollution will affect earth, animals and the people.

6.6. Creating digital stories

Tallinna Lasteaed Südameke, Tallinn, Estonia

Mirjam Saia

Janika Oleinikova

Ülle Mägi

Larissa Malõševa

One way to make a digital story is to use a stop motion app to create a short cartoon. Last year Mirjam and Janika taught about this app too the teachers and they enjoyed the workshop a lot. Teachers created fun educational short cartoons about traffic, nature or just a fairytale about friendship. We have created stories with children because it is a great tool to enhance teamwork skills, teach patience and cooperation. Children can let their minds run freely and participate in every step of their creation.