ACAδIMIA

European Teacher Academy For Creative & Inclusive Learning

SYNOPSIS of Methodological modules

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PREFACE

Welcome to the ACADIMIA project, an educative adventure that combines the desire for discover with the enthusiasm to learn and grow.

Imagine yourself in a new city, where you meet new people, learn interesting new things, participate in a close-knit community and develop new skills. This enthusiasm is accompanied by a slight concern: will you be able to learn all these new things?

Your heart beats fast with the excitement typical of those on the verge of discovery, while standing in the shadow of this new city gate. Your eyes are a patchwork of curiosity, apprehension and wonder. You ask yourself if the decision you have made, to leave the comfort of your home to embrace this new chapter is the right choice. In this sea of new faces and voices, you look for a friendly shore, to anchor your emotions, between curiosity, anxiety and determination.

Fortunately, a person stands at the door with a warm and reassuring smile.

They invite you to participate in a game with others who are laughing and having fun. Their presence brings a glimmer of comfort to your uncertain heart, making you feel welcome. It's the right time to venture out on the journey of learning, ready to embrace its beauty.

As teachers, we recognize the importance of learning new creative methodologies to inspire our students and to be inspired by them in turn. ACAδIMIA European Teacher Training Academy for Creating and Inclusive Learning offers to all students and in-training teachers the opportunity to go deep in a sea of original and creative teaching methodologies.

But what is meant by creativity?

The concept of creativity has been analyzed over the years, together with studies on intelligence. Creativity is seen as the ability to generate something new by dealing with everyday challenges in different and effective ways. Indeed, over the years, the concept of creativity, as well as that of intelligence, has been used to describe a wide range of people, situations and products. This has led to the need to identify different forms of creativity (Gardner, 1993).

The most recent analysis of creativity starts with a definition that sees it as the ability of generate something new, to create new combinations of ideas and to deal with everyday situations in different and effective ways than usual practices. In other words, creativity is seen as the ability to restructure a problem or overcome a difficulty while also changing the contexts from which the problem arises. From this perspective, creativity becomes a behavior that needs to go along with other traits (autonomy, balance, judgment, etc.), which can be seen in every person in different extents, and are showed in the most common situations, even in daily life. The social recognition of the creative act thus becomes irrelevant; the most important part is that the new product exists, is effective and genuinely useful to the producer, and that it has a characteristic of novelty (in the sense of not customary and already experienced before by the person who has produced it).

The most recent psychological literature was raised in this conceptual context, organizing a base of scientific knowledge and research that touches on several aspects: the constituent elements of creativity, its relationship to intelligence and educational development.

For a long time, creativity education has been approached with methodologies primarily oriented toward the development of expressive skills, especially in the graphic-pictorial area, often referred to as creative activities. Today, theoretical reflection is much more thorough, articulate and critical. Howard Gardner's theory of multiple intelligences provides insights for reevaluating teaching practices, leading the way for new teaching and learning methods (McKenzie, 2005).

The ACADIMIA project offers new approaches to foster entirely new teaching and learning methods, that may remain unexpressed. Many pupils are at risk of being left behind, unable to follow traditional ways of teaching. Each student has different methods to learn, derived from different intelligences, which can operate flexibly across the curriculum and in different contexts. They should not be confused with talents, predispositions, aptitudes or learning styles. Intelligences are legitimate cognitive channels that each pupil can apply flexibly across the curriculum and in different contexts.

ACADIMIA has the aim to bridge the gap between the creativity concept and its effective implementation in teaching by providing concrete strategies using didactic methods that can engage and enhance all the intelligences (unlike traditional methods), it means verbal, logical, visual, kinesthetic, musical, intrapersonal, interpersonal and naturalistic intelligences (Gardner, 1983).

We hope that the presented methods can be an empowering tool, enriching the potential of students in their life-long learning journey.

Welcome to ACADIMIA, where learning becomes a stimulating and inclusive adventure.

Work Package 2 – Design and development of a Joint Creative Curriculum

At the first stage of the project, in the framework of WP2, the main aim is to develop a Joint Creative Curriculum through the valorization of creative methods that have been developed in the framework of previous WPs. The aim of this Joint Curriculum will be to form the basis for the delivery of teacher training programs, both in ITT and in CPD, on these methods. The curriculum will be developed on a modular basis to be able to be flexible and allow teacher training organizations to implement as a whole or only some parts. The project aims to transfer 10 non-formal creative methods of teaching developed in the framework of previous EU initiatives. For each method, one or more expert partners will be responsible for its transfer in the consortium.

Summary of the methods

Here a summary of the ten methods presented in this document.

Name of the method	Brief description	Partner
Drama in Education	A method based on participatory drama, that involves collective, situation/context-based thinking, where the fictional context allows a safe space for practical group exploration of problems. The method is transferred as implemented in the framework of the DIVERSE project	InSite Drama
EAR	A method which combines Socratic Dialectics and Theatre to discuss issues related with citizenship education and social issues in general	Action Synergy
SEDIN	Elements of Montessori method implemented in non-Montessori schools, combined with theatre techniques, to improve social inclusion of students from disadvantaged backgrounds	Waterpark Montessori
Creative Learning	A method on how teachers can create a theatre scenario helpful to teach any type of subject/content	Centre of Higher Education in Theatre Studies
Game Based Learning	Two methods on the use of games mechanics applied in education to increase critical thinking and problem-solving in schools, as well as taking care of inclusive issues.	University of Iceland (HI), University of Florence (UniFI)

Strengths – Based Learning	A method of classroom management and approach, especially when teaching in diverse multicultural classrooms, focused on students' talents and strengths	UCLL
Digital Storytelling	Creating stories using digital tools (i.e. Scratch) to explore in participatory ways various subjects. The method is transferred as implemented in the framework of the DIVERSE project.	University of Girona (UDG)
MonTech	Elements of the Montessori method (implemented in non-Montessori schools) combined with digital technology and elements of maker education to increase the attainment of basic skills in schools with students from disadvantaged backgrounds	University of Girona (UDG) Waterpark Montessori
TalentMaker	A method on how teachers can valorize their own talents to make their courses more engaging and attractive in the framework of maker education	University of Girona (UDG)
Creative STE(A)M	A method on how theatre methods and techniques can be used to teach STE(A)M subjects	Centre of Higher Education in Theatre Studies

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Task 2.1 – Making a synopsis of creative methods

In the framework of this activity, the partners will provide a synopsis of the creative methods they are expert in. The synopsis will valorize the partners' experience and expertise. The methods will be described through a specific template that has been created by the WP coordinator. The template is going to include elements such as: brief description of the method, target age of students, innovative elements, evidence of impact, examples of classroom implementation etc. Ten methods are described below.

Synopsis of creative methods

The synopsis consists of a presentation of the ten creative methods developed by the project partners.
Each method is presented through an outline that includes:

- General information: Partner (1.1) and Project Start (1.2)
- Main information: Brief description (2.1) and Theoretical framework (2.2)
- Main features: Innovative elements (3.1)
- Goal, Competences and Skills: Skills (4.1)
- Implementation and Impact: Example/s of classroom implementation (5.1), Evidence of impact (5.2) and Summary list and Description of available resources and materials (5.3)
- Improvements and risks: Possible risks (6.1) and Possible improvements (6.2)
- References: Reference publication/s (7.1) and Online references (7.2)

In addition, for each method the degree to which it involves technology is indicated (use of technology or not), the way it can be used (face to face, online, blended or hybrid), the subjects preferred (STEAM, Humanistic), and the age group to which it can be applied, it can be found near the name method.
This information is provided by the symbols placed at the top of the table for each method, respectively:

1. The use of technology in the method:

Use of technology, referring to the use of software and online material (i.e. Scratch, Videos, online Platforms…)

Without use of technology, referring to the use of non-digital resources and materials (pen, paper, colors …).

2. The mode used for the lesson:

Online lessons, referring to only online lessons, in terms of synchronous as well as asynchronous mode.

Face-to-face lessons, speaking about lessons in class, with no possibilities of online lessons.

Blended or hybrid lessons, referring to lessons in class that can be followed by students online, in synchronous or/and asynchronous mode.

3. The subject preferred for the method:

STE(A)M subjects, known as Science, Technology, Engineering, Math (and Art), mostly speaking of scientific subjects.

Humanistic subjects, such as history, literature, geography, etc.

The ten creative methods are collected into three macro areas to emphasize artistic expressions and personal growth.

1. THEATRE AND IMPROVISATION

The first area is dedicated to **theatre and improvisation:** here, innovative approaches are presented to enhance creativity through theatre, exploring the potential of improvisation as a tool to free our minds and develop self-esteem.

In this area four methods are introduced:

- Drama in Education
- EAR (Forming Active European Citizens through the dialectical method and theatre)
- SEDIN (Creative Methods for Successful Inclusion in Multicultural Schools)
- Creative Learning (CLEAR)

2. GAMES AND ADAPTABLE PATHWAYS

The second area has a focus on **games and adaptable pathways**, through different gamified activities and flexibles pathways. Unique methods to learn and grow are described, promoting interactions, challenges, discoveries and encouraging creativity through experiential learning.

In this area three methods are presented:

- G.A.M.E. (Goal, Accessibility, Motivation, Environment)
- Gamified Learning
- Strengths-based learning (SBL)

3. DIGITAL AND INNOVATIVE ACTIVITIES

Finally, the third area is devoted to **digital and innovative activities**. Here, cutting-edge approaches, involving technologies to empower creativity, are depicted. From the use of digital tools to the integration of new activities, this section offers an overwhelming and contemporary experience.

In this area four methods are included:

- Digital storytelling
- MonTech (blended Montessori – Creative Technologies approach for successful inclusion in Multicultural Schools)
- TalentMaker (Talent-Based Learning and Maker Education in the context of Hybrid Education after Covid-19)
- Creative STEAM

Before presenting the methods, three summary tables are introduced: table 1 provides an overview of the Agenda 2030 goals each method allows educators to work on and table 2 the key citizenship competences involved in each method, while table 3 shows the inclusive practices used in each method. At the end of the document, an appendix can be found including all the information about these parts.

The overall purpose of the current document is to allow readers to get an overview of the 10 methods and at the same time easily identify their specific features.

FIRST TABLE: GOALS AGENDA 2030

	DRAMA in EDUCATION	SEDIN	EAR	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY-TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
1 NO POVERTY			✓		✓					
2 ZERO HUNGER			✓		✓					
3 GOOD HEALTH AND WELL-BEING	✓		✓		✓	✓		✓		
4 QUALITY EDUCATION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5 GENDER EQUALITY	✓	✓	✓	✓	✓	✓	✓		✓	✓
6 CLEAN WATER AND SANITATION			✓		✓					

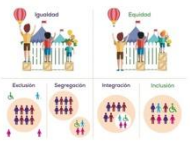
	DRAMA in EDUCATION	SEDIN	EAR	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY-TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
7 AFFORDABLE AND CLEAN ENERGY			✓		✓					
8 DECENT WORK AND ECONOMIC GROWTH			✓		✓					
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE			✓		✓					
10 REDUCED INEQUALITIES			✓		✓					
11 SUSTAINABLE CITIES AND COMMUNITIES	✓		✓		✓					
12 RESPONSIBLE CONSUMPTION AND PRODUCTION			✓		✓					

	DRAMA in EDUCATION	SEDIN	EAR	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY-TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
13 CLIMATE ACTION			✓	✓	✓				✓	✓
14 LIFE BELOW WATER			✓		✓					
15 LIFE ON LAND			✓		✓					
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	✓		✓	✓	✓					✓
17 PARTNERSHIPS FOR THE GOALS			✓		✓					

SECOND TABLE: EUROPEAN KEY COMPETENCES

	DRAMA IN EDUCATION	EAR	SEDIN	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
Literacy competence	✓	✓	✓		✓	✓	✓	✓		
Multilingual competence	✓	✓	✓		✓	✓	✓	✓		
Mathematical competence and competence in science, technology, engineering			✓		✓	✓	✓	✓	✓	
Digital competence					✓	✓	✓	✓	✓	
Personal, social and learning to learn competence		✓	✓	✓	✓	✓	✓	✓		✓
Citizenship competence	✓		✓	✓	✓	✓	✓	✓		✓
Entrepreneurship competence	✓				✓	✓			✓	
Cultural awareness and expression competence	✓	✓	✓	✓	✓	✓	✓			✓

THIRD TABLE: INCLUSIVE PRACTICES

	DRAMA in EDUCATION	EAR	SEDIN	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
Teaching is planned with the learning of all students in mind	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lessons encourage the participation of all students	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lessons develop an understanding of difference	✓	✓	✓	✓	✓	✓	✓	✓		✓
Students are actively involved in their own learning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Students learn collaboratively	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Assessment contributes to the achievements of all students	✓	✓	✓		✓	✓		✓	✓	✓
Classroom discipline is based on mutual respect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Teachers plan, teach and review in partnership	✓	✓			✓					

	DRAMA in EDUCATION	EAR	SEDIN	CLEAR	G.A.M.E. AND GAMIFIED LEARNING	SBL	DIGITAL STORY TELLING	MONTECH	TALENT MAKER	CREATIVE STEAM
Teaching assistants support the learning and participation of all students	✓	✓		✓	✓	✓				✓
Homework contributes to the learning of all	✓	✓			✓					
All students take part in activities outside the classroom	✓	✓		✓	✓					
Student difference is used as a resource for teaching and learning	✓	✓	✓		✓	✓	✓	✓		
Staff expertise is fully utilized	✓	✓	✓		✓			✓	✓	
Staff develop resources to support learning and participation	✓	✓	✓		✓	✓	✓	✓	✓	
Community resources are known and drawn upon	✓	✓			✓					
School resources are distributed fairly so that they support inclusion	✓	✓		✓	✓					✓

FIRST GROUP: THEATRE AND IMPROVISATION

DRAMA IN EDUCATION

6-18

1. GENERAL INFORMATION

1.1. PARTNER	InSite Drama
1.2. PROJECT START	Diverse Project (2019); Democracy through Drama Project (2016); 1910s Hariett Finlay-Johnson

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

Drama in Education/ Creative Drama is an approach that focusses on **human beings in difficult situations**, but allowing freedom to understand and connect with the difficult situation of others through using fictional narratives.

Drama in Education (DiE) is a pedagogical process that seeks to balance both the **form** and **content** of drama. In doing this, participants can engage with an element of **living through** the drama, whereby they bring themselves to the dramatic experience to learn about issues and concepts raised in the drama and through drama. The methodology used is based on collective, **situation/context-based thinking**, where the **fictional context** allows a **safe space** for practical group exploration of problems (Bethlenfalvy 2020).

The dramatic methodologies offer the opportunity for "slowing down time" (Heathcote, 1984) and the close exploration from a **variety of perspectives** thus building understanding and empathy through facilitated meaning-making processes that are based on forms and methods used in theatre processes and performance. Importantly Drama in Education relies on engaging participants in fiction – fiction that they are creating themselves – and this **provides a form of protection**, which offers an educational, rather than a therapeutic perspective.

Drama in this sense creates a space for participants to understand the world in which they live (Davis). The **facilitator** of the drama lesson plays an important role in creating space for participants to explore and express themselves and the world both through the structure of the lesson and also the mode of facilitation.

2.2. THEORETICAL FRAMEWORK

1. Bethlenfalvy, A.(Ed.) (2018) *Democracy through drama: Conceptual and Pedagogical Framework*. InSite Drama.
2. Davis, D. (2014). *Imagining the Real: Towards a New Theory of Drama in Education*. Trentham Books.

3. Heathcote, D. (1984). Signs and portents. In C. O'Neill & L. Johnson (Eds.), *Collected Writings on Education and Drama*. Northwestern University Press.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Experiential learning
- ✓ Embodied learning
- ✓ Multiliteracies and discussion-based teaching

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

This example of a drama lesson develops out of a fragment of the text from Sophocles' tragic play Antigone and creates space to engage in the problem of the relationship to power and authority. For age-group 14-15.
The drama structure looks at the situation of one of the Sentries/Guard commanded to protect the dead body of Polyneices from being buried. Following a short contextualization within the story so far structured around drawing task related to the dead body of Polyneices corpse, the participants of the workshop read a part of the second monologues of the GUARD. This text is explored first through collecting key concepts, then turning that into an embodied image of the central moment within the text in small groups. The images created are brought into action and then analyzed with the use of the AMIMS (Action, Motivation, Investment, Model, Stance) system.
The drama lesson turns to the exploring the situation of the Guard, who is stuck in the between the authority of Kreon and the human values of Antigone. The class explore what the reasons are behind the guard's decision to lead Antigone to Kreon. This is done through creating scenes of what the Guard saw and heard in the city on his way to the Palace.
After this a whole group image is created step-by-step of how the Guard hands over Antigone to Kreon. This allows all participants to take on role and take a position on the events within the safety of the fiction.
Finally, there is a discussion about why the group thinks this text survived for 2500 years and is still read and performed today.

5.2. EVIDENCE OF IMPACT

The lesson was conducted by 5 teachers in different contexts with students.
No specific research tools were used so far to collect data on the impact directly from participants, but the teachers wrote notes on the contribution of participants. This indirect data shows that the participants were

active and motivated to participate. Both the theme of the relationship to authority and also the fairly closed forms offered to them enhanced their activity.
Students worked cooperatively and negotiated socially in the process of creating creative inputs.
Students could clearly articulate the connection between the situations of young people today and in the Greek classic.
The lesson also created motivation to engage with an iconic text, students of the technical vocational school, who are usually not keen to read, wanted to find out "what happened to the girl"!
The DICE research (reference below) researched the impact of drama on 5 Lisbon key competences in a large, quantitative research.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. Cziboly, A. (2010). T*he DICE Has Been Cast; Research Findings and Recommendations on Educational Theatre and Drama*. DICE Consortium https://www.dramanetwork.eu/file/Policy%20Paper%20long.pdf
2. Antigone Project Handbook: http://antigone-project.eu/wpcontent/uploads/2022/02/Antigone-Handbook-Engish-final-20220212.pdf
3. Diverse Project Handbook: http://diverse-education.eu/guidance-book/
4. Open Education Resources – Democracy through Drama Project: https://drive.google.com/file/d/1D3eK6dB59nzZAw9A4QWY1Pfkt0-U6NQr/view
5. Video recordings of drama lessons – playlist: https://www.youtube.com/watch?v=FlemSYHBdmY&list=PLyTORC6pWlfuaPngMnF9p0gLYU4Rc_2ly

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

The method requires a shift in the teaching paradigm of the teacher, from transmission teaching to becoming a facilitator, this is often quite difficult.
The freedom provided by the tasks to the participants of the lesson can at times create anarchy in the classroom, if the group is very unused to working independently.
Curriculum constraints can often be a deterrent to implementing more time consuming, collaborative tasks.
If teachers are aware of these possible risks, it can help them to think in advance and prepare possible solutions.

6.2. POSSIBLE IMPROVEMENTS

The possible improvements of the method can be achieved by creating further material (written and video) on the challenges of facilitating.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

As the field has a long history it also has a wide range of reference publications. We have listed some that are particularly important currently.

1. Bethlenfalvy, Á. (2020). *Living Through Extremes in Process Drama*. KRE - L'Harmattan.
2. Bolton, G. (1998). *Acting in Classroom Drama. American Edition*. Trentham Publishers.
3. Cziboly, A., Bethlenfalvy, a. (2020). 'Response to COVID-19 Zooming in on Online Process Drama'. *Research in Drama Education: The Journal of Applied Theatre and Performance.* 1–7. doi: 10.1080/13569783.2020.1816818.
4. Neelands, J., Goode, T. (2015). *Structuring Drama Work*. Cambridge University Press.
5. O'Neill, C. (1995). *Drama Worlds: A Framework for Process Drama.* Heinemann.

7.2. ONLINE REFERENCES

1. Antigone Project Handbook: http://antigone-project.eu/wp-content/uploads/2022/02/Antigone-Handbook-Engish-final-20220212.pdf
2. Diverse Project Handbook: http://diverse-education.eu/_guidance-book/
3. Open Education Resources – Democracy through Drama Project: https://drive.google.com/file/d/1D3eK6dB59 nzZAw9A4QWY1Pfkt0-U6NQr/view
4. Video recordings of drama lessons – playlist: https://www.youtube.com/watch?v=FlemSYHBdmY&list=PLyTORC6pWlfuaPngMnF9p0gLYU4Rc_2ly

EAR (Forming Active European Citizens through the dialectical method and theatre)

3-99+

1. GENERAL INFORMATION

1.1. PARTNER	Action Synergy
1.2. PROJECT START	2018

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

The EAR Methodology aims to combine the use of the **Socratic dialectical method** (Plato, 1991, Singer, 1983, McKinney, 1983) with theatre techniques such as **Forum theatre** (Boal, 1979), **participatory/community theatre** and **documentary/ verbatim theatre**.
The EAR Methodology is based on a simple series of activities, which have a common goal: to **change attitudes and behaviors** and develop **active citizenship** in students.
It uses both theatre and the Socratic method in order to involve students in examining issues of citizenship. We have identified a range of different theatre techniques with elements that can be used in part in the delivery of the EAR lesson.
The main steps of the EAR Methodology are described below:

- Main concepts - where learners analyse and further define the main concept or problem, based on questions, dictionary definitions, etc., and try to find the real meaning of the concept or concepts in a different context each time.
- Theatre Techniques - where they explore the theme through **experiential theatre activities** of various kinds, be it Forum Theatre, Documentary Theatre or Participatory Theatre. This should be followed by a **reflection phase** - where students step out of their roles as actors and discuss how they felt and how they feel now, what they think and what they have learned.
- **Dialectical Discussion** - where learners develop **critical thinking skills**. They create a discussion based on the principles of Dialectics rather than just a guided conversation or a debate where two groups cross swords on a binary opposition. Through **individual and group work** each learner will think and possibly write about what they believe on a topic, what arguments they base their opinion on, why they hold that opinion, and what factors influence what they currently believe. Learners become self-directed and **autonomous learners** and researchers, taking **ownership of their learning**.

- Individualized action plan - where trainees now record their feelings and (new) opinions and create their **personal or group Action Plan** with short, medium and long-term measures for a social and/or personal problem.

2.2. THEORETICAL FRAMEWORK

1. Rosano, Michael J., 2000, "*Citizenship and Socrates in Plato's Crito*." Review of Politics 62, no. 3): 451–77. http://dx.doi.org/10.1017/s0034670500041656
2. Evans, Joseph Claude, 1990, "*Socratic Ignorance--Socratic Wisdom*" Modern Schoolman 67, no. 2 (): 91–109. http://dx.doi.org/10.5840/schoolman199067220
3. Freire, Paulo, 1970, 2005, *Pedagogy of the Oppressed*, Continuum, New York-London
4. *Documentary Theatre*, 2002, The Continuum Companion to Twentieth Century Theatre
5. Tuluk Nilgun, 2012, *Augusto boal's treatment of the socratic method teaching techniques used in with drama in education*, Procedia - Social and Behavioral Sciences 51 2012, 1050 – 1055 https://www.sciencedirect.com/ science/article/pii/S1877042812034246

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Blended learning
- ✓ Experiential learning
- ✓ Embodied learning
- ✓ Multiliteracies and discussion-based teaching

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Green skills
- ✓ Digital skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

The activities from the EAR Methodology have been implemented by several of the trained teachers in their classrooms after creating their own scenarios.

Example: "Power and free will / Binary oppositions"
A scenario for higher education students (13-15 years old) on ethical dilemmas based on the ancient Greek Tragedy Antigone by Sofocles.

Based on the story of Antigone as an **initial stimulus** the students work first individually to record the first thoughts and feelings.
They identify the **questions-binary oppositions** that arise from the story and chose one to explore. They **investigate the basic concepts** and terms by looking up in a dictionary and apply different dialectical techniques such as the **Fish Bowl, Essential Questions, the 5 Whys, On the Line**, and others to dialectically examine every part of the binary oppositions.
Then they examine the same questions through theatrical expression.**Forum Theatre, Frozen Images, Consciousness Alley,The Live Newspaper,** and other techniques allow them to find out different hidden parts of the topic.
Following this series of activities, the students enjoy creating their **personalised Action Plan** with short-term, mid-term, and long-term actions.

5.2. EVIDENCE OF IMPACT

Evidence was gathered through teacher reports from implementation in the individual classrooms (see EAR website)
Young people in the classrooms had the opportunity to develop the 'skills' type of competences (autonomous learning, critical thinking skills etc.) as a part of all EAR educational scenarios. They are the essence and outcome of dialectical learning and theatre techniques. You should select one of these you wish to focus on in any particular lesson and observe how well students use those skills and give feedback. Of the other three competence types, each educational scenario focuses specifically on one of these, and this is highlighted on the scenario, use the competence ladder for that competence.
We created Competence Ladders. They follow a progression from recognizing a competence when it is observed, to being able to describe concrete examples of the competence, to describing the competence at a more abstract level, to explaining why the competence is important.
An external evaluator cooperated with the project team who worked with evidence-compiling evaluation of the good-practice models in the view of their subsequent upscaling and exploitation (see external evaluation report of the EAR project)
There was also an Internal evaluation - process evaluation and quality assurance of the projects work approach, implementation and management.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. Theoretical framework on Citizenship education and the Dialectical method as well as resources on situation analysis, educational scenarios, and policy recommendations can be found on the website https://ear-citizen.eu
2. The Guidance Book for Teachers contains guidelines to build and educational scenario and a template, and a large collection of drama techniques, exercises, games and strategies. https://ear-.eu/guidance-book/

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

During the second half of the project, partners were faced with the additional challenge of disruption to schooling caused by the Covid-19 pandemic. While some teacher training had been delivered before the pandemic hit, all partners except Italy were required to move the training of teachers online.

The EAR methodology and program addressed nine challenges and constraints of citizenship education, identified in the situation analysis carried out in each country: external challenges to democracy; danger of indoctrination; gap between intended democratic curriculum and educational practices; marginalization and associated limited resources, training and time in relation to citizenship education; and lack of skills and resources to assess learning in citizenship education.
In the Situation Analysis through interviews several teachers alluded to tensions between the democratic ethos promoted by their school and less favorable attitudes externally, be that media or other family members. Teachers should be reassured that the methodology avoids an indoctrination approach to citizenship – telling pupils what to think – but rather, equips them to engage critically with information and opinions. There are also limited resources for teaching citizenship. A very important risk was the limited time to implement citizenship education and teachers' workload. There is also lack of training on and evaluating citizenship education.

6.1. POSSIBLE IMPROVEMENTS

The higher quality questioning which the dialectical method trains pupils in is crucial to increasing the power of their learning. It was therefore important that practitioners understood the theatre techniques as creating the right conditions and scaffolding for the challenge of effective questioning, rather than the focus of the methodology itself. As was evident from logs, and pupil outcomes data, teachers did indeed apply theatre techniques to stimulate and support dialogue. The educational scenario template had an important role to play in ensuring this balance.
The promotion of methods such as EAR sends a message that citizenship education is at least as much about pupils behaving democratically and in a socially responsible way, as it is about their knowledge of civic processes and structures. Curriculum designers should ensure a balance of the two in citizenship curricula.
There is an increasingly wider recognition of the importance of placing students' voice at the heart of school improvement. EAR should be promoted as a methodology which promotes skills which mean students have greater confidence and ability to comment on their learning.

7. REFERENCES

7.1. REFERENCES PUBLICATION/S

https://ear-citizen.eu/guidance-book/
EAR Methodology Guidance for Teachers

7.2. ONLINE REFERENCES

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2. Evans, J. C. (1990) http://dx.doi.org/10.5840/schoolman199067220
3. Freire, P. (1970, 2005) https://kwanj.files.wordpress.com/2016/02/freire-pedagogy-of-the-oppressed.pdf
4. Tuluk, N. (2012) https://www.sciencedirect.com/science/article/pii/S1877042812034246
5. https://ear-citizen.eu/ WEBSITE
6. https://ear-citizen.eu/educational-scenarios/ Educational Scenarios
7. https://ear-citizen.eu/competence-ladders/ Competence Ladders
8. https://ear-citizen.eu/policy-recommendations/ Policy Recommendations

9. https://www.facebook.com/ear.citizen FACEBOOK page
10. The dialectical method https://ear-citizen.eu/2019/05/01/socrates/
11. Pedagogy of the Oppressed https://en.wikipedia.org/wiki/Pedagogy_of_the_Oppressed
12. 10 different educational scenarios categories concerning gender, environment, democracy, discrimination, education, values, personal life, justice, media, pandemics. https://ear-citizen.eu/educational-scenarios/
13. External evaluation report of the EAR project https://ear-citizen.eu/external-evaluation-report/

SEDIN (Creative Methods for Successful Inclusion in Multicultural Schools)

6-12

1. GENERAL INFORMATION

1.1. PARTNER	Action Synergy; Waterpark Montessori
1.2. PROJECT START	2018

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

The SEDIN project aimed to adapt and transfer the Montessori method and the Creative Learning method in order to promote social inclusion in multicultural schools.
Using foundational Montessori principles such as cosmic education, autonomy, control of error, freedom of choice, and hands-on learning, we look at a variety of ways to approach different subjects in the curriculum. We combined this with the creative theatre methods to show how to further explore the concepts being presented and how students can benefit from deeper learning through experiencing the various activities.

The method is based on two learning approaches:
Creative Learning - The Creative Learning Method is a method that is based on the use of theatre techniques in order to stimulate learning in the classroom. It has been developed for children of elementary school and is based on the principle that children learn better when they actively participate in the learning process in comparison with being passive listeners. The use of theatre techniques in the elementary school is proven to be very effective for the improvement of the school performance of the children (see for example the work of Kieran Egan, Dewey and Jean Piaget). It addresses at the same time linguistic intelligence, logical (reasoning) intelligence, spatial intelligence, bodily-kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence and naturalist intelligence.
It makes the class more attractive and it promotes the active participation of the students in the class improving in this way the educational performance of the children.

(SEDIN Creative Learning Trainers Guide)

The Montessori Method - which began in Italy in the early 20th century, developed by Dr. Maria Montessori, and was based on her experiences with children at risk of exclusion in the slums of Rome. She based her ideas on respect towards children and their impressive capacity to learn. She posited that independence and self-management should be a main educational goal and that children must be given

freedom of choice to develop their full potential. This educational methodology is now known all over the world and thousands of schools implement it globally.

(SEDIN Montessori Trainers Guide)

2.2. THEORETICAL FRAMEWORK

1. Crossley, M. (2021). Contemporary theatre education and creative learning: a Great British journey. Springer Nature.
2. Neelands, J. (2011). Drama as Creative Learning. In Sefton-Green, J., Thomson, P., Bresler, L., and Jones, K. Routledge International Handbook of Creative Learning, London; Routledge.
3. Montessori, M. (2006). The Absorbent Mind. Montessori-Pierson Publishing Company
4. Montessori, M. (2007). To Educate the Human Potential. Montessori-Pierson Publishing Company
5. Standing, E. M. (1998). Maria Montessori: Her life and work. Penguin.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

✓ Experiential learning
✓ Embodied learning
✓ Multiliteracies and discussion-based teaching

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

✓ Cooperation and partnership skills
✓ Social dimension (inclusion)
✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

The activities from the Creative Learning and Montessori guidebooks have been implemented by several of the trained teachers in their classrooms.

Example 1: Mathematics: The Arena
Students are presented with a large circular mat containing the hierarchical decimal system from 0-9000 which allows them to use their bodies to calculate using the four arithmetic operations. This activity allows for playful learning, teamwork and collaboration with the students, as well as whole-body movement and concentration.

Presentation

Introduce the Math

Explain the colour systems. Point out that there is no space for 10, only for 0. Explain how each ring represents a hierarchy – units are the inner circle, then tens, then hundreds on the outer circle. Play an activity with the children to count through and practice moving over the red line into the next hierarchy. When the units pass the red line (after 9), they move to the zero space and the tens must move up one space.

Have three children stand on the gold 0 spaces- these are the "parking spaces". Each should be wearing a coloured hat that represents their hierarchy. Say to children to please go to 724 as fast as you can. Let them run to the space. Continue to call out numbers and have them run to the places.

Place three children on spaces and ask which number is represented. Have them change places within their hierarchy and ask other students to say which number they are representing.

Addition

Simple: Take a problem such as 4+7= . Begin with one child wearing a green hat standing on the 4 space. They begin walking and count 7 spaces. Have a second student wearing a blue ready on the zero space for when the units cross the red line. On child can ding a bell when the units pass the red line, indicating when the tens need to move up one space.

Compound: Take a problem such as 592 + 254 = . Have the units, tens and hundreds of children stand on 592. Now begin with units and walk ahead 4 spaces. Then the tens walk ahead 5 spaces. As they cross the red line, the hundreds move ahead one space. Continue counting. Then the hundreds child can move ahead 2 spaces. Read off the answer.

Subtraction

Take a problem such as 846 – 254 =? Have the three hierarchies stand on 846. Then beginning with units, walk backwards the number of spaces in each hierarchy. Change as needed: when one crosses the red line, the bell dings and the higher hierarchy moves backwards one space.

Multiplication

Simple: Choose a problem such as 4 x 5 =? Have all three hierarchy children standing on the "parking places" (zero). Place a marker on the outside of the circle to indicate the number of times they are multiplying. One child will stand on the outside of the circle and count each time the number is counted. Start with the units and move the number one time. The counter records this and asks the units to move the number again. Repeat this until the units has moved the correct number of times. (If the units pass the red line, the ten must move up one space.) Read off the answer.

Compound: Choose a problem such as 87x7 =? Follow the same principles as above but now units and tens need to move, starting with units. The hundreds will need to move up one space as the red line is crossed.

Division

Do a multiplication as above. Ask the children to stay in their places. Explain that they have to do the same job but now it will go backwards. Begin with hundreds and walk backwards toward the parking place. The result is read off by the counter on the outside of the circle. The answer is what the green units is standing on.

Additional ideas

Present a dance of the multiplication tables. Choose a number: 9. They can use their foot to count to nine, or they can see that 9 is the same as 10-1, so they can move one place forwards in the tens circle and one backwards in the ones circle.

Using cones, they children can place cones on each of the numbers (for example 3+4). These cones get moved in the same way as on the stairs in exercise 1, up and down. They child can remove the cone when it gets to zero. This can be done alone or with a partner.
This material can be used to calculate with negative numbers. If they are a positive number, they are facing forwards. If they represent a negative number, they will face backwards. Continue to move around the circle using the methods described above.

Example 2: Language: Spring and the Four Seasons
The lesson allows for social inclusion in the class group. The teacher can adapt the lesson to focus on the seasons of the various countries that are represented by the student group. During the lesson, many surprises arise, activating the children' interest. Students use drama to enact and express the various aspects of each season, following the adventure of a mountain thought a year.
Layout of the classroom: The desks are put aside so that there is empty space in the middle of the class.

Phase 1
Students cut a piece of paper into very small pieces; they are going to be used in phase B, as the snow. They also fold a piece of paper (preferably black) to form birds that are blackbirds. The students now climb a mountain carrying their bags. In reality, they climb on their desks and chairs and then descend going around their classroom; they pretend they go up and down the mountain through its pathways.

Phase 2
The mountain is full of trees that change according to each season. Spring, summer, autumn, winter. Students are divided into two groups: Group A: Pantomime- these students are the trees. During springtime, the trees grow and flourish. The teacher guides the students'/trees' movements. They start from a kneeling position and rise slowly, extending their hands/branches.
SUMMER: Group B. They approach the trees and add on their branches many different objects, like pens, tiny balls, etc., to represent fruit. Sounds of cicadas from the CD.
AUTUMN: Wind blowing. Group A: under the teacher's guidance, the students move like trees in the wind. They lower their hands and fold into themselves, so they lose the objects they had as if losing their leaves.
WINTER: Group B: They go around Group A and throw white paper bits at the trees, which is the snow in Phase A.

Phase 3
The groups change roles and they repeat the play.

Phase 4
Enriching the lesson with other actions within the same play: one or more children from group B hold a blackbird made of paper and following the teacher's guidance they throw them around, from tree to tree; many other actions can take place using pantomime.
Our diary: during the last phase of the play, the students write in their diary what they did in class and the whole adventure in the mountain throughout the four seasons of the year.

Phase 5
The classroom goes back to the original layout. The teacher goes on with the lesson the typical way.

Phase 6
The teacher can enrich the first motive of the four seasons through questions and discussion with the students where they will have the opportunity to suggest new themes. i.e. Which are the big

celebrations of the spring? (Easter) Summer? Autumn? Winter? etc. When is the name day of the children (John = winter, Maria = summer, etc), Which flowers or fruits live in the 4 seasons? Which animals, birds, etc.
Extension: In the multicultural classrooms the teacher asks about the various cultural celebrations during the year related to the seasons.

5.2. EVIDENCE OF IMPACT

Evidence was gathered through teacher reports from implementation in the individual classrooms. Additionally, evaluation tools such as pre- and post-surveys were given to teachers and students and were utilized to assess the success of the implementation.

Responses from the surveys indicated implementation of the Creative Learning and Montessori activities with a generally good degree of fidelity. Group work and collaboration were a common feature across SEDIN classrooms. The methods were appropriate for mixed indigenous and refugee/migrant/minority students. Results indicate increased social and learning skills through SEDIN lessons, including critical thinking, collaboration, respect for others, and giving and reflecting on feedback.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. SEDIN Creative Learning Trainers Guide
2. SEDIN Montessori Trainers Guide)
3. https://sedin-project.eu/ : The full trainers guides for each methodology as well as activities, suggested videos, didactic materials and further reading can be found on the SEDIN website.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

The promotion of parental involvement had relatively low resonance in the SEDIN project, and yet the evidence for its value in supporting children's learning is strong. The cultural inertia against parental involvement, both within schools and among parents themselves, should not be a barrier to promoting it, and the SEDIN approach offers subtle ways to achieve this.
The issue of language and communication was generally perceived during the SEDIN project as one where children who did not have the dominant language as their L1 needed to acquire proficiency in the dominant language. However, children's home languages are an asset, a resource for all children's language learning in the classroom, and also a fragile skill which can easily be lost if it is not promoted. Maintaining and exploiting the languages RMM pupils bring with them for the learning of all pupils, also contributes to European policy to 'improve the teaching and learning of languages to ensure that more young people become proficient in foreign languages.

6.2. POSSIBLE IMPROVEMENTS

As well as the successes they enjoyed implementing SEDIN, teachers also highlighted the additional work that was required in organizing lessons and resources, and that pupils' engagement could sometimes be messy and inconsistent. When organizing the implementation of SEDIN ensure teachers have the support they need to prepare for and trial the approach and learn from when things don't go

to plan. Coaching in schools and debrief with peers were two appropriate support mechanisms partners on SEDIN organized. The training model described in this report provides a reliable guide for the features which will help the process. The inclusion of leaders in the training and professional development program helped them fulfil the 'instructional leadership' part of their role, but because school leaders do not always conceive engaging in continuing professional development and learning (CPDL) a necessity or priority for them, it was not a consistent feature across partners. For any initiative involve school leaders from the outset. SEDIN provides examples of practice which speak to a range of agendas, whether that is numeracy, literacy, learning skills or integration, and so there should be something among any school's priorities where SEDIN can provide an answer. Share also the international evidence23 24 on the benefits of instructional leadership and school leaders' engagement with CPDL.

The promotion of methods such as EAR sends a message that citizenship education is at least as much about pupils behaving democratically and in a socially responsible way, as it is about their knowledge of civic processes and structures. Curriculum designers should ensure a balance of the two in citizenship curricula.

There is an increasingly wider recognition of the importance of placing students' voice at the heart of school improvement. EAR should be promoted as a methodology which promotes skills which mean students have greater confidence and ability to comment on their learning.

7. REFERENCES

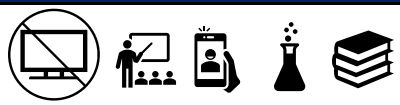
7.1. REFERENCE PUBLICATION/S

1. SEDIN Creative Learning Trainers Guide
2. SEDIN Montessori Trainers Guide)

7.2. ONLINE REFERENCES

1. SEDIN Creative Learning Trainers Guide
2. SEDIN Montessori Trainers Guide)

CREATIVE LEARNING



3-10

1. GENERAL INFORMATION

1.1. PARTNER	Centre Of Higher Education In Theatre Studies
1.2. PROJECT START	2014

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

Creative learning is an educational, knowledge, teaching and learning method on how teachers can use theatre and theatre techniques in order to teach their lessons in the classroom.
Creative Learning focuses especially on the relationship between theatre, theatre techniques and learning.
It is based on the common pedagogical place where imitation, action, role play, games, and improvisation is how children spontaneously choose to communicate with their environment and learn from it.
As an activity, eminently collective, it favors the socialization of the child, making the child an "addict" to communication and team spirit.
It is inspired by and based on a series of methods from which it takes the most organic and useful features to apply them in education. Such methods are:

- One of these is **Augusto Boal's method, which led to the Theater of the Oppressed**. A type of interactive theater. Boal's methods involve the public and are often used in schools to get students to think critically and talk to each other.
- **The method of Improvisation for the Theater by Viola Spolin**. Viola Spolin is the founder of spontaneous theater. Her work is mostly about using improvised games and exercises to improve people's communication, imagination, and ability to be spontaneous.
  In the field of theater in education, it was mostly the British drama teacher Dorothy Heathcote who came up with a way for students to learn by acting like experts.

These pedagogues and others have looked into and used theater techniques in a variety of ways to improve the learning process and give students a more complete and interesting way to learn.

Creative learning takes parts from these sources and puts them together in a new way that works well as a teaching method.

Creative learning above all exploits the characteristics of theatre, theatre play, role playing, acting and transformation for the sake of learning, teaching and education.

2.2. THEORETICAL FRAMEWORK

1. Gardner, H. (1993). Multiple Intelligences: The Theory in Practice. Basic Books.
2. Montessori, M. (1912). The Montessori Method. Frederick A. Stokes Company.
3. Dewey, J. (1916). Democracy and Education.
4. Macmillan. Freire, P. (1970). Pedagogy of the Oppressed. Continuum.
5. Steiner, R. (1995). The Education of the Child: And Early Lectures on Education. Anthroposophic Press.

Academic Articles:

1. Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.
2. Piaget, J. (1973). To Understand Is to Invent: The Future of Education. Grossman Publishers.
3. Rogers, C. R. (1983). Freedom to Learn for the 80's. Merrill Publishing Company.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

✓ Blended learning
✓ Game-based learning
✓ Experiential learning
✓ *The innovative elements are the theatre and theatre techniques, the improvisation, the relationships among the students during the lesson process. The lesson (students and teacher as a leader) abandons the pathetic confrontation of the learning process and swift their participation into energetic action.*

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

✓ Cooperation and partnership skills
✓ Social dimension (inclusion)
✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLES/S OF CLASSROOM IMPLEMENTATION

THE SOLAR SYSTEM
The dancing stars.

6th Grade Geography: Book: Learning about Earth
1st section- The earth as a celestial (Greek educational system

Materials for the lesson

- A flashlight
- a cd player / tape recorder
- a famous waltz that could be “Blue Danube”, or “Traviata” by Verdi, or whatever the teacher chooses
- teacher’s bell
- Tags with the names of planets (Mars, Venus, earth etc.). The tags are made by the children at the beginning of the course and hang them up with a cord around their necks or with a paper clip pinned to their clothes.

Layout of the classroom

The desks-chairs must be by the walls of the classroom to have free space in the middle to move. The teacher makes concentric circles with a chalk or masking tape on the floor. The number of circles must be half the number of children in the class because the children will be divided in pairs. It will be good if the concentric circles are as many as there are in our solar system stars. It will be better, more exciting and funnier if we have a relative blackout by the school’s curtains so as the light of the flashlight to have more extraordinary results.

Phase 1: duration 15’

With the guidance of their teacher, children learn to waltz. We do not care how well they will waltz. Just good enough so as they can twirl and click on the circle that is set from the beginning on the floor. The teacher stands at the center of concentric circles and illuminates the flashlight. The music plays and scatters the melody of the whole class. Off course the flashlight falls on the pair of children when they pass in front of him. So a pair is illuminated on one side and not the other. The teacher helps with the proper moves and maneuvers that flashlight=sun falls accordingly and makes the lesson more understandable.

Phase 2: duration 15’

The bell rings and children are immobilized. The teacher gives the tags with the names of the planets in each pair. The music resumes and children dance. The teacher with the flashlight illuminates the planets as the sun in our solar system. At his own discretion, action can stop to correct or clarify the details (How planetary paths do not overlap and do not strike one another, slower one planet in relationship with someone else who turns faster etc.)

Phase 3

Couples can change paths for greater variety, and they can switch tags too.

Phase 4: duration 15’

Children sit at their desks and the teacher presents the course by explaining and combining the creative course with the theoretical-cognitive way, with the known traditional form. Views and maps explain and show pictures that indicate the position of the planets on their orbits, their speeds etc. The gain is that children, in addition to knowledge about the planets, danced, listened to music, disciplined on the tracks painted by the teacher on the floor, socialized through movement, danced and played.

5.2. EVIDENCE ON IMPACT

The impact is extremely positive on the functioning of both teachers and students of elementary schools. During the previous implementation of the method in Primary Schools in Greece, Turkey, Bulgaria, Italy, Sweden both teachers and young students enthusiastically accepted their functioning through the process. The Creative Learning method has to contest with a decades-old system of decades-old education and mentality.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

For further detailed information, please visit the official site of the method: *Creativitylearning.eu.*
The site has an extensive theoretical approach and massive number of case studies.

The complete and detailed methodology has been published in all partner languages (English, Bulgarian, Italian, Greek and Turkish) and distributed to teachers in the participating countries. In addition, the same book is available in English on the official project site (www.Creativitylearning.eu) as a flip book for any teacher who wants to apply the method.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

Teachers may initially resist or feel uncomfortable with a creative learning approach, especially if they are accustomed to more traditional teaching methods.
Implementing creative learning activities in the tight frame of school curriculum can sometimes require more time compared to traditional instructional methods.

6.2. POSSIBLE IMPROVEMENTS

The visible possible improvements are in the teachers' familiarity with the method and in the reversal of the teaching philosophy from conceptual to experiential education.
By extension, a change (radical) in the way education is treated by the official European curriculum.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

1. "The Art of Teaching Theatre" by David Hornbrook
2. "Drama for Learning: Dorothy Heathcote's Mantle of the Expert Approach to Education" by Dorothy Heathcote and Gavin Bolton
3. "Games for Actors and Non-Actors" by Augusto Boal
4. "Improvisation for the Theater" by Viola Spolin

Also, useful articles about Creative learning can find on several journals like:

1. Research in Drama Education
2. Youth Theatre Journal
3. Journal of Applied Arts & Health

4. Teaching Artist Journal
5. Theatre Research International
6. Journal of Aesthetic Education
7. International Journal of Education & the Arts

7.2. ONLINE REFERENCES

1. www.creativitylearning.eu (Official site)
2. https://ahaslides.com
3. https://www.teachthought.com/
4. www.jstor.org
5. www.proquest.com

SECOND GROUP: GAMES AND ADAPTABLE PATHWAYS

G.A.M.E. (Goal, Accessibility, Motivation, Environment)

3-99+

1. GENERAL INFORMATION

1.1. PARTNER	University of Florence
1.2. PROJECT START	2022

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

G.A.M.E. (Goals, Accessibility, Motivation, Environment) is an **aggregator of tools** that allows to associate a series of conceptual devices already validated and widely used, even in different contexts, able to return to the designers of education (teachers and educators) a synthesis of the main elements of educational and didactic design related to the themes of **inclusion** and **gamification** (Gaggioli, 2022). In order to be able to design "educational artifacts" capable of creating "learning experiences", it is essential to know and to be able to use all the designed dimensions typical of didactics (description of the target audience, objectives, timing, methodologies, mode of execution, evaluation), but also to know two indispensable factors: the identification of the **game elements** to be included in the proposed activity (Werbach & Hunter, 2015) and the **motivations** that may push the user to participate (Chou, 2019).

The idea of formalization suggested by G.A.M.E. is built around three assertions, which are reflected in established traditions of study, able to create a solid scientific basis, forming the theoretical framework of reference. The first assertion states that playful educational/didactic intervention must be skillfully designed (ADDIE model).

The second assertion specifies that playful educational/didactic intervention must be inclusive, and even in this case the school already has designed devices that are attentive to inclusion policies, cultures and practices (Booth & Ainscow, 2002) able to focus operational attention on the dimensions of individualization and individualization, such as the Individual Education Project (IEP).

The third and final assertion, adds that the playful educational/didactic intervention must be engaging, and this is where the elements of game design referenced by design tools such as Octalysis (Chou, 2019) and D6 Framework (Werbach & Hunter, 2015).

2.2. THEORETICAL FRAMEWORK

1. Chou, Y. K. (2019). Actionable gamification: Beyond points, badges, and leaderboards. United States: Packt Publishing Ltd.
2. Deterding, S., Dixon, D., Khaled, R. & Nacke, L. (2011). From game design elements to gamefulness: defining "gamification". In Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp. 9-15).
3. Gaggioli, C. (2022). La classe oltre le mura. Gamificare per includere. Milano: Franco Angeli.
4. Merrill, M. D. (2002). First principles of instructional design. Educ. Technol., Res. Dev. 50, 43-59.
5. Werbach, K. & Hunter, D. (2015). The gamification toolkit: dynamics, mechanics, and components for the win. Pennsylvania: Wharton School Press.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Blended learning
- ✓ Game-based learning
- ✓ Experiential learning
- ✓ Embodied learning

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Green skills
- ✓ Digital skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

This example presents an experience conducted by the authors in blended university course "New Technologies for Education and Training", in which was enrolled 254 students, held by Prof. Maria Ranieri at the University of Florence in hybrid mode.
Gamification was a key ingredient of the course. The activities outlined below were designed using the GAME model.
The first meeting started with the division of teams and the organizational management of the exchange among students. Participants in the first class of the course were explained the course and the implications in terms of teaching engagement and the different evaluative modes involved in choosing to attend. Those who participate in the gamification activities carried out during the lectures in fact

receive a final overall evaluation linked to the result obtained by the team they belong to, while there is an exercise to be carried out individually for those not attending. Participating students were assigned to 20 teams (competition) and received general instructions (game rules) for the gamified progression of the course (progress bar). Since the course was delivered in a hybrid mode, with students synchronously connected via Webex and students who went to the classroom, the teams were mixed, so they could also consist of members who were not physically close. The teams, after adjustments required to meet the needs of the participants, were composed of between 9 and 12 students.

5.2. EVIDENCE OF IMPACT

In terms of monitoring the experience, 201 students out of 254 enrolled (79.1 percent) were found to have chosen and maintained attendance status, attending at least four out of five classes in total. At the end of the course, students were asked to submit comments anonymously about the experience. Although the results on participant satisfaction, involvement and learning are deferred to another venue, one can first observe the high level of attendance that characterized the course to its conclusion. From the perspective of the male and female students who attended the course, the gamified course found many favorable opinions particularly in relation to perceived learning outcomes and increased motivation to attend. Regarding the support in content acquisition, students appreciated the practical application of theoretical notions as a direct experience solicited by the game, which in their opinion keeps their attention high on the proposed topics and facilitates their memorization in the study phase.
The method was initially assessed by a group of 14 instructional designers in training, who were asked to observe a simulated classroom and design a teaching activity, making use of G.A.M.E.
This mode of evaluation, done through a questionnaire, can also be re-proposed to teachers participating in the project.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. https://playablecards.com/#scopri
   Cards useful to find game elements that can be used in an educational activity in a funnier and easier way
2. https://udlguidelines.cast.org
   A framework to improve and optimize teaching and learning for all people
3. https://open-lab.com/4t/
   Cards useful to find teaching strategies that can be used in an educational activity in a funnier and easier way
4. https://www.istruzione.it/inclusione-e-nuovo pei/decreto-interministeriale.html
   Individualized Education Program (IEP) proposed by the Italian Ministry of Education

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- The difficulty in defining goals by people without an educational background.
- Necessity of fill-in support. This aspect is considered critical by many, probably in relation to the lack of experience of some evaluators, as confirmed by some comments expressed by who has used the model.

- To ensure that everyone can truly experience the immediacy of use for professional figures from different contexts, it is important to offer the possibility of visualizing additional connections, procedures and scenarios that are created between and within the phases and elements of design through more concrete examples.

6.2. POSSIBLE IMPROVEMENTS

- To give more structured support during the design phase with training, tutorials, guidelines, etc.

7. REFERENCES

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7.2. ONLINE REFERENCES

1. Laboratory of Educational Technologies of the University of Florence https://www.lte.unifi.it/

GAMIFIED LEARNING

3-99+

1. GENERAL INFORMATION

1.1. PARTNER	University of Iceland
1.2. PROJECT START	Not applicable

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

The method outlined here primarily focuses on the alignment of instructional methods, learning outcomes, learning assessments and key elements of game design theory.
Ultimately, game design is concerned with the creation of activities that engage players by means of a range of intrinsic and extrinsic motivational tools. Well-crafted games can keep players engaged even through the most demanding challenges. It is this quality that the method aims to emulate by combining the motivational tools commonly used in games with well-designed learning activities to increase learners' engagement and agency.

Gamifying learning involves transforming educational activities into engaging games to achieve specific outcomes. The approach described here incorporates Juul's definition of a game as a rule-based system with variable outcomes, where effort influences the outcome, and attachment to the outcome is emotional. Thus, gamified learning entails creating novel educational games or adapting existing ones with clear goals, incorporating fundamental game design principles, and aligning with learning objectives. The effectiveness of the method relies on aligning instructional methods, learning outcomes, assessments, and game design theory. Engaging game activities are crafted using intrinsic and extrinsic motivational tools to enhance learner engagement and agency. The method builds on a number of approaches that underscore the importance of game-like interactivity, rules, and entertainment value in learning. The core aim of the method is to stimulate learners' motivation, both intrinsic and extrinsic, to foster engagement and empower learners to internalise knowledge and skills. By mimicking the engagement of well-designed games, educators can enhance the learning experience, making it more effective and enjoyable.

2.2. THEORETICAL FRAMEWORK

1. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining 'gamification'. *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9–15.

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3. Juul, J. (2011). *Half-real: Video games between real rules and fictional worlds*. MIT Press.
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8. Reiss, S. (2005). Extrinsic and intrinsic motivation at 30: Unresolved scientific issues. *The Behavior Analyst, 28*(1), 1–14. https://doi.org/10.1007/BF03392100

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

✓ Blended learning
✓ Game-based learning
✓ Experiential learning
✓ Embodied learning

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

✓ Cooperation and partnership skills
✓ Green skills
✓ Digital skills
✓ Social dimension (inclusion)
✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

The method is intended to be used in initial or continuing teacher training and is based on a wealth of rigorous research that has been described in scholarly publications. The partner has delivered courses based on the theoretical aspects of the method which have included examples of how it can be applied. In particular, a course was offered at the University of Iceland on computer games, game design, and gamified learning that incorporated several related EdX MOOCs and was conducted in collaboration with

Icelandic gaming company, CCP Games who are responsible for the MOMG Eve Online, among others. In the course students had opportunities to interact with a number of educational games, among them CCP's Project Discovery (CCP Games, n.d.).
The method was used in a teacher training seminar on entrepreneurship education. Learners had the objective of gamifying a lesson on how to balance budgets in a start-up business. Using the method and associated tools, learners were able to develop novel strategies for teaching what is often perceived as an uninteresting subject by incorporating metaphors from which game-based elements were derived. For example, a game in which players collected weights for successfully completing subject-relevant tasks. In the end, the team with the best balanced scale was declared winner. By developing gamified lessons, learners were also able to identify necessary areas for scaffolding to ensure that participants had the initial skills needed to successfully advance throughout the game, and to develop novel ways to incorporate scaffolding in the gamified lessons.
Numerous other examples of implementation of gamified learning can be found in published scholarly literature. The focus here, however, is less on the implementation of particular games and more on methods for planning and conducting the implementation of gamified learning independent of any particular games.

5.2. EVIDENCE OF IMPACT

Evidence of impact is thoroughly described in published scholarly literature.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

The method is derived from scholarly literature, some of which is cited in the description. Aside from these resources (and more - see ex. Google Scholar) here are some resources describing some of the more practical aspects of gamified learning.

1. EdX - Leading Change: Go Beyond Gamification with Gameful Learning. https://www.edx.org/learn/education/the-university-of-michigan-leading-change-go-beyond-gamification-with-gameful
2. This MOOC was one of the integrated MOOCs in the University of Iceland course on gamified learning described above.
3. Richard Landers - Game-based Assessment: An Interdisciplinary Workshop. https://www.youtube.com/watch?v=pkw0wwaTzb0
4. A recording of a workshop organised by Dr. Richard Landers, author of Landers' theory of gamified learning.
5. Hunicke, R., LeBlanc, M., & Zubek, R. (2004). MDA: A formal approach to game design and game research. In Proceedings of the AAAI Workshop on Challenges in Game AI (Vol. 4, No. 1, p. 1722).
6. A short paper describing practical applications of the MDA framework in the design of games.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- Over-reliance on extrinsic motivation (i.e. badges, rewards, etc.). Gamified learning requires a delicate balance of extrinsic and intrinsic motivation. Too much extrinsic motivation can divert learners' attention from learning goals.

- Overly competitive learning environment. Competition is a key component of gaming that does not always align well with learning goals. Gamified learning needs to be designed so that competitive aspects of gameplay do not overshadow learning activities and promote adversity over collaboration.
- Balancing complexity and accessibility. A key component of gamification is creating activities that challenge learners. If these are too challenging learners will not be motivated to participate. If they are not challenging enough learners will easily be bored.
- Need for scaffolding. Games are based on rules. Rules need to be unambiguous and learned before games can be enjoyed.

6.2. POSSIBLE IMPROVEMENTS

Gamified learning is currently a subject of intense interest to practitioners and scholars. Theoretical frameworks are continuously being refined and practical recommendations updated to reflect recent developments.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

A number of reference publications on gamified learning are available. However, in such a rapidly developing field reference publications can become quickly outdated. Therefore, social media and personal learning networks can be more effective resources than publications. Some useful resources include:

1. Playful learning alliance Facebook group https://www.facebook.com/groups/1943083332372097/
2. MIT Gamelab - http://gamelab.mit.edu/
3. Scott Hebert, Canadian teacher - https://www.thegamificationguy.com/
4. GamefulBits (Gustavo F. Tondello) - https://www.gamefulbits.com/

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2. Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). https://doi.org/10.1145/2181037.2181040
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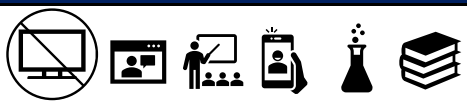
STRENGTHS-BASED LEARNING



6-99+

1. GENERAL INFORMATION

1.1. PARTNER	UCLL Research & Expertise
1.2. PROJECT START	2017

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

Strengths-Based Learning (SBL) is an overall didactical framework. It combines principles of positive psychology, self-regulated learning and group work, and **recognises students as the specialists of their learning processes**. The method is developed in **multicultural educational settings** in more than 70 schools and educational organizations in Belgium, over a time span of 25 years.
To complete an SBL-assignment students are asked to **build their own learning path** which has to include the following elements: **the content (the what)**, **the way of working (the how)** and the possibility to **ask for help** when they struggle as well as feedback once they've completed part of the assignment. To help them they receive a rubric that contains several options for each of these building blocks. They get to choose how to combine these building blocks, **taking into account their own strengths**, to create their own lesson content.
Students practice **cooperation, active participation, democratic decision making, and basic principles of citizenship** while they are learning maths, languages, art, sports, … without lowering the standards of the curriculum.
In a SBL-environment students evaluate themselves
using a feedback form based on the **OICO-principle** which lays out a pathway for a student **to master a higher order skill**. OICO is an alternative method of evaluation in which the acronym stands for observation, imitation, creation and originality.
OICO follows a natural path of learning: you observe before trying something by imitation. After overcoming your inhibitions, you get some practice and start doing
something for yourself. Once you become more skilful you can integrate the skill with others and come up with new and original things.

2.2. THEORETICAL FRAMEWORK

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2. Hattie, J. (2009). *Visible learning: a synthesis of meta-analyses relating to achievement.* New York: Routledge.

3. Hiemstra, D., & Yperen, N. W. V. (2015). The effects of strength-based versus deficit-based self-regulated learning strategies on students' effort intentions. *Motivation and Emotion*, *39*(5), 656–668. https://doi.org/10.1007/s11031-015-9488-8
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3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Blended learning
- ✓ Game-based learning
- ✓ Computational thinking
- ✓ Experiential learning
- ✓ Embodied learning
- ✓ Multiliteracies and discussion-based teaching
- ✓ *SBL can be used for all kinds of learning.*

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Green skills
- ✓ Digital skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

Example 1: Mathematics: Addition and subtraction to 10.
First grade of the elementary school

When the pupils enter the classroom, the desks are grouped into larger tables. On each of them they find counting materials, a device with internet connection, puppets and coloured task cards. The blue cards show *what* they have to do (written and drawn). The yellow cards show *how* they have to do it and the green cards give them different ways to *reflect* on their work and *ask for feedback.*
On the blue cards, the pupils find different ways of adding to 10: 5 sums to complete, 4 ways of getting the result 7, counting objects that can be seen through the classroom window, 6 exercises with calculation cubes and making 2 mistakes, watching a video online about adding/subtracting to 10, ...
The yellow cards tell the pupils how to use the blue cards: work alone, interview with the puppets and one of them plays a stupid pupil, explain to someone else on the whiteboard, hide the sums or subtractions in a drawing, one pupil solves the task and the other observes to find mistakes, act out the task without talking, etc. The pupils have to change roles within a task.
The green cards are for help and feedback: give feedback after the third exercise of the task, ask for help with the most difficult exercise, ask the teacher for an advice, correct with the calculation cubes, swap with your neighbour, correct by giving 'yes' or 'no' feedback, …
The teacher helps by explaining the task cards if necessary, observes the working groups in order to intervene and spot early signs of conflict.
Pupils choose one card of each colour and work through these tasks. Then they look for a new combination. They cannot start until they have agreed on the cards they have chosen. First they go through the cards working on adding to 10, then they use the same cards for subtracting to 10.
At the end of the lesson, they start with an assignment based on higher order skills: combining addition and subtraction up to 10. They can choose to work with 3, 5 or 7 numbers for 1 exercise. They have to invent 3 problems and write the result in their workbook. They can choose one of the "how" cards (yellow) or invent a new "how". Their exercises will be done by a pupil who was not in their working group. At the end of the lesson, they fill in the SBL evaluation form.

Example 2: Citizenship education: Developing a future perspective.
Sixth grade of a secondary, technical and vocational school

This lesson is one of a series of five lessons on planning for the future for sixth grade students who have to decide about their near future: going to work, going to higher education, starting a small business, ...
The near future is linked to their adult perspective: what will I do when I am 25 years older? The first lesson invites the students to think about their future in 25 years.
Students work in groups of 5 or 6. Each group has access to the Internet and is given a grid of assignments. The columns of the grid are the 'what', 'how' and 'asking help and feedback'. The grid contains 7 assignments of the 'what', 5 of the 'how' and 4 of 'asking help and feedback'. The 'what' assignments are about professions, inventing new professions, analysing of future trends, writing down their perspective in 5 sentences, etc. As this lesson was their first encounter with Strengths-Based Learning, the 'how' assignments focus on working alone, leading or supporting the discussion, giving positive comments, etc. Asking help and feedback focuses mainly on reflection in the group, helping someone else and giving positive feedback on the work of others.
The final task for all the students is to transform their vision of their future into a letter or a picture they have created themselves and to send it to the teacher.
In this first lesson the teacher is busy with observing the groups and looking for early signs of conflict. A group is confronted with these, mostly non-verbal signs if necessary. The teacher also 'rebuilds' the relationship with the students by asking them to solve the difficulties, ambiguities and problems within the group and not to rely on the teacher.

5.2. EVIDENCE OF IMPACT

2023: Heda. Citizenship Education through Art. As part of the HEDA-methodology SBL was tested in the pilot of the project with a group of students in higher education.
2022: Teachmi. Teacher preparation for migrant school inclusion. SBL was tested while implementing curriculum material developed for lessons in higher education.
2018-2021: Coaching youngsters through SBL in a youth detention centre.
1998-2019: Vlaggen en Wimpels. An art education project in 10 elementary schools in which SBL was gradually developed.
2018-2019: You.Legend. Development of SBL about entrepreneurship for vocational secondary education.
2015-2017: Strength-based project in KA Hoboken. Teacher in-service training and coaching to introduce SBL in secondary vocational education.
2011-2014: ETFU: Empowering The FUture through arts and media. Transfer of Innovation project in which SBL was used in the pilot with young artists in Antwerp.
2011-2013: Art Eco. Using sustainability and art for global engagement. A project with 9 elementary schools in Flanders and 9 schools and artists from countries in global engagement.
2005-2007: Self Made. A project in theatre education with 13 amateur theatre groups.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

Teachmi:
- Class management
- Planning tools
- Evaluation tools on world view, learning processes, self-image, class relationships and well-being
- Evaluation form creative writing
- Individual coaching tool based on SBL
- Solving conflicts using SBL.

You.legend: lessons on entrepreneurship.
Self- made and Art Eco: creativity disc.
Vlaggen en Wimpels and Iedereen kunstenaar!: evaluation tools for professional development in SBL, based on the OICO-principle.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- Building lesson plans using SBL is really difficult in the beginning.
- Teachers have to take on the role of coach, rather than that of purely a teacher.
- Teachers have to be attentive to monitor the progression of all the working groups.
- To get the most out of SBL students have to learn to choose to implement their strengths in their learning.
- Being able to analyze/divide higher order skills into lower order skills in order to create the forms for self-evaluation demands a clear and specific view on the learning processes at hand.
- The SBL-approach requires teachers to look at their lessons differently and get out of their own comfort zone, which has proven not to be easy.

6.2. POSSIBLE IMPROVEMENTS

- Enriching the didactical guide (as it is currently available) with exercises and examples.
- Strengthening the connection between the principles of class management of SBL and the didactical principles.
- Integrating the use of the self-evaluation forms in the lessons.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

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7.2. ONLINE REFERENCES

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THIRD GROUP: DIGITAL AND INNOVATIVE ACTIVITIES

DIGITAL STORYTELLING

8-16

1. GENERAL INFORMATION

1.1. PARTNER	Universitat de Girona (UdiGitalEdu)
1.2. PROJECT START	2019

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

Digital Storytelling is a relatively new term that refers to stories that include multimedia elements such as photographs, videos, sounds, texts, and also narrative voices, and this has found its way into the classroom in a number of contexts. Digital stories often present in compelling and emotionally engaging formats and can be interactive.
The most important characteristics of a digital story are that it no longer conforms to the traditional conventions of storytelling because it is capable of combining still imagery, moving imagery, sound, and text, as well as being nonlinear and contain interactive features.

Digital Storytelling and Education
Digital Storytelling has become a powerful instructional and learning tool for both students and educators. Teachers can create digital stories to help facilitate class discussions, as an anticipatory set for a new topic, or to help students gain a better understanding of more abstract concepts. When students create their own digital stories they are required to take ownership of the material they are presenting. They have to analyze and synthesize information as well. All of this supports higher-level thinking. Students are able to give themselves a voice through expressing their own thoughts, ideas and feelings.
Bringing ideas of Constructionism and Play together, digital storytelling, like traditional storytelling, has major potential for a number of general reasons, for example:
- It increases the enthusiasm to read and re-read.
- It can be used at any age, from pre-school to college.
- Sharing stories helps us put ourselves in the role of others and stimulates our empathy.

Story of Digital Storytelling
Digital storytelling is not a new idea. Joe Lambert and Dana Atchley helped create the digital storytelling movement in the late 1980s as cofounders of the Center for Digital Storytelling (CDS) in Berkeley,

California. Since the early 1990s, the CDS has provided training and assistance to people interested in creating and sharing their personal narratives (Center for Digital Storytelling, 2005).

Digital Storytelling links perfectly with Constructionism, that theory of learning proposed by Seymour Papert (Papert, 1980), where children use technology as a medium of expression, and they construct knowledge in their minds while building something through technology (a robot, a digital story, etc.).

2.2. THEORETICAL FRAMEWORK

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3. Resnick, Mitchel. (2007). All I really need to know (about creative thinking) I learned (by studying how children learn) in kindergarten. Creativity and Cognition 2007, CC2007 - Seeding Creativity: Tools, Media, and Environments. 1-6.
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5. Tucker, G. (2006). First person singular: The power of digital storytelling. Screen Education, 42, 54–58.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Computational thinking
- ✓ Experiential learning
- ✓ Multiliteracies and discussion-based teaching
- ✓ *Collaborative learning*
- ✓ *Transmedia Learning*

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Digital skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

Example 1: Poetry with Scratch (activity for primary schools)

This activity, designed at "Constantin Ianculescu" School in Romania, offers an immersive 6-hour experience tailored for 8-10-year-olds. The activity, ideal for 10-30 students in small teams, marries English language learning with digital creativity, all centered around the simplified "Happy Halloween" poem (but we can use any poem). It requires computers, Internet access, and basic stationery.,,
Initially, the teacher aids in translating and understanding the poem, setting a solid linguistic foundation. Then, the children dive into Scratch, starting by customizing their stage and carefully selecting characters - ghosts, bats, owls, cats, and pumpkins. If necessary, they venture online to find the perfect sprites, enhancing their digital skills by resizing or editing images.
The real magic happens as they script simple dialogues or draft storyboards, laying the groundwork for their digital storytelling. They breathe life into their characters using basic Scratch blocks, making them move and speak. While the teacher offers guidance, children are encouraged to explore and experiment, potentially adding their own recorded voices or using text-to-speech features to further practice their English.

This activity isn't merely about learning English or programming; it's about igniting imagination, fostering teamwork, and nurturing digital fluency. It's adaptable, allowing for themes beyond Halloween, making it a perfect fit for any language, art, or technology class aiming to blend creativity with learning. Through these steps, children don't just read poetry; they bring it to life, leaving with a deeper understanding of language, a flair for digital creation, and a sense of achievement in their collaborative storytelling masterpiece.

Example 2: Hack your window (all ages)
This activity was designed during the COVID-19 confinement, and offers a 60-minute digital storytelling experience for individuals aged 8 and above. It's a perfect at-home activity, requiring just a computer, Internet connection, and a photo-taking device like a camera or cellphone.
The aim is to transform a simple photo of a home window into a captivating digital story, game, or art project using Scratch, a versatile programming platform. This activity, initially designed to bring families together during lockdown, can also be adapted for educational settings.
The process begins with capturing a photo of a window. This photo then becomes the canvas for digital creativity on Scratch. Participants are guided to upload and edit their window image, perhaps cutting out the interior to make room for imaginative elements like beautiful landscapes, characters, or personal drawings.

The real creative exploration starts as participants add stages and sprites to their Scratch project. They might add birds fluttering by the window or a wizard peering in, each element enhancing the narrative or gameplay. The focus is on programming these elements to move, interact, and tell a story. This could be as simple as birds moving across the screen or as complex as a full-fledged interactive game.
As the project concludes, participants are encouraged to share their creations on the Scratch website, joining a community of creators and inspiring others with their unique window into the world.
Full tutorial here: https://hackart.eduard.cat/2020/03/hack-your-window.html

5.2. EVIDENCE OF IMPACT

This is the number of schools that participated in the project DIVERSE and that implemented Digital Storytelling activities.
Total: 388 (Greece: 169; Romania: 89; Italy: 50; Hungary: 29; Spain: 26; Bulgaria: 24 Germany: 1)

Trained teachers implemented the activities in their classrooms and collected the observations and results in teacher logs. Forms and focus groups were also facilitated to the children to evaluate their

learning and engagement in the activities. Evidence came also in form of children's productions, like Scratch animations, stories, etc.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. DIVERSE Guidance Guide for Teachers (includes the Digital Storytelling method and two more) http://diverse-education.eu/guidance-book/
2. Many ideas in the Digital Storytelling chapter of this guidance book were inspired by open resources created by the MIT Scratch team: https://scratch.mit.edu/educators.
3. And from Harvard Creative Computing Curriculum: http://scratched.gse.harvard.edu/guide/curriculum.html.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- Cases of teachers with skeptical views about technology or low confidence in using it.
- Teacher's perception of high time consumption in preparing the activities.
- Technologies required are not always available in all contexts: computers, tablets, Internet Connection.

6.2. POSSIBLE IMPROVEMENTS

- To adapt the method to early childhood education stages and lower primary.
- To adapt the method increasing the focus on cross-curricular activities and fostering collaboration between teachers of different subjects.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

1. K. Diamantis, A. Bethlenfalvy, A. Cziboly, G. Breziou, M. Di Foggia, R. Dimitrova, A. Dragomir, J. Freixenet, M. Frigola, C. Isham, N. Kamtsis, M. Masgrau, C. Marrucci, C. Meschiari, E. Muntaner-Perich, M. Niell, A. Telesca, S. Vasileva.: "DIVERSE Project. Guidance book for teachers", Edited by Adam Cziboly, corrections by Colin Isham. Outcome of the Erasmus+ Projecte DIVERSE (612178-EPP-1-2019-1-EL-EPPKA3-IPI-SOC-IN), April 2021. [Online version]

7.2. ONLINE REFERENCES

1. Website of DIVERSE project: http://diverse-education.eu/
2. Guidance Book for Teachers: http://diverse-education.eu/guidance-book/
3. Digital Storytelling Method Summary: http://diverse-education.eu/digital-storytelling/

MonTech (blended Montessori – Creative Technologies approach for successful inclusion in Multicultural Schools)

6-12

1. GENERAL INFORMATION

1.1. PARTNER	Universitat de Girona (UdiGitalEdu); Waterpark Montessori
1.2. PROJECT START	2021

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

The MonTech method is based on a well-tested traditional method (Montessori) and adds to it Creative Computing with the objective of adapting Montessori to the new context of multicultural schools (schools with a significant amount of children with refugee/migrant/minority background) and updating it with modern but affordable digital tools for schools with few economic resources.
The MonTech project was inspired by the question: If Maria Montessori were alive today, how would she use technology in the classroom, with children and teachers, without betraying the principles of her methodology?
The method teacher's guide offers a collection of workshops for children from 6 to 12 years old. The activities engage children in the creation of projects reproducing the creative learning spiral of Mitch Resnik in a growing cycle that navigates through imagine, create, play, share and reflect. Children are encouraged to work both individually and on teams and to learn to give and receive feedback.
Activities give importance to characteristic Montessori elements, such as the stories and the journal relying on the impressive capacity of learning of children and their freedom of choice to develop their full potential. In addition to that, Creative Computing covers the interdisciplinary area at the cross-over of creativity and computing, is an educational trend that has its roots in learning theories such as Constructionism or in movements such as Maker Education, both of which were developed mainly since the 1970s, thanks to pioneers such as Seymour Papert, who explored ways to use technology to promote creative learning, and to transform technology into a medium of expression that would give children a voice. Current concepts such as Computational Thinking or STEAM methodology are based on these ideas.

2.2. THEORETICAL FRAMEWORK

1. Montessori, M. (1949). *The Absorbent Mind*. The Theosophical Publishing House.
2. Papert, S. (1980). Mindstorms. Children, computers, and powerful ideas. Basic Books.
3. Resnick, M. (2017). Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play. MIT Press.

4. Healy Walls, C. (2008). At the Heart of Montessori Series. Waterpark Books
5. Bocconi, S., Chioccariello, A., Dettori, G., Ferrari, A., y Engelhardt, K. (2016a). Developing Computational Thinking in Compulsory Education. Implications for policy and practice.
6. Jones, S.J. (2017). Technology in the Montessori classroom: Teachers' beliefs and technology use. Journal of Montessori Research. Vol. 3 (1)

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

- ✓ Computational thinking
- ✓ Experiential learning
- ✓ Embodied learning
- ✓ Multiliteracies and discussion-based teaching

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

- ✓ Cooperation and partnership skills
- ✓ Digital skills
- ✓ Social dimension (inclusion)
- ✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

These activities have been implemented by several of the trained teachers in their classrooms. Here is the description of the implementation with a group of 16 students 11 and 12 years old:

Example 1: Measuring time
Start: The activity is introduced based on the previous knowledge of the students on the specific topic. In this case they have been asked questions such as: How would you explain what the word time means? Do you think time is important? Why? Can time be measured? How to measure time? How have devices for measuring time evolved over time? What is the use of measuring time? Is time measured the same all over the world?
Development: Activity in pairs. With the different guidelines of the teachers, the students have been proposed to create their own clock in Scratch and to be able to program the hand for the seconds in such a way that it goes around the clock completely for 60 seconds. In this case, students must consider that we measure in degrees, and that the entire vault of the clock is 360º. Bearing in mind that the time it takes for the search to complete the entire revolution is 60 seconds, the students must calculate the degrees that the search must turn in order to complete the entire revolution in 60 seconds. The students have carried out the activity by downloading the image of a clock without time hands and then they have chosen one of the images from the program to search for a hand and have

applied it to their clock. Then they have programmed and sequenced the orders. They have used the trial/error method until they find the correct angle and the correct sequence.
Closing: Joint reflection on the results and learning.

Example 2: Music and conductivity: - Musical
Instruments with Makey-Makey and Scratch
In this activity we worked on the conductivity of materials. So, after this starting point, Makey-Makey was introduced to work on the art of creating instruments in a global way, scratch and conductivity with low-cost materials were worked on. This activity lasted about 90 minutes and the students were given the freedom to create the instrument of their choice. Once they had created their instrument, they were able to create their own sounds and experiment with the conductivity of the materials.
The students were highly motivated from the very beginning. In some cases, motivation increased as the activity went on for a few minutes, as some students were not very participative at the beginning.

5.2. EVIDENCE OF IMPACT

In the framework of the project 350 teachers from 6 countries have been trained on the methodology, so far. The aim is to have reached to 500 teachers by the end of December 2023. The total number of children involved will be about 7500. Evidence is being collected through pre and post questionnaires about the expectations and the results of the teacher training courses. Trained teachers are implementing the activities in their classrooms and collecting the observations and results in teacher logs. Forms and focus groups are also facilitated to the children to evaluate their learning and engagement in the activities. Evidence comes also in form of children's production and the records in their journals.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

MonTech Primary School Teacher guidance book: https://montessoritech.eu/montech-guide/

Many ideas in this guidebook have been inspired by, remixed and taken directly from open resources created by the MIT Scratch team (directly extracted from https://scratch.mit.edu/educators) and from the guide:

1. Brennan, K., Haduong, P., Williamson, M. A., Peters, L., Smolevitz, S., & Yu, B. (2021). *Getting unstuck: An intermediate Scratch curriculum to support design studio culture in the classroom*.
2. Creative Computing Lab. Retrieved from https://gettingunstuck.gse.harvard.edu/
3. Creative Computing Curriculum: http://scratched.gse.harvard.edu/guide/curriculum.html

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- Cases of teachers with skeptical views about technology or low confidence in using it.
- Teacher's perception of high time consumption in preparing the activities
- Cases of negative comparison of final workshop products in children with low self-esteem.

6.2. POSSIBLE IMPROVEMENTS

- To adapt the method to early childhood education stages and to early stages of secondary education.

- To adapt the method to focus in the curricula of specific areas such as mathematics, art, language, etc.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

The project to develop and implement de methodology is still ongoing. The end date is January 2024, when publications will follow with the results, impact and evaluation of the project.

7.2. ONLINE REFERENCES

1. Montessori, M. (1949). *The Absorbent Mind*. The Theosophical Publishing House. https://archive.org/details/in.ernet.dli.2015.202650.
2. Bocconi, S., Chioccariello, A., Dettori, G., Ferrari, A., y Engelhardt, K. (2016a). Developing Computational Thinking in Compulsory Education. Implications for policy and practice. https://doi.org/10.2791/792158
3. The creative learning spiral of Mitch Methods (ENG)
4. https://montessoritech.eu/methods/montessori-method/
5. https://montessoritech.eu/methods/creative-technologies/

Also available in Bulgarian, Catalan, Greek, Italian, Rumanian, Spanish and Turkish

6. Teacher's Guide (Book): https://montessoritech.eu/montech-guide/ (ENG)

Also available in Bulgarian, Catalan, Greek, Italian, Rumanian, Spanish and Turkish

TalentMaker (Talent-Based Learning and Maker Education in the context of Hybrid Education after Covid-19)

6-12

1. GENERAL INFORMATION

1.1. PARTNER	Universitat de Girona (UdiGitalEdu)
1.2. PROJECT START	1st March 2021

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

The Talent Maker method is the evolution from a good practice of El Pla school (Salt, Spain).
Its innovative methodology blends **Talent-based learning** inspired by Howard Gardner's Theory of Multiple Intelligences and cutting-edge **Maker Education** approaches build up on Seymour Papert's Constructionism. Moreover, the application of the project reproduces the Creative Thinking Spiral of Mitch Resnik, supported by the Digital Educative Capsules with the same structure. Additionally, it is influenced by initiatives like Arvind Gupta Toys, Kriti Activities and Paper Crane Lab.

Once a week, teachers offer workshops based on their **passions**: cycling, DIY, music, cooking, sewing and robotics, among others. These hands-on activities (Educative Capsules), which advocate a circular economy by upcycling, integrate digital technologies to extend or maximized their final product functionality. At the beginning of the academic year, **children freely pick which ones to participate** (creating reduced groups) in according to their interests during an established period: 4 sessions for lower primary and one academic term for middle and upper primary pupils. Not only the Talent Maker method is carried out as **workshops at school** (in-person) but also as **home-learning at home** (distance) and combining both settings (**hybrid education**) supported by the Digital Educative Capsules and their tutorials. All this, considering multicultural **school children's needs**, such as the language barrier and the affordability of the materials.

In summary, it encourages pupils to **make an artefact** they are passionate about or in a field they are skillful, **to build and mobilize their knowledge** while boosting their **digital competence** and collaboration**, creativity and critical thinking abilities**.

2.2. THEORETICAL FRAMEWORK

1. Gardner, H. (1993). Multiple intelligences: The theory in practice. Basic Books.

2. Martinez, S. L., & Stager, G. (2013). Invent to learn: Making, tinkering, and engineering in the classroom. Torrance, CA: Constructing Modern Knowledge Press.
3. Resnick, M. (2017). Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play. MIT Press.
4. Punie, Y. (Ed.). (2017). European Framework for the Digital Competence of Educators: DigCompEdu (EUR 28775 EN). Luxembourg: Publications Office of the European Union. doi:10.2760/178382
5. Greenstein, L. (2017). Assessing 21st century skills: A guide to evaluating mastery and authentic learning. Thousand Oaks, CA: Corwin Press.
6. Kirschner, P. A., & Hodges, C. B. (2020). Hybrid learning in the 21st century. Journal of Computer Assisted Learning, 36(3), 233-243. doi: 10.1111/jcal.12410

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

✓ Blended learning
✓ Experiential learning
✓ Embodied learning
✓ *Maker Education in a formal context, adapted to distance learning and European multicultural schools needs.*

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

✓ Cooperation and partnership skills
✓ Green skills
✓ Digital skills
✓ Social dimension (inclusion)

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

This example illustrates the two sessions implementation of a Library Digital Educative Capsule following the Talent Maker method with a group of ten lower-primary pupils in El Pla school, Salt (Spain).
It was conducted by Mireia Costa Gay, teacher and librarian of the school, and the UdiGitalEdu team.

Session 1:
When the children arrived, they found an ocean ambience in the library and plenty of books about the sea displayed. Firstly, pupils sat in a circle, and the teachers presented the books by mentioning the title, reading the synopses and examining the covers together. Then, they pointed out their genres: non-fiction, graphic novel, poetry, comic, etc. Secondly, children had time to read books of their choice on their own, in pairs or groups. The rest of the session was about making a sea diorama in pairs

representing an ocean scene inspired by the books they had previously explored and their own experiences.

Session 2:
Once in the classroom, the teacher opened the session by asking pupils how the tangible sea dioramas they had created could be transferred to a screen to animate their marine characters. Next, by guiding questions to pupils, she conducted an introduction to the Scratch Jr. interface. Afterwards, one tablet per pair of children was handed out, and they had time to recreate their ocean (or take a photo of them and upload it as a background) this time digitally exploring the different possibilities that coding offered them. Finally, pupils shared their projects and discoveries with the rest of their classmates. Also, they were encouraged to answer what they had learned from each other during the creation process.

5.2. EVIDENCE OF IMPACT

The method was tested and implemented ever since the consortium capacity building in the partnership multicultural schools: El Pla (Slat, Spain), which had a project precedent, Constantin Ianculescu (Cârcea, Romania) and 1st Primary School of Nea Alikarnassos (Heraklion, Greece); reaching 45 teachers and 437 children. Then, the impact was increased by the Talent Maker Teachers Training and implementation conducted outside the partnership. Concretely, through two online Courses for Colombia and Romania and two face-to-face Programme in Greece and Spain. Therefore, about 300 more teachers from 72 schools were engaged involving approximately 7500 children (25 pupils per class/teacher).

Multicultural School Children: An important aspect to highlight is children's perception about learning while making without realizing not only they mobilize and build knowledge of different subjects, but also reinforce their collaboration, creativity, critical thinking skills and the digital competencies. Besides, as they choose the *Talent* they wanted to participate in, they get more engaged in the activities generating opportunities for significant learning for each of them. Regarding their conception towards technology as a tool for creativity and a means of expression incremented by being a natural extension of the already *maker* activities and exposed explicitly in the imagine, create and share sections of the Digital Educative Templates.
Multicultural School Teachers: One aspect on which partner schools agreed is that the impact on their organizations has materialized with the creation of new Digital Educative Capsules and the compromise to continue implementing Talent Maker activities after the funding period. Besides, trained teachers also stated they will integrate Talent Maker workshops into their practice. In general, they concurred, the project has given them new perspectives on different pedagogical methods in the use of digital technologies and would recommend its implementation as a school project.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

1. Methodology: a document that gathers the two chapters that set the proper method implementation basis, serving as a guideline for the teachers. It includes the Theoretical Framework for Talent-based learning and Maker Education, as well as how to put them together into practice.
2. Digital Educative Capsules Catalogue: printable hands-on and cross-curricular activities that reproduce the Talent Maker methodology following the Creative Thinking Spiral. They have step-by-step instructions, pictures and some tutorials to overcome the language barrier. They are thought to be implemented as collaborative workshops at school and independently at home by pupils.

3. Teacher's Guide: a book addressed to teachers that describes the Project, the Theoretical Framework, the Methodology, and the Capsule's Template, and includes a complete Assessment Proposal, Case Studies and examples of Digital Educative Capsules.

Participatory Exchange System: a form that allows teachers from around the world to share their talents through the design of a Capsule from a provided template and uploading it through a form integrated into the project website.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- During home learning, exceeding parents' involvement.
- Children who regularly require help, also need extra support when performing the Digital Educative Capsules at home independently.
- Cases of negative comparison of final workshop products, in children with low self-esteem

6.2. POSSIBLE IMPROVEMENTS

- To encourage collaboration in distance learning (providing feedback, previous research together, complementary parts of the product, etc.).
- To facilitate extra support tools for pupils who need more help to follow up on the activity progress (buddy program, IA, etc.).
- To involve parents and community members experts in the talent (the cook from the neighborhood restaurant, the architects from the studio in front of the school, etc.).

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

Methodology:

- ENG: https://talent-maker.eu/methodology/
- ES: https://talent-maker.eu/es/metodologia/
- CAT: https://talent-maker.eu/ca/metodologia/
- RO: https://talent-maker.eu/ro/methodology/
- EL: https://talent-maker.eu/el/methodology/

Teacher's Guide (Book):

- ENG: https://talent-maker.eu/teachers-guide/
- ES: https://talent-maker.eu/es/guia-de-la-maestra/
- CAT: https://talent-maker.eu/ca/guia-de-la-mestra/
- RO: https://talent-maker.eu/ro/teachers-guide/
- EL: https://talent-maker.eu/el/teachers-guide/

7.2. ONLINE REFERENCES

1. Project website: https://talent-maker.eu/

2. Blog: https://talent-maker.eu/category/news/
3. Testimonials: https://talent-maker.eu/testimonials/

Resources:

4. Methodology: https://talent-maker.eu/methodology/
5. Digital Educative Capsules Catalogue: https://talent-maker.eu/catalogue-of-digital-capsules/

CREATIVE STE(A)M

11-14

1. GENERAL INFORMATION

1.1. PARTNER	Centre Of Higher Education In Theatre Studies
1.2. PROJECT START	2021

2. MAIN INFORMATION

2.1. BRIEF DESCRIPTION

When STEM lessons are full of concepts, formulas, and definitions that students need to memorize, CREATIVE STE(A)M puts art, especially theatre, theatre techniques, and the Art of painting, as a starting point in teaching and learning processes.
Creative STEM focuses especially on the relationship between theatre, theatre techniques and learning. CREATIVE STE(A)M uses all the way and tools of CREATIVE LEARNING to give teachers an integrated method to transform their teaching from conceptual to experiential learning. In addition, to use the Art of painting as a starting point for approaching scientific topics. Students rely on action, images, representations that develops in the classroom during the teaching of a scientific subject (Science, Technology, Engineering and Math's). In this way they are not a passive spectator but act effectively in the lesson and therefore gain a deeper understanding. At the same time as the learning takes place through artistic works and processes students broaden their horizons and are socially cultivated by expanding their critical thinking.
Incorporating art into STEM (Science, Technology, Engineering, and Mathematics) lessons can enhance creativity, engagement, and the overall learning experience. Here's a description of a method that integrates art into STEM teaching: the primary goal is to foster a multidisciplinary approach by seamlessly integrating art with traditional STEM subjects to enhance creativity, critical thinking, and problem-solving skills.

Introduction and Context Setting:
the lesson begins by presenting a piece of art, a masterpiece from painting. The teacher focus on art elements and thus emphasizes the importance of creativity and diverse perspectives in finding solutions. He/She explains how art can complement STEM disciplines by encouraging innovative thinking and visualization. Teacher and students discuss famous examples where art and science have intersected, such as Leonardo da Vinci's anatomical drawings. But almost all the paintings have elements related with some STEM lesson elements. The students engage in a discussion about the visual representation of STEM concepts. They explore how artistic elements like color, shape, and form can be used to represent scientific data or engineering designs.

The classroom can then move on to an action analogous to the previously examined work of art. By simple elements, through improvisations, the class engages in an action that will then bring the students closer to understanding the stem lesson.

Thus, the commentary on a work of art is transformed into a theatrical action and improvisation and then the discipline itself is approached. Now, however, before the students have cognitively understand the lesson, they have experienced the characteristics and function of the lesson.

2.2. THEORETICAL FRAMEWORK

Methods of teaching STEM (Science, Technology, Engineering, and Mathematics) lessons in secondary schools involves integrating relevant educational theories, pedagogical approaches, and learning principles.
More detailed here is a potential outline for a theoretical framework:

1. Constructivism:
   Definition: Learning is an active process where students construct their understanding by building on prior knowledge.
   Application: Designing STEM lessons that encourage hands-on activities, problem-solving, and collaborative learning.
2. Sociocultural Theory:
   Definition: Emphasizes the role of social interactions in learning and the importance of cultural context.
   Application: Incorporating group projects, discussions, and real-world applications to promote collaborative learning.
3. Experiential Learning:
   Definition: Learning through direct experiences, reflection, and experimentation.
   Application: Integrating experiments, field trips, and interactive simulations to enhance students' practical understanding of STEM concepts.
4. Project-Based Learning (PBL):
   Definition: Students engage in extended, real-world projects to address complex questions or challenges.
   Application: Designing STEM lessons around projects that require critical thinking, problem-solving, and interdisciplinary skills.
5. Inquiry-Based Learning:
   Definition: Students actively explore problems, ask questions, and develop solutions through investigation.
   Application: Designing STEM lessons that encourage students to ask questions, conduct experiments, and draw conclusions independently.
6. Technology Integration:
   Definition: Leveraging technology tools to enhance teaching and learning.
   Application: Integrating digital simulations, virtual labs, and online resources to make STEM lessons more interactive and engaging.

By combining these theoretical perspectives, educators can create a comprehensive framework for designing and implementing alternative methods of teaching STEM lessons in secondary schools.

3. MAIN FEATURES

3.1. INNOVATIVE ELEMENTS

✓ Blended learning
✓ Game-based learning
✓ Experiential learning
✓ *The novelty of the method is that it works both ways. Through art (theatre, theatrical techniques, painting) the STEAM lessons are approached, but also through the approach of STEM subjects the secondary school students expand their knowledge and culture towards art by developing critical thinking and acquiring an opinion on many issues beyond the lesson.*

4. GOAL, COMPETENCES AND SKILLS

4.1. SKILLS

✓ Cooperation and partnership skills
✓ Green skills
✓ Digital skills
✓ Social dimension (inclusion)
✓ Gender sensitivity

5. IMPLEMENTATION AND IMPACT

5.1. EXAMPLE/S OF CLASSROOM IMPLEMENTATION

BUOYANCY-upward force on an immersed body.
Materials:

- The chairs of the classroom.
- Brooms and mops any kind of sticks about a meter long.
- A painting with a boat at the sea (we propose the Eugene Delacroix painting Christ Asleep during the Tempest–1853).
- A big glass pot/container with water.
- A simple small ball.

Stage 1: The painting as the first step
The teacher shows a painting on the wall without any other information about it and invites the students to look at it carefully and describe it.
We propose the «***or Christ on the Sea of Galilee***» by the French painter Eugene Delacroix. The teacher asks specific questions in order to give stimulus to the students to speak about the following:

- What does the painting represent?
- Where are the people?
- What is happening? do we see calm waters or a tempest?
- What could be the feelings of the persons in the paintings? Etc.
- But there is one person that is not afraid of the tempest, what is he doing?

- Can you guess who is he?
- The aesthetic matters of the painting (colors, the light and where it is coming from, the contrast etc).

The teacher gives some basic information about the painter and the painting:
Ferdinand Victor Eugène Delacroix (26 April 1798 – 13 August 1863) was a French Romantic artist regarded from the outset of his career as the leader of the French Romantic school. Delacroix took for his inspiration the art of the painters of the Venetian Renaissance, with an attendant emphasis on color and movement. Dramatic and romantic content characterized the central themes of his maturity. Delacroix was also inspired by Lord Byron, and themes related to the Greek and French revolution. However, according to Baudelaire, "Delacroix was passionately in love with passion, but coldly determined to express passion as clearly as possible." He is one of the last old Masters of painting. As a painter he uses optical effects of color profoundly shaped the work of the Impressionists. Delacroix illustrated various works of William Shakespeare, the Scottish author Walter Scott and the German author Johann Wolfgang von Goethe.
The painting: Delacroix painted at least six versions of this New Testament lesson in faith: when awakened by his terrified disciples, Christ scolded them for their lack of trust in Providence. In the earlier works, the seascape is more prominent; in the later ones, as here, Christ's bark occupies a more significant place.

Stage 2: The action
The teacher encourages the students to take a chair and put it in the middle of the empty space of the classroom. They take one stick as a paddle (can be a broom or mop or any kind of sticks about a meter long or anything else). The teacher inspires the students to pretend that they are in a boat in the middle of a lake or sea and paddling to go across. The water is calm and peaceful. Suddenly a tempest breaks out. Wind and huge waves appear. The students pretend that they are in danger. They are afraid that they will be lost in the water. They experience feelings of agony and make efforts to survive. The theatricality and drama desired can develop and evolve if relationships are established between students and the various roles they will be encouraged to play.
(i.e. one student saves the boat and the life of another student beside him. Connect 2 boats/chairs. They make bigger space to step as 2 chairs connect to each other etc. and finally reach the seaside).

Stage 3: The technology of floating
1st question: how heavy is a boat with nine people on it? Let's guess.
Nine persons by 70 kg each is about 420 kg and the boat about 400 kg are almost a tone all together.
2nd question: how such a heavy thing-a vessel- about 850 kg, does not go straight in the bottom of the sea/lake?
An experiment:
The teacher uses the glass pot with water and 2 balls (a wooden one and a metal one). The wooden one floats. The metal one sinks and goes to the bottom. *Why?*

Stage 4: The Buoyancy
The teacher explains the phenomenon of Buoyancy and all the forces that works for it. Buoyancy or up-thrust is an upward force exerted by a fluid that opposes the weight of a partially or fully immersed object. In a column of fluid, pressure increases with depth as a result of the weight of the overlying fluid. Thus, the pressure at the bottom of a column of fluid is greater than at the top of the column. Similarly, the pressure at the bottom of an object submerged in a fluid is greater than at the top of the object. The pressure difference results in a net upward force on the object.

For this reason, an object whose average density is greater than that of the fluid in which it is submerged tends to sink. If the object is less dense than the liquid, the force can keep the object afloat. The M = mass of the object; The R = Density of the object; The P = Density of the fluid
The relationship between them in order to have the phenomenon of Buoyancy and the final results What is the M and R in Wooden ball and what is the same in metal.

5.2. EVIDENCE OF IMPACT

The impact is extremely positive on the functioning of both teachers and students.
During the previous implementation of the method in secondary schools of high schools in Greece, Spain, Italy, Sweden both teachers and students enthusiastically accepted their functioning through the process.
The Creative STEAM and CREATIVE LEARNING methods have to contend with a decades-old system of decades-old education and mentality.

5.3. SUMMARY LIST AND DESCRIPTION OF AVAILABLE RESOURCES AND MATERIALS

For further detailed information, please visit the official site of the methods:

- Creativitylearning.eu
- https://stemproject.eu/

The sites have an extensive theoretical approach and many practical case studies.

6. IMPROVEMENTS AND RISKS

6.1. POSSIBLE RISKS

- Teachers may initially resist or feel uncomfortable with a creative STEAM approach, especially if they are accustomed to more traditional teaching methods.
- Implementing creative STEAM activities in the tight frame of school curriculum can sometimes require more time compared to traditional instructional methods.

6.2. POSSIBLE IMPROVEMENTS

The visible possible improvements are in the familiarization of teachers with the method and the way of teaching STEM lessons and in the reversal of the teaching philosophy from conceptual to experiential education.
By extension, a change (radical) in the way education is treated by the official European educational curriculum.

7. REFERENCES

7.1. REFERENCE PUBLICATION/S

1. https://www.futurelearn.com/info/blog/effectively-teach-stemsubjects
2. https://stemeducationjournal.springeropen.com/articles/10.1186/s40594-016-0046-z

7.2. ONLINE REFERENCES

1. https://stemproject.eu/ (the official site)

Other:

1. https://www.fizzicseducation.com.au/
2. https://ahaslides.com/
3. https://www.futurelearn.com/

APPENDIX

Referring to the three tables at the beginning of the document, here all the links to further information can be found.

- Table 1: AGENDA 2030 GOALS
  https://sdgs.un.org/goals
- Table 2: European Key Competences (2018)
  Council Recommendation of 22 May 2018 on key competences for lifelong learning Text with EEA relevance. (europa.eu)
- Table 3: Inclusive Practices based on the Index for Inclusion (2006)
  https://www.eenet.org.uk/resources/docs/Index%20English.pdf