

THE 21C-SDG PROJECT CURRICULUM

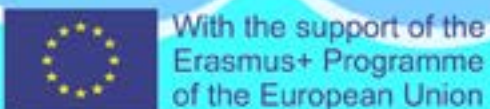


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CONCEPT

Our children today are growing up in a world completely different from previous generations. The planet is under stress from pollution and climate change. To secure the planet and future generations, we need to learn to live in a sustainable manner. It is thus important to recognize that children and pupils need to be able to address these problems and be part of the solution. They need to master 21st century skills such as creativity, critical thinking, and problem-solving skills, media literacy and entrepreneurship.

Children and pupils must learn to be pro-active and think outside the box to address the world's current challenges that are well elaborated in the United Nation's Social Development Goals (UN-SDG). Using the UN-SDG as framework, the project will develop and facilitate the acquisition of these 21st century skills. This focus is derived from the belief that informed and fact-based knowledge about global issues such as pollution, water contamination, etc. will inspire pupils to become more socially aware and open up entrepreneurial possibilities that they had otherwise not considered.

The project aims to challenge the pupils to come up with solution, work together, co-create and think critically both on how the issues of the world have arisen and how they can contribute towards a solution. Combining 21st century skills and the UN-SDG provides a perfect opportunity for pupils to develop critical thinking, problem solving, entrepreneurship and digital competences while working with real world issues such as pollution, water contamination, equality, etc.



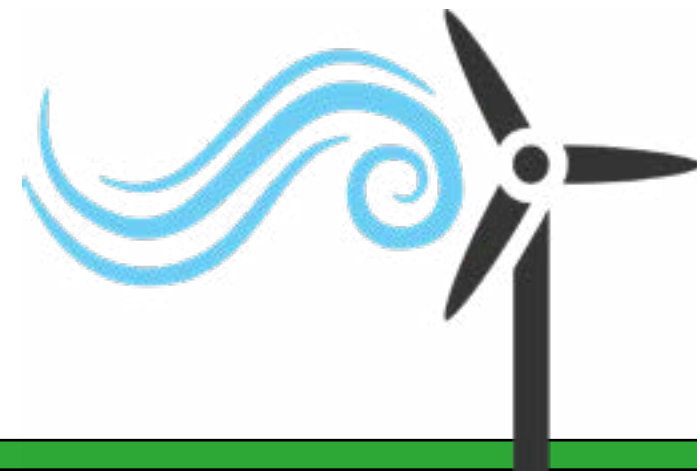
Objective

21C-SDG (21st Century Skills in the Context of UN's Social Development Goals) aims to foster skills critical for the development and success of pupils in the 21st century. These include critical thinking, entrepreneurship, media literacy, and creative problem solving.

Activities

The following activities will be conducted:

- Development of an educational curriculum, with a special focus on 21st century skills, and UN's sustainable development goals
- Development of educational materials targeted at pupils aged 10-15 years
- Development of an online platform intended as a hub for the materials, also acting as a place to share experiences and best practices between educational institutions
- Evaluation of the materials and the project as a whole
- Holding of multiplier events in partner countries
- Holding of End-of-project conference





Introducing basic concepts

On 10 June 2016, the Commission adopted a new and comprehensive Skills Agenda for Europe. The aim is to ensure that people develop a broad set of skills from early on in life and to make the most of Europe's human capital, which will ultimately boost employability, competitiveness, and growth in Europe. Critical thinking, entrepreneurship, problem solving, or digital competences are just some of the competences enshrined by the New Skills Agenda. These skills emerge today as key to allow people to develop good-quality jobs and fulfil their potential as confident, active citizens.

¹This need is mostly attributed to the changes in society, and more particularly, to the rapid development of technology and its impact on the way we live, work, and learn.

According to Michael Fullan and Geoff Scott there are six competences which are fundamental for our success, contribution, and life-long education²:

¹ <https://ec.europa.eu/jrc/en/news/competence-frameworks-european-approach-teach-and-learn-21st-century-skills>

² Fullan, M & Scott, G (2009) New Pedagogies for Deep Learning: Education PLUS. Collaborative Impact SPC, Seattle, Washington



Character

Character refers to qualities of the individual essential for being personally effective in a complex world including: grit, tenacity, perseverance, resilience, reliability, and honesty.



Citizenship

Thinking like global citizens, considering global issues based on a deep understanding of diverse values with genuine interest in engaging with others to solve complex problems that impact human and environmental sustainability.



Collaboration

Collaboration refers to the capacity to work interdependently and synergistically in teams with strong interpersonal and team-related skills including effective management of team dynamics, making substantive decisions together, and learning from and contributing to the learning of others.



Communication

Communication entails mastery of three fluencies: digital, writing, and speaking tailored for a range of audiences.



Creativity

Having an 'entrepreneurial eye' for economic and social opportunities, asking the right questions to generate novel ideas, and demonstrating leadership to pursue those ideas into practice.



Critical Thinking

Critically evaluating information and arguments, seeing patterns and connections, construction meaningful knowledge and applying it in the real world.

We are faced with the urgent need to recast our ways of living, away from ones that rely on the unsustainable consumption of resources, the degradation of ecosystems. That's why the notion of Sustainable development was introduced: Sustainable development is described by the United Nations Economic Commission for Europe (UNECE) Strategy for Education for Sustainable Development as being underpinned by an ethic of solidarity, equality and mutual respect among people, countries, cultures and generations; it is development in harmony with nature, meeting the needs of the present generation without compromising the ability of future generations to meet their own needs³. There are many global challenges the world faces in the 21st Century. In 2015 the 193 members of the United Nations agreed to achieve 17 Sustainable Development Goals (SDGs) by 2030⁴. These goals address global problems like climate change, inequality, violence, etc.



3 UNECE, 2013. Learning for the future. Competences in Education for Sustainable Development

4 <https://en.unesco.org/sustainabledevelopmentgoals>



According to the provided examples, in the last few years, it's clear that issues like climate change, plastic waste management, increasing migration, and other major issues are growing global concerns. For the last two years students have become highly active in protesting and finding solutions to both national and global issues. In March 2018, students led March for Our Lives with over 1 million participants to put an end to gun violence in the US. The next one will be from the 20th till the 27th of September.

As some researchers mention, traditional education gives students few opportunities to explore, understand, and solve real world problems. So how are students expected to prepare for all these global issues? The SDGs can be used as a framework and tool to support students develop their research, critical thinking, problem solving, teamwork, and communication skills. Students need these 21st Century skills to prepare them for the major real-world problems they will face during their lifetime. Teaching Sustainable Development Goals (SDGs) and exploring them can also support students find their identity and purpose⁵.



⁵ <https://www.classtime.com/blog/teaching-sustainable-development-goal>

The 21C-SDG curriculum: the need for the curriculum

Knowledge and education are considered among the major factors contributing to the reduction of poverty, sustainable development, and economic growth. The SDGs have been specifically created to draw attention to some of the biggest environmental challenges in the world today. As the SDGs are wide-reaching and can be used to provide new perspectives and real-world context to lesson plans. Students need to be aware of cultural norms and differences around the world so that they can succeed and thrive. The SDGs are universal goals for all people and are inherently global in nature. Learning about these initiatives will help students develop insights into issues around the world, such as lack of access to clean water and gender equality. These issues are inseparable from culture, and to truly understand the SDGs, students need to learn about the world around them. Developing global citizens who are passionate about caring for others and our world is essential for them to be members of our society. The curriculum includes chapters with extensions in which we discuss how to use certain educational resources. The curriculum provides the structure for the provision of quality learning, especially where teachers might be under-qualified and inexperienced, their classrooms under-resourced, and their students lacking the prior frameworks within which to situate their learning. The curriculum articulates both the competencies necessary for lifelong learning and the competencies needed for holistic development. Education should be inclusive and equitable, characterized by quality learning, promoting lifelong learning, and relevant to holistic development.



Objectives of the curriculum

The purpose of the curriculum is to develop successful learners, confident individuals, and responsible citizens who are resilient and uphold the core values and principles. The curriculum aims to ensure that students develop the knowledge, skills and attributes they will need if they are to flourish in life, learning and work, now and in the future, and to appreciate their place in the world. Students will get a greater knowledge of challenges faced not only in their own lives but also in the lives of others all around them. These SDGs highlight the structures behind our society – economic, legal, and political – and their complexities. They shed light on difficulties that students may not be aware of, or even take for granted.

One of the key benefits of learning about the SDGs is that it opens students' minds to different communities and experiences outside of their own. Empathy and curiosity are at the heart of [global citizenship](#). They give students an awareness of the wider world, and its values and identities. This helps the development of students into more well-rounded citizens of the world and shows them the ways in which they can make a difference in the future.

It is envisioned that this curriculum will help teachers to develop successful learners, confident individuals and responsible citizens who are resilient and uphold the core values and principles. This curriculum reinforces the connections between the SDGs through a holistic, life course approach taking into account the SDG targets and the relevant indicators.

Intended users of the curriculum

The 21C-SDG Curriculum is a digital compendium of educational resources, resulting from the cooperation between different institutions and agents around Europe, looking for support and inspire educators in their practices and activities. It provides tools and practical examples that offer insights into how to develop young people's knowledge, skills, and attitudes to deal with the 21st-century challenges and to fully participate in their society within the 2030 Agenda for Sustainable Development.

Given the scope of the 21C-SDG project, the intended users are teachers of pupils aged 10-15 years, who are interested in improving their knowledge and capabilities in the design and implementation of educational experiences that combine 21st-century skills and Sustainable Development Goals. It could be also useful for youth workers, social workers, and non-formal educators who are operating within this framework. The 21C-SDG Curriculum has wide applicability, can be adapted, and applied to different educational contexts, age groups, topics, and goals.



Educational approach

Education has an important task in preparing young people for their participation in society, while it carries the capacity to ensure current and future generations develop the knowledge, understanding, values, skills and dispositions necessary to overcome social, political, and environmental challenges and threats and to ensure a sustainable future for both current and future generations. The educational approach employed in the 21C-SDG curriculum is firmly focused on developing citizens capable of responding to complex 21st century challenges. In that sense, the curriculum emphasizes the principles of both 21st century education and citizenship education.

Quality 21st century education encompasses the acquisition of a broad set of knowledge, skills and values capable of fostering critical thinking, creativity, solidarity, dialogue and problem solving (UNESCO, 2015a). The Incheon Declaration (UNESCO, 2015b), resulting from the 2015 World Education Forum, states that quality education is that which: fosters creativity and knowledge, and ensures the acquisition of the foundational skills of literacy and numeracy as well as analytical, problem-solving and other high-level cognitive, interpersonal and social skills. It also develops the skills, values and attitudes that enable citizens to lead healthy and fulfilled lives, make informed decisions, and respond to local and global challenges through education for sustainable development (ESD) and global citizenship education. (p. 2) Having said that, we understand that 21st century education is about teaching 21st century skills, employing enabling technologies, and using personalized and flexible learning approaches, while it includes equipping students with the necessary resources to compete in a global economy; to create a fair, just and flexible society; and to teach students to think well. In summary, common themes that are crystallized include connectivity, criticality, flexibility, and a call for educational change.

21st century education is under the umbrella of citizenship education which, in turn, refers to how education can support students' development of identity. It helps them to develop self-confidence and a sense of agency, and successfully deal with life changes and challenges such as climate change and inequalities. It also gives them a voice: in the life of their schools, their communities and society at large and enables them to make a positive contribution by developing the knowledge and experience needed to claim their rights and understand their responsibilities.



Structure of the curriculum

The curriculum is organised in 6 modules. Each module will focus on the intersection between one specific Sustainable Development Goal and the acquisition of 21st century skills. The promoted skills are based on Michael Fullan's 6 Global Competencies, and include character, citizenship, collaboration, communication, creativity, and critical thinking. Module 1 explores in depth Sustainable Development Goal 4 – Quality Education. Module 2 focuses on Sustainable Development Goal 5 – Gender equality. Module 3 aims to highlight Sustainable Development Goal 11 – Sustainable Cities and Communities. Module 4 promotes Sustainable Development Goal 12 – Responsible Consumption and Production. Module 5 presents Sustainable Development Goal 13 – Climate Action. And, finally, Module 6 focuses on Sustainable Development Goal 14 – Life below Water. Each module comprises:

- *a theoretical introduction about the dedicated Sustainable Development Goal and the acquisition of 21st century skills that will enhance the knowledge of both students and teachers;
- *a repository of 6 learning tools that promote the acquisition of 21st century skills through the knowledge around each Sustainable Development Goal;
- *a repository of country-specific good practices.

The Curriculum builds upon the national information and examples provided by the 21C-SDG partners during the project execution and includes specific contextual information relevant to the project countries, namely: Denmark, Cyprus, Portugal, Italy, Latvia, and the Republic of North Macedonia. The Curriculum is however conceived as being ready to be used at the European level and tailored to the national context of any of the 27 EU Member States.

We sincerely hope that the Curriculum will actively contribute to a solid understanding of the Sustainable Development Goals and will foster the acquisition and development of 21st century skills.



How to use the curriculum

The curriculum provides everything you may need to guide your students to the discovery of the Sustainable Development Goals, with the aim to enhance their soft skills.

Each module of the curriculum deals with a specific Sustainable Development Goal, and it has been structured in three parts:

- An introductory section, that we suggest sharing with your students under the form of an easy tale, in a creative way including some practical examples. This may help to avoid boring or scaring off your students with a theoretical content that could appear more complex than what it really is.
- A central body composed of six learning tools, i.e. didactic activities that it is worth analyzing in advance to decide which of them best fit with the educational objectives related to the age of your students. Each activity has different characteristics, and choosing the activities to be carried out with your students, we suggest to pay attention not only to the objectives and the modalities of development, but also to the estimated duration and to the didactic material required. But no worries: these tools are easily scalable, and if necessary, you can adapt your interventions, in order to match the activities with your timetable and with the available stuff!

In order to foster the cooperative learning-by-doing, many activities require to split the class in small groups. For this reason, it is highly recommended that you get help from a teacher able to manage group dynamics and to supervise with you the work of the various groups.

Finally, please note that the learning tools have been designed during a period of general uncertainty due to the unpredictable situation of Coronavirus pandemic. In view of the limitations and distance required nowadays in many European countries, it is possible that some activities may not be developed in the manner foreseen. In that case, you and your teachers should find the way to arrange different and tailored options to develop them respecting the safety rules and, at the same time, without losing sight of your objectives related to SDGs and 21st century skills for your students.

- An existing good practice identified at local level, able to show how many nice and important things we can do for the future of our Planet if we use our skills and competences to plan new solutions to the problems the SDGs are focused on. The analysis of good practices can serve as an example and a stimulus to your students and can both precede the performance of didactic activities and follow it as a comment and confirmation of the validity of the path taken together.





THE MODULES

Module 1

QUALITY EDUCATION (SDG4) AND THE ACQUISITION OF 21ST CENTURY SKILLS

Introduction

The overall aim of Sustainable Development Goal 4

The overall aim of Sustainable Development Goal 4, “Quality education”, is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. According to the United Nations (2015, p.7)⁶, the right of education must be guaranteed at all levels – early childhood, primary, secondary, tertiary, technical and vocational training – and should encompass all people, irrespective of sex, age, race or ethnicity, and persons with disabilities, migrants, indigenous peoples, children and youth, especially those in vulnerable situations. Furthermore, learning must be merged with real life and occurs in different contexts (formal, informal, no formal). Fullan and Scott (2014, p. 7)⁷ sustain that learning that “looks at the world from many different perspectives (...) is relevant to the real world interests, needs and challenges of our students, is (inter) active and which concentrates on developing the capabilities that are not just for today but for a sustainable future” as well.

According to the United Nations (2015, p. 17) the main targets of the Sustainable Development Goal 4 are:

- 4.1. Universal primary and secondary education
- 4.2. Early childhood development and universal pre-primary education
- 4.3. Equal access to technical/vocational and higher education
- 4.4. Relevant skills for decent work
- 4.5. Gender equality and inclusion
- 4.6. Universal youth and adult literacy
- 4.7. Education for sustainable development and global citizenship
 - 4.a. Effective learning environments
 - 4.b. Expand the number of scholarships available to developing countries
 - 4.c. Increase the supply of qualified teachers

⁶ United Nations A/RES/70/1 (2015) Resolution Transforming our world: the 2030 Agenda for Sustainable Development. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

⁷ Fullan, M. & Scott, G. (2014). New Pedagogies for Deep Learning Whitepaper: Education PLUS. <https://michaelfullan.ca/education-plus/>

Why is it important for the educational community?

In order to promote inclusive and equitable quality education and promote lifelong learning opportunities for all, it is essential to adopt a broad and integrative perspective of the educational processes. It includes different educational methods, not only formally organized, but also those that provide contacts with different knowledge and practices, inside and outside the school/academic context (Zucchetti & Moura, 2010)⁸. It means that educational response to the transformations that result from economic, demographic and social changes necessarily requires greater investment in collaboration between the formal and non-formal system.

In Portugal, this ecological perspective and socio-educational practice, in formal and non-formal educational contexts, at different levels of education, has occupied over the years a position of prominence and growing expansion (Silva et al., 2010)⁹ among all agents, namely those directly or indirectly involved in it. In fact, from those directly in charge of the teaching and learning process, curriculum and program organizers, policy mentors and supervisors, students and their families, this ecological perspective is recognized far more than a purely local matter; by contrast, presents itself as an object of broad interest, with increasing visibility and legal structure (idem). This broader, inclusive and equitable perspective, that sustains the lifelong learning principle, requires communication and articulation of different languages and different knowledge, in a context of informality, which will help to promote creativity and diverse skills (knowledge, reasoning, communication, attitudes), leading to innovation and citizenship development. This networking scenario favors the emergence of new educational practices promoting social cohesion, which is in line with the Sustainable Development Goal 4: “Quality education”.

To understand the global aspects of society and, at the same time, act to transform its local and community reality, inclusion presupposes the right of all to full and effective access and participation in the same educational contexts. At this moment, the Portuguese Government Program establishes, as one of its priorities, the commitment to an inclusive school where each and every student, regardless of their personal and social situation, finds answers that enable them to acquire a level of education and training that promotes their full social inclusion (Law 54/2018, 6th July). This inclusive commitment, in line with UNESCO (2009)¹⁰, integrates specific support resources for learning and inclusion, as community resources.

Taking into consideration the generational effects of educational processes, as we develop quality education today with the above assumptions, its effects will certainly be verifiable in the long term, meaning in future generations. So, quality education aims to build answers for the local challenges that each one faces, in different moments and in a macro scenario of global transformation intending to be socially inclusive.

8 Zucchetti, D. & Moura, E. (2010). Práticas socioeducativas e formação de educadores: novos desafios no campo social. Ensaio: aval.pol.públ.Educ., 18 (66), 9-28.

9 Silva, A.; Caetano, A. P.; Freire, I.; Moreira, M. A.; Freire, T. & Ferreira, A. S. (2010). Novos atores no trabalho em educação: os mediadores socioeducativos. Revista Portuguesa de Educação, 23(2), pp. 119-151.

10 UNESCO (2009). Policy Guidelines on Inclusion in Education. Paris: UNESCO

Key dimensions of Sustainable Development Goal 4

The key dimensions of SDG4 are associated to cognitive, socio-emotional and behavioural learning objectives (UNESCO, 2017, p. 18)¹¹.

The cognitive learning objectives are related to: understanding the role of education and lifelong learning opportunities for all; acknowledge that education is a fundamental human right; recognizing the lack of equitable access to quality education and lifelong learning opportunities; understanding the role of culture in achieving sustainability and the importance of education to the creation of a more sustainable, equitable and peaceful world.

The socio-emotional learning objectives are related with: the learner ability to raise awareness for the importance of quality education for all; motivate and empower others to demand and engage education for sustainable development and other educational opportunities; identifying their own learning needs and personal development and improving their skills, especially for employment and entrepreneurship.

The behavioural learning objectives are related with the capacity to facilitate and implement quality education for all, at different levels; promote gender equality; demand and support the development of policies; empower young people to learn throughout their life and promote sustainable development.

11 UNESCO (2017). Education for Sustainable Development Goals: Learning Objectives. <https://unesdoc.unesco.org/ark:/48223/pf0000247444>

The interplay between Sustainable Development Goal 4 and the acquisition of 21st century skills

Ensuring quality education and promoting lifelong learning opportunities for all is essential to the acquisition of 21st century skills. In this perspective, the “whole-institution approach and transformative pedagogies are recognised as key drives for the education for sustainable development. (..) It involves rethinking the curriculum, campus operations, organizational culture, student participation, leadership and management, community relationships and research” (UNESCO, 2017, p. 53). The pedagogical approaches (PA) related with the quality education for sustainable development (UNESCO, 2017, p. 55) are: learner-centered, action-oriented and transformative learning. This framework is consistent with the possibilities for the acquisition of 21st century skills, as can be observed in Figure 1.

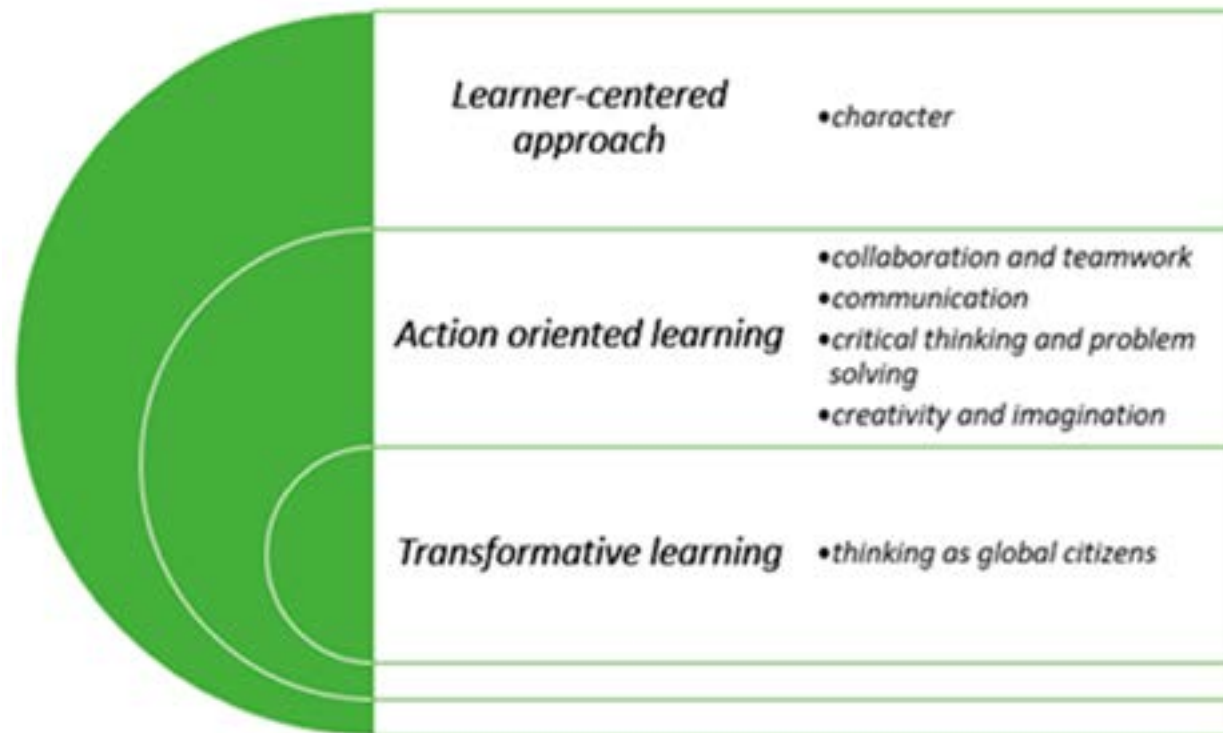


Figure 1 Possible Interplay between pedagogical approaches for Education for sustainable development and 21st century skills

As systematized in Figure 1, the pedagogical approach (PA) learner-centered approach can be related to the 21st century skills (21C) character.

PA learner centered

- students as autonomous learners
- requires learners to reflect on their own knowledge and learning processes in order to manage and monitor them.

21C - character

- Learning to learn, and ability to regulate the learning process; work goal-directed; self-regulation

The PA action-oriented learning can be related to the 21C: collaboration and teamwork, communication, critical thinking and problem solving, creativity and imagination.

PA action-oriented learning

- increases knowledge acquisition, competency development and values clarification by linking abstract concepts to personal experience and the learner's life
- refers to Kolb's theory of the experiential learning cycle with the following stages: 1. Having a concrete experience; 2. Observing and reflecting; 3. Forming abstract concepts for generalization; and 4. Applying them in new situations

21C - collaboration and teamwork, communication, critical thinking and problem solving creativity and imagination

- cooperate in teams; solve conflict
- communicate in a purposeful way using a variety of methods, including digital tools; adapt the communication to different groups
- solve problems; critical assessment and the ability to question information; ability to see connections and patterns; explore, reflect upon and follow up ideas in real life
- raise innovative ideas and non-traditional solutions; employ own creativity into an action process

The PA transformative learning can be related to the 21C: thinking as global citizens

PA – transformative learning

- It aims to empower learners to question and change the ways they see and think about the world in order to deepen their understanding of it

21C -Thinking as global citizens

- to explore global problems (using deep understanding and different values and worldviews); genuine interests and abilities to solve complex real-world problems which affect sustainability; ability to define alternatives for action and set priorities; ability to make smart and informed decisions

Learning tool 1

One school for all – Strengthening Education for Quality

21st century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

This learning tool is relevant for pupils aged 10-11 (5th grade of primary school in Cyprus) and it is based on the Cypriot primary school Curriculum's thematic unit 3 DEVELOPMENT AND IMPROVEMENT OF OUR SOCIAL SELF, and particularly the subunit 3.3 INTERCULTURALITY, ACCEPTANCE AND MANAGEMENT OF DIVERSITY. It is taught in the context of "Health Education" subject.

The tool was developed and structured using Drama in Education as a teaching and learning methodology. It is consisted of two 80-minute drama workshops.

With this tool, students are expected to:

- Cultivate a culture of empathy and acceptance of the different
- Distinguish the negative effects resulting from any form of exclusion or discrimination

Activity details

- Material: classical music, projector, pc, videos, classroom equipment, agree/disagree statements (see Appendix 1) for activity 2 (1st 80-minute lesson), agree-disagree line, small cards of four different colors (for dividing the class into groups), markers, figures for the "Role on the wall"
- Duration: 2x80 minute lessons (drama workshops)
- Group number: 22-24 pupils

Activity 1

“White and Black sheep” (50 min.)

Steps

1. We invite students to sit on the ground in a circle. Then we ask them to imagine in how many different ways they can say “good morning”, except from the usual. We let children choose for themselves, whether to use their bodies, facial expressions, different tones of their voice. We set as a condition that each child must say their own personal “good morning”. First, the educator says her/his own different good morning and then all the kids in turn.
2. We put soft music on and invite the children to move freely in the classroom, following the music rhythm. When the music stops, we ask them to stay still, keeping their eyes closed. Any child who cannot keep her/his eyes closed, we suggest that she/he should put on a mask or scarf. We take a child out of the group and then we invite the rest of the children to open their eyes and find out which child is missing. We instruct them not to speak either when they move in space or when they are looking for which child is missing. This process is repeated several times.
3. We put music and invite the children to move freely in the classroom, following the music with their movements. When the music stops, we ask them to create with their bodies whichever animal they want. We remind them not to talk, but that they should stay focused on what they’re trying to do. The process is repeated several times. Then we invite the children to sit down in a circle. We ask a child to get into the center of the circle and show to others which animal she/he portrays. The rest try to guess which animal might be.
4. We ask children to walk freely but slowly in the classroom. We ask them not to touch each other and not to talk to each other. They are only allowed to communicate through the eyes. Then we ask them to continue walking and greet any child they come across by mimicking the sound of an animal, trying to talk to each other in this language. We explain to them that they will not just say hello, but they will try to understand each other.
5. We invite the children to gather in a circle. We begin to tell a story, while, at the same time, the children act it out. The story is about a herd of white sheep living on a hillside. Children “become” those white sheep and choose for themselves which corner of the classroom will become the space of action, i.e. the hillside. They perform the sheep’s daily habits. They eat grass, drink water, play and sleep. They assign the roles on their own, according to the story plot, but the educator should assign the leader of the herd. In the course of the action, we inform the children that two black sheep are approaching their flock; again, the educator chooses two children and assigns them the role of black sheep. The children - white sheep will discuss with each other, listen to all the opinions and decide for themselves how to react, i.e. whether to accept the black sheep in their flock or to chase them away. Then perform their decision for the story to be completed.
6. Debriefing/reflecting: When the story is complete, we invite the children to sit down in a circle and discuss their feelings and thoughts about this activity. Questions to be discussed:
 - Did you like the activity?
 - How did you decide whether to accept the two black sheep in your flock?
 - Why did you / did you not accept the two black sheep?
 - What human values do you associate with this activity?
 - How would our lives look like, if we didn’t have those values?

Activity 2

Line debate (30 min.)

Steps

1. The students are asked to line up on the line on the floor.
2. The teacher/teacher reads the first statement of Appendix 1 and asks the participants to move to one or the other area, according to whether they agree or disagree with it. The more they agree or disagree, the more they move aside.
3. The trainer asks some of the participants from both sides to explain their position. While listening to the explanations, the others have the right to change position if they feel convinced.
4. Debriefing/reflecting: The trainer asks the participants to share their views and feelings about the activity (agree/disagree statements).

LESSON 2 (80 MIN.)

Activity 1

“Teach respect-mimic” (45 min.)

Steps

1. Students move in the classroom by changing:
 - a. speed (slowly, sluggish, fast, faster)
 - b. direction (moving ahead, backwards, towards the door of the class, away from the door, diagonal)
 - c. level (low, medium, tall)
 - d. using “lame foot” while changing speed and direction (movement using one foot only)
 - e. using “blind eye” (movement using one eye only, covering the other)
 - f. ‘lame leg’ and ‘blind eye’ together
2. Ask them when it was easier for them to move. They are expected to acknowledge that they moved much more easily without a “blind eye” and a “lame leg”.
3. Split the group into pairs. Randomly distribute color papers to the students and pair them according to the color of the paper they picked.
4. Show the UNICEF video “Teach respect-mimic” (2-3 times) (see appendix 2)
5. Discuss briefly the students’ thoughts.
6. Role on the wall: The students with their teacher’s help use two empty figures (appendix 3) to create and develop the profile of the characters they saw in the video.

7. Little scene: The teacher asks the pairs to perform the scene from the video using: a) pantomime without sounds; and b) pantomime with sounds (no words are allowed). Then, the teacher asks for volunteers to enact their scene on the plenary.
8. Thought tracking: The teacher “freezes” children’s pantomime and asks from the rest to touch the shoulder of the child on crutches and discover his thoughts at that particular time; they should say out loud what that child thinks using the first person (“I”). Repeat this and invite children to discover the thoughts of the child who mocks the child on crutches.
9. Conscience alley: The teacher divides the students into 2 groups, and asks them to form two lines facing each other. The teacher invites one of the students who acted the role of the child who mocks to slowly pass through the alley created. The rest of the children become the voice of his/her consciousness, and they yell out loud the thoughts that she/he had in his head after the scene. The aim is to reflect on the behavior her/his role had towards the child on crutches.
10. The activity ends with discussion and reflection on the possible completion of the story. Follow-up questions might include the following:
 - If you came across a similar scene in your school yard, what would you do?
 - How could the child who mocks to make up for his/her behavior, given that she/he has already regretted for his/her behavior?

Activity 2

“Tolerate diversity” (35 min.)

Steps

1. Show the UNICEF video “Every child has the right to a life free from discrimination”. Discuss students’ opinions and feelings after watching the video. Questions to be asked:
 - Which are the characters of this story? What do they do?
 - How does each character feel? Why?
 - Is there a problem?
 - Would you change something in this story? Why?
2. Hot seating: Initially, the teacher (and then a student) takes on the role of the teacher in the video and sits on a chair in the center of a circle. The other students, assuming the role of an “interrogator”, ask questions to the teacher, seeking answers about her/his behavior towards the child and the reasons why she/he reacted like this.
3. The teacher raises some questions:
 - Would you like your school to be like the school in the video?
 - If this story was unfolding in your own school, in your own class, with you for protagonists, how would you imagine the story? How would you react? What attitude and behavior would you have, as a teacher and students?

4. The teacher splits the group into 4 teams. He/she randomly distributes color papers to the students and divides them according to the color of the paper they picked. Ask them to develop a two-minute scene using mime during which they will direct and change in any way they want the story in the video, giving a new title. Students are encouraged to use colorful fabrics and clothes and other objects they can find in the classroom (e.g. whiteboard, desks, chairs, books etc.) for their scene.

5. Each team will present and discuss in plenary their scene.

Tips for the teacher

- For the line debate activity:
-
- Since the “decoding” and interpretation of each statement is expected to differ somehow between the participants, the selection and the wording of the statements needs to be thought out and planned very carefully to avoid misinterpretations.
- Practical arrangements: Draw a line on the floor using tape or a ribbon. One side of the line will be the “I agree” area; the other side will be the “I disagree” area.

Debriefing

Students write on post-it notes words or phrases they learned from this lesson and then they put them on the board. They recommend a title that would suit the lesson.

References/Further reading

Υπουργείο Παιδείας και Πολιτισμού (2014) Ανακαλύπτοντας τον Ελέφαντα. Παιδαγωγικό Ινστιτούτο Κύπρου. Υπηρεσία Ανάπτυξης Προγραμμάτων. Λευκωσία. Διαθέσιμο στην ιστοσελίδα Ανακτήθηκε στην ιστοσελίδα της Αγωγής Υγείας Δημοτικής Εκπαίδευσης. [Ministry of Education and Culture (2014) Discovering the Elephant. Cyprus Pedagogical Institute. Service for Programs' Development. Nicosia]

Υπουργείο Παιδείας και Πολιτισμού (2017) Αναλυτικό πρόγραμμα Αγωγής Υγείας: Δείκτες Επιτυχίας – Επάρκειας, Ανακτήθηκε από την ιστοσελίδα της Αγωγής Υγείας Δημοτικής Εκπαίδευσης [Ministry of Education and Culture (2017) Health Education Analytical Program: Success – Adequacy Indicators]

Books and online tools:

Συμβίωση: Σχέδιο δράσης για την προώθηση της ανεκτικότητας και την πρόληψη του ρατσισμού στο σχολείο (The UN Refugee Agency-UNHCR, 2014) [Coexistence: Action Plan to promote tolerance and prevent racism at school] (From this book I took Activity 1, Lesson 1)

On-line version:

https://www.unhcr.org/gr/wp-content/uploads/sites/10/2019/07/Symbiosis_project_manual_final.pdf

The document Competences for democratic culture (Council of Europe, 2016) ; On-line version: http://www.coe.int/t/dg4/education/Source/competences/CDC_en.pdf

TASKs for democracy – 60 activities to learn and assess transversal attitudes, skills and knowledge (TASKs) (Pestalozzi, 2016), On-line version: http://www.coe.int/t/dg4/education/pestalozzi/Source/Documentation/Pestalozzi4_EN.pdf

Compasito - Manual on human rights education for children (Council of Europe, 2007), On-line version: <http://www.eycb.coe.int/compasito/pdf/Compasito%20EN.pdf>

Games for actors and non-actors (Boal, 2002), On-line version: https://geraldkeaney.files.wordpress.com/2014/06/augusto_boal_games_for_actors_and_non-actorsbook-fi-org.pdf

Annex

Annex 1

Statements used in the line debate (Activity 2- Lesson 1)

1. I like to have kids from different countries in my class.
2. I would rather hang out with kids who do well in sports.
3. I do not complain when my teacher asks me to sit next to a student who doesn't speak Greek well.
4. In a classroom, all students have the right to express their opinion.
5. I am making fun of kids who give wrong answers.
6. I choose my friends based on their character.
7. Children who don't play football well shouldn't be involved in the game at all.
8. I respect children who have different abilities than me.
9. Both girls and boys can become class presidents.
10. For our class to do well, all students should cooperate with each other.

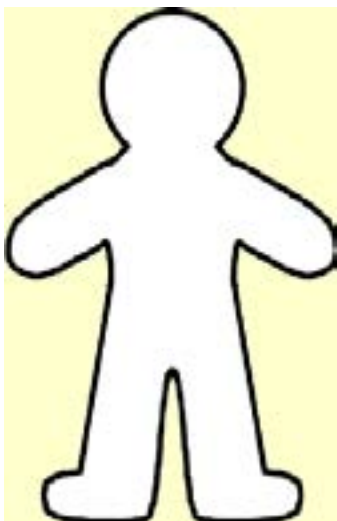
Annex 2

Videos used in Lesson 2

1. UNICEF: Teach Respect – Mimic: <https://www.youtube.com/watch?v=lnFCpvTetro>
2. UNICEF: Every child has the right to a life free from discrimination: <https://www.youtube.com/watch?v=LK5a-DYzBWk>

Annex 3

Role on the wall (figure)



Learning tool 2

Why is education important?

21st century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Learn the importance of education for their future
- Learn to learn, and ability to regulate your own process of learning
- Think critically
- Work goal-directed
- Be able to define alternatives for action and set priorities
- Be able to make smart and informed decisions
- Claim values that are in line with SDG4
- Respond positively towards achieving SDG4
- Understand the importance for education for sustainable development and global citizenship

Activity details

- Material –see annex
- Duration – 2 hours 30 min
- Group number –3-4 groups, 5 students each (8TH grade, age 13-14)

Instructions

Lesson one (1 hour)

1. Teacher asks students about their dream jobs and future careers and gives students an activity sheet to fill. (see annex)
2. Students fill in the activity sheet than discuss their answers in the class.
3. Students work in groups, discuss and fill in a chart about most wanted professions. (see annex)
4. Students present their findings in a class discussion with the emphasis on the education needed for the professions.

Lesson 2 (1 h 30 min)

1. Students interview people with different professions and fill in questioners. (see annex) Some of the questions are:
 - What is your profession?
 - What kind of education you needed to train yourself for the job?
 - How long did the studies take?
 - How much did it cost?
 - What are the advantages of schooling?
 - Do you think that education has helped you in life? How?
 - Do you think people with a university degree have the advantage over others in terms of employment?
2. Teacher asks students to compare their findings in class.
3. Students come to conclusion:
 - The importance of education for their future
 - How education makes our life better
4. Students do a presentation on what they learned and their conclusion on why we should stay in school. (see annex)

Tips for the teacher

- 1) Teacher asks questions about future careers and dream jobs.
- 2) Teacher encourages a discussion about dream job and the education needed.
- 3) Teacher invites students to share the results from the interviews in class

Debriefing

Students design posters for the importance of education and place them around the school. The work sheets can be adapted to students' abilities, age, and experience. Students can present their findings also in a form of an essay.

Follow-up/Inspiration for the future

Information in social media, school's webpage.

References/Further reading

<https://education.seattlepi.com/benefits-not-quitting-school-1332.html>

<https://list25.com/25-reasons-you-should-stay-in-school/>

Annex

1. Activity sheet “What is your dream job”

WHAT IS YOUR DREAM JOB?

(write here)

Would you like to work with people or things?
(circle one)

Does your dream job involve working with people or things?
(circle one)

List other jobs that also suit your choice of things or people.

How much money and time do you want to invest to pursue
the profession of your dreams?

money

time (years/months)

How will you get the money you need?

Name _____

Annex

2. Chart “Most wanted professions”

Most wanted professions

Think about the most common jobs that people choose, the reasons why they choose those professions (eg - benefits, money, ...) and what education is needed for them.

Most common jobs	Reasons why	Education needed

Name _____

THE PATH TO THE JOB OF YOUR DREAMS

1. What is your profession?

2. What kind of education did you need to train yourself for this profession?

3. How long did schooling take?

4. How much did schooling cost?

5. What are the advantages of education?

Name _____

6. Do you think that education has helped you in life? How?

7. Do you think people with a university degree have advantage over others in terms of employment?

WHY YOU SHOULD STAY IN SCHOOL?

WHY SHOULD STUDENTS GO TO SCHOOL?

IT CAN BE HARD TO COME UP WITH REASONS TO STAY IN SCHOOL. WHETHER IT'S BECAUSE YOU HATE YOUR SCHOOL, YOUR TEACHER, OR YOUR PEERS, QUITTING CAN SEEM LIKE AN ATTRACTIVE OPTION. MAKE NO MISTAKE, IT'S A BAD ONE. THE LIFELONG BENEFITS OF STAYING IN SCHOOL WILL MAKE THE STRUGGLE WORTH IT.

EDUCATION IS IMPORTANT. NOT ONLY DOES IT HELP YOU GET A JOB, NOT BE A DWM, AND CONTRIBUTE TO SOCIETY, IT'LL HELP YOU POTENTIALLY LIVE A LONG AND HEALTHY LIFE.

THIS IS A LIST OF REASONS WHY YOU SHOULD STAY IN SCHOOL:




BY STAYING IN SCHOOL, YOU'LL CONTINUE TO DEVELOP AND HONE YOUR SKILL SETS AND PROVE TO EMPLOYERS THAT YOU HAVE THE WILL AND PRINCIPLES TO SEE A JOB COMPLETED.

IT'S MUCH EASIER EXPLOITING THE ILLITERATE AND THE UNEDUCATED.

HAVING AN EDUCATION WILL KEEP YOU FROM BEING FOOLED AND CHEATED.

TRYING TO ORGANIZE MEET UPS WITH FRIENDS CAN BE A LOT OF WORK.

STAYING IN SCHOOL MEANS YOU GET TO SEE YOUR FRIENDS AND PEERS ON A REGULAR BASIS AND EXPERIENCE SOCIAL INTERACTION YOU MIGHT NOT BE ABLE TO OTHERWISE



The days of finding a high paying job and staying there for thirty years until you retire are gone.

Now more than ever it's more likely someone will change jobs ten times throughout their career.

Not having an education only increases your risk of being unemployed when an employer lets you go.

4. Presentation “Why you should stay in school”

**WE LIVE IN A COUNTRY WHERE
ELEMENTARY AND SECONDARY
EDUCATION IS FREE, TAKING ADVANTAGE
OF IT IS ONE OF THE SMARTEST THINGS
YOU CAN DO TO INVEST IN YOUR FUTURE.
DON'T THROW IT AWAY.**

**MORE EMPLOYERS DEMAND
HIGHER EDUCATION AND
BETTER SKILLS.**

**IF YOU WANT TO COMPETE, IMPROVE
YOUR LIFE, AND HAVE BETTER
OPPORTUNITIES, STAYING IN SCHOOL
IS THE WAY TO DO IT.**

**MOST OF THE HIGHEST PAYING JOBS
REQUIRES A BACHELOR'S DEGREE?**

**WHAT IS YOUR DREAM JOB DO YOU WANT TO
BE A LAWYER, OR NURSE A DOCTOR OR A
NURSE, MAYBE YOU WANT TO BE A SCHOOL
TEACHER OR MAYBE YOU WANT TO BE
INVOLVED IN POLITICS.**

**ALL THESE JOBS REQUIRE A BACHELOR'S
DEGREE**

**SO IF YOU EVER GET TIRED OR BORED
THINK OF THE LIFELONG BENEFITS OF
STAYING IN SCHOOL.**

**SO KEEP THIS LIST ON HAND WHENEVER
YOU FEEL LIKE GIVING UP; IT'LL REMIND
YOU OF SOME OF THE REASONS WHY YOU
SHOULD STAY IN SCHOOL.**

Learning tool 3

My skills, our future

21st century skills addressed

Character
Citizenship
Collaboration and Teamwork
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Work goal-directed
- Learn to learn and regulate their own process of learning
- Cultivate the ability to define alternatives for action and set priorities
- Cultivate the ability to make smart and informed decisions
- Cultivate social, emotional and intercultural abilities
- Evaluate information and arguments
- Cultivate the ability to see connections and patterns
- Cultivate the ability to explore, reflect upon and follow up ideas in real life
- Raise innovative ideas and non-traditional solutions
- Employ own creativity into an action process
- Have an 'entrepreneurship' within the possibilities they are given
- Make relevant and exploring questions to consider and follow-up new ideas and solutions

In European education systems, basic education is basically guaranteed for everyone, with qualitative and quantitative standards undoubtedly higher than in other parts of the planet. In this context, reasoning on Quality Education therefore requires to aim at objectives more ambitious than the "simple" right of access without discrimination, which refer to the targets 4.4 et seq. of the Sustainable Development Goals strategy defined in 2016 by the United Nations: "By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decentralized jobs and entrepreneurship".

The proposed activity therefore aims to establish a direct link between the themes that the school is able to bring to the attention of younger students and the identification of a path that should lead in a targeted way to the continuation of studies and integration into the job market.

In this scenario, transversal knowledge and skills constitute an inseparable combination, able to activate in very young people a process of acquisition of a better awareness of the characteristics of their way of being, in relation to their inclinations and aspirations for the future.

Activity details

- Material

Teacher/teacher: personal computer or another device connected to the Internet and the interactive whiteboard

Students: basic school stationery (sheets of paper, pens/pencils); A3 sheets of paper (at least one for each student in the class); a block of small sheets of paper (e.g. business cards no longer usable, with a free side for writing); smartphone, tablet or different device connected to the Internet. You need at least one every 3/4 students. A small (non-transparent) paper shopper.

- Duration

About 100 minutes divided into two 50-minute modules

- Group number

3/4 students per group, depending on class size

Instructions

FIRST LESSON

- The teacher/teacher introduces himself to the class explaining that in the following minutes some short videos (without commentary) will be projected through the interactive whiteboard showing people intent on doing their job. These will be particular activities, the result of creative and courageous choices that have given those who carry them out the opportunity to gain satisfaction, both economically and in terms of professional achievement. Examples: snail breeder, interpreter for the deaf, chef on cruise ships, expert in acrobatic construction, window dresser, drone pilot, etc.. The presentation of the videos will have a total duration of about 15 minutes.
 - At the end, the teacher/teacher will ask the students if they have been able to recognize which activities those people were doing; if not, the teacher/teacher will give the correct answer. He will also ask if they were aware of the existence of those professions and what studies they believe were necessary to be able to undertake them, regardless of whether they are self-employed or employed. This part will take no more than 10 minutes.
 - Once the start-up phase is over, the teacher/teacher will give each student an A3 sheet (used paper will be fine, as long as it has a white side to write on), inviting them to form two columns with a central pen stroke. The sheet will have to be used by everyone in the following 10 minutes to list in the two columns their main characteristics (at least 10 for each column), in order to answer questions such as: “what kind of person am I/not?”; “what do I like/not like to do?”; “what am I/not good at?”; “my friends appreciate/not appreciate me because...”.
 - Once the list is complete, the teacher/teacher will ask each student to select in each column the two self-characteristics he considers most significant, underlining them with the pen or a coloured highlighter/pencil. The sheets thus filled in will then be handed over to the teacher/teacher, who will examine them together with the class and ask them to intervene in an orderly manner according to the answers given, trying to imagine a working scenario corresponding to the personal characteristics highlighted in the list. When starting the debate, the teacher/teacher will clearly explain that the aim is not to make everyone say what job they would like to do when they grow up, but to reflect on the working conditions that could be compatible with the main personal characteristics listed in the sheet. Example: if a student has indicated that he or she is fussy and techno-loving, but at the same time tends to be shy and taciturn, he or she can be expected to imagine for himself or herself an activity of precision to be carried out in a laboratory, without contact with the public.
- Depending on the time still available before the end of the lesson, it is important that all or as many students as possible intervene and expose what could be their “working environment”. The teacher/teacher will take note of the impressions expressed and in the days between the first and second lesson will draw up a diagram that will then be displayed on the interactive whiteboard and in which will be highlighted, for each student, the main characteristics (2 positive and 2 negative) and the working scenario considered appropriate by the student himself. The diagram can be organized through a simple spreadsheet or using an appropriate digital tool, but it should allow a compact display that includes all the students in the class in a single screen.

SECOND LESSON

In the initial warm-up the teacher/teacher will recapitulate what was done in the previous lesson and will propose on the interactive whiteboard the scheme that he or she has prepared in the meantime, so that everyone can see the main characteristics of his or her own way of being and of each school mate, accompanied by a very brief description of the professional scenario in which he or she imagines himself or herself as an adult.

- The class is then divided into groups of 3/4 pupils composed randomly, using one of the many techniques that every teacher certainly knows. The choice of the technique will depend on the degree of interaction you want to develop with the students and the time available. A creative and engaging suggestion could be to ask the class to indicate the names of a number of famous people (musicians, actors, sportsmen, etc.) equal to the number of groups to be formed according to the class size. Example: in a class of 20 pupils 5 groups of 4 pupils each will be formed. The names of 5 famous people will then be chosen. Subsequently, each selected name will be written on 4 paper balls that will be placed in a non-transparent paper shopper. Each pupil will pull out a paper ball from the bag and will form the group together with their classmates who have drawn the same name. In this way it will also be possible to give each group the name of the corresponding famous character.

- The groups get together and each of them will be given a sheet of paper, which the teacher/teacher will have prepared in the meantime, on which they will find a list of trades including the particular professions illustrated in the videos seen in the previous lesson and some more common and normally known trades. In total, the list should present a maximum of 8-10 jobs, with types that will vary partially from group to group.

- List in hand, each group will have 20 minutes to search on the Internet, using their own devices (minimum one for each group), what are the knowledge and skills required to perform each of those occupations, which schools must be attended, what are the teaching subjects characterizing. The information found in this way will be pinned schematically on a sheet of paper.

At the end of the research, the teacher/teacher will ask each group to briefly present (3 minutes per group) what they have found about a couple of trades, taking care to make sure that each group has been able to present their work and that most of the jobs included in the lists have been presented. The teacher/teacher will also take care to distribute the presentation of the trades according to the number of the class and therefore to the number of groups that will have to intervene.

- In closing, the teacher/teacher will propose to the class a reflection on what emerged during the two lessons dedicated to the activity, highlighting some main aspects:

- 1) Many people perform with good results and professional and economic satisfaction work activities outside the ordinary, of which it is important to know the existence and possibility of access.
- 2) There is the possibility to “invent” an original job, drawing on one’s knowledge, skills and passions. From this point of view, creativity and awareness of their own personality are decisive.
- 3) When we talk about quality education, we also think about the importance of orientation activities that must accompany teaching and training activities in a broad sense, so as to allow each student, without discrimination, to discover his/her inclinations, talents and weaknesses from the very first years of school.

Tips for the teacher

- 1) If time is short or the teacher/teacher wants to shorten the activity, the beginning of the first lesson could involve the simple presentation of some photographs instead of videos of “mysterious” professions. Whether they are videos or photographs, the teacher/teacher should make sure to avoid as much as possible projecting narrated or written parts that facilitate the task of identifying the activity behind those images.
- 2) All the sheets used to carry out the activity can already be used and retrieved within the school, as long as they still have a usable white facade. This will also give the pupils a signal in environmental terms, emphasizing the importance of recycling materials.
- 3) The discussion phase following the compilation of the A3 sheets with the positive and negative characteristics of one’s own way of being will have to be conducted by the teacher/teacher, paying great attention to channel the pupils’ attention towards the areas of work compatible with those characteristics and not to the simplistic enunciation of the work they would like to do as adults. The use of some practical examples will be of great help.
- 4) For the success of the activity to be successful and to avoid downtime that could disperse pupils’ attention, it is important that the teacher/teacher prepares all the necessary materials in advance.

Debriefing

Unfortunately, the proposed activity does not make it possible to objectively measure the degree of participation and internalization of objectives by students. It is in fact the construction of a path that will hopefully bear fruit over time and not in the immediate future.

Considering the age target of the students involved, we do not recommend the use of a structured evaluation questionnaire, which could prove to be complex and not give the expected results. However, the teacher/teacher will be able to collect the “hot” impressions at the end of the second lesson, asking to express a general opinion, positive or negative, obviously guaranteeing anonymity. To do this, he or she will give each pupil a paper ball asking to draw a “like” (thumbs up) or a “dislike” (thumbs down). The teacher/teacher will then pick up all the paper balls using the paper shopper used previously.

Follow-up/Inspiration for the future

Based on the overall progress of the activity, and on the outcome of the small survey carried out at the end of the activity (like or dislike), the teacher/teacher will draw useful indications on how best to direct the further stimuli to be offered to the class to favour the process of acquiring self-awareness, one’s own potential and the other transversal competences stimulated by the stimuli offered during the two lessons.

The theme of creativity to be developed for the research of one’s own future path represents a strategic dimension on which it is suggested to continue working with further laboratory activities.

Annex

N/A

LEARNING TOOL 4

Pupils as teachers

SDG4 in action “on board” of SDG14

21st century skills addressed

Character

Citizenship

Collaboration and Teamwork

Communication

Critical Thinking and Problem Solving

Creativity and Imagination

Objectives

With this tool, students are expected to:

- Recognize education as a public good, a global common good (cognitive dimension of SDG4)
- Motivate and train others through participatory methods to demand and take advantage of educational opportunities (socio-emotional dimension of SDG4)
- Be personally involved with the Education for Sustainable Development (ESD), contributing, and facilitating the implementation of quality education at different levels (behavioural dimension of the SDG4)
- Develop essential skills and competencies that allow him/her to acquire knowledge, values and behaviours that promote ESD
- Transmit their knowledge to peers in order to make their learning more meaningful and lasting

Activity details

The main purpose of this learning tool consists in placing the older pupils of the school in the face of the challenge of passing on to the youngest the knowledge they have built around a given curricular unit.

This idea is inspired by the Glasser's Learning Pyramid, according to which we only retain 5% of what we hear, 10% of what we read, 20% of what comes to us by audiovisual, 30% of what is shown to us, 50% of what results from a discussion, 75% of what we practice, and 90% of what we teach. So, the idea is to promote a practice that promotes a retention of 90% of the concepts foreseen in the approach of a given curricular unit, placing pupils facing the challenge of teaching the youngest. Thus, the aim is to improve the education quality, either through the implementation of more efficient dynamics in retaining what is learned (Glasser's learning pyramid), or through the creation of spaces for metacognitive processes to take action (Flavell's metacognition). The pupils will create a learning experience based on their own learning process.

Thus, it is proposed that a group of pupils organise a meeting with their peers in order to disseminate what they have learned.

The protocols through which the application of this leaning tool is proposed could be found in the attachment. The activity was developed around the water properties theme, focusing the problem of its worldwide distribution and the maintenance of its quality. It highlights the fact that this dynamic can be replicated in any curricular unit.

Material

Flexible - all material need to be appropriate to the context and dynamics that pupils suggested to implement.

We propose: computer, projector, 4 tablets with the Kahoot application, laboratory supplies, cardboards, markers, paper, various solutions, “rooms of the future”

Duration

Preparation of working/collaborative group: 3x50’

Dissemination of work in pairs: 2x50

Group number

5 students per group in 20-student classes

Instructions**Procedure**

The main idea of this learning tool is to place older students at the school facing the challenge of passing on to the younger ones the knowledge they have built up around the theme of water sustainability.

FIRST MOMENT

1 - To present questions that serve as the basis for the development of the tasks that will

be distributed by working groups.

There is no doubt that the sustainability of the planet is at risk.

- What should we do?
- How should we proceed individually or collectively to avoid an ecological disaster?
- Is the water on the earth all pure water?
- How can we distinguish drinking water from other waters?
- What are the environmental impact of acid rain and complementary changes?

SECOND MOMENT

Form workgroups that will focus on different areas of knowledge related to the theme based on the idea of teaching to the youngest.

group 1 - water properties

group 2 - water distribution on the planet and hydrological cycle

group 3 - types of water and forms of water treatment

group 4 - global water sustainability challenges - water footprint

Each group will promote activities around the theme assigned to them. The elements of the group will have to conduct individual research, in groups and with the collaboration of parents and teachers, seeking, whenever possible, to include experimental activities. For this, teachers will provide a protocol of experiences that they can test.

THIRD MOMENT

All work should be shared with other colleagues at lower education levels. The third cycle students will share their final products with those on the 2nd cycle. Then, the second cycle students will perform the same process with the first cycle students. It is not necessary to involve the same students.

FOURTH MOMENT

The activity evaluation will be based on the quality of the experiences that they promote with their peers and the opinions expressed by all, either orally or in writing, based on the ideas raised by completing the following expressions:

Thankfully..

It was a pity that ...

It was good that ...

Tips for the teacher

- 1) It is recommended to form different groups
- 2) It should be applied in a context with different ages and/or educational levels

Debriefing

Invite to watch on streaming.

Follow-up/Inspiration for the future

- Identify other pertinent themes in the curriculum with which this dynamic can be replicated.
- Apply this dynamic as a PAA activity on World Teachers' Day (5 October) or a world youth skills day, or a possible ESD week as a way of raising awareness of SDG4.

References/Further reading

References

- Bruner's spiral curriculum
- Glasser's Learning Pyramid
- Education for Sustainable Development (pp.18-19, 22-23)

Further reading

- Basic skills and competencies for the XXI century
- Youth empowerment.

Annex

Experimental protocols and reflection guidelines to the group activities, whenever relevant.

Protocols/Guide for reflection

- 1- Water properties
- 2- water distribution on the planet and hydrological cycle
- 3- types of water and forms of water treatment
- 4- Global water sustainability challenges - water footprint "water footprint".

LEARNING TOOL 5

Pathway to Knowledge

21st century skills addressed

Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Become aware that one of the most important values in life is quality education
- Raise awareness that high quality education is everyone's responsibility - government, schools, teachers, parents, and students
- Get acquainted with the "images" of different schools in different regions around the world
- Study and compare information about education systems in different European countries

Activity details

Materials:

- A4 format size photographs (annex No.1)
 - a video (see description of the class and "References/Further reading" section)
 - education in the UK (annex No.4)
 - materials for group work: Foreign Education Systems (annex No.5, in Latvian): <http://www.aic.lv/ENIC/lat/enic/shemas/Arzemju%20izglitiba%20sistemam.html>
 - worksheet (annex No.2) and writing tools
 - A4 format paper for mind maps
 - Why should I study in Latvia? (annex No.3)
- Length: 2-2.5 hours
Target audience: 4th – 5th grade students (10-11 years old)

Instructions

What can we do in order to resolve the problem/situation?

Encouragement:

1. Students look at the photographs put on the walls in the classroom and express their opinions about what the topic of the class might be.
2. Students get to understand why it is important to learn the topic of the class, express their ideas and participate in the discussion:
 - What does the concept “educated person” mean?
 - Where does a person receive education?
 - Who is responsible for quality education?

Acquisition:

1. Students watch the video “How children around the world get to school”.
2. After watching the video, students express their opinions and participate in the discussion:
 - Why are students in different countries (incl. the underdeveloped countries) ready to overcome difficulties on their way to school?
 - Why do students go to school?
 - Why should people receive education?
3. Students watch videos about schools in different countries (scenes from schools around the world) and answer the teacher’s questions:
 - Did you see similarities/differences?
 - What similarities/differences did you see?
4. Working in groups, students study the materials about education in different European countries (each group studies one country); the information is summarized in the table (annex No.2). Every group presents their work.
5. Using the information from their tables, students compare the stages of education in different countries. They say what is similar/same and different.
6. Students watch videos about innovative schools around the world. In groups, students express their opinions and draw a mind map “What does quality and modern education mean?”. They show their group work.
7. Students participate in the discussion:
 - Why should I study in Latvia?
 - What would I change in the Latvian education system if I was the Ministry of Education? Why?

Reflection:

Students perform the assessment of the class “My achievements during the class” using the method of unfinished sentences:

- During the class I have acquired, learned...
- Today my most important discovery was...
- The material/information I acquired during the class will help me/will be useful...
- I would also like to learn, acquire...

Tips for the teacher

What is the problem/situation? What do we know about the problem/situation? What should we know? How can we know about it? How can we organize our research?

Encouragement:

1. The teacher invites students to look at the photographs put on the walls in the classroom (see examples in annex No.1) and express their opinions about what the topic of the class might be.
2. The teacher cooperates with students in order to provide an understanding of the way the acquisition of the topic will happen, why the topic is important and what measurable result is expected from them at the end of the class. The teacher identifies the objectives of the class.
3. The teacher invites students to express their ideas and participate in the discussion:
 - What does the concept “educated person” mean?
 - Where does a person receive education?
 - Who is responsible for quality education?

Acquisition:

1. The teacher shows the video “How children around the world get to school”: <https://www.youtube.com/watch?v=k9K1t8b9t3s> . The destination is the same, but the pathway is so different. Some pathways to knowledge may seem shocking to those who are accustomed to brand new schoolbags, white bows and a blue sky above their heads.
2. After watching the video, the teacher encourages students to think, express their opinions and participate in the discussion:
 - Why are students in different countries (incl. the underdeveloped countries) ready to overcome difficulties on their way to school?
 - Why do students go to school?
 - Why should people receive education?
3. The teacher shows students the video about schools in different countries (scenes from schools around the world): <https://www.youtube.com/watch?v=at2gAjtsgtk> . The teacher encourages students to answer the questions:
 - Did you see similarities/differences?
 - What similarities/differences did you see?

4. The teacher divides students into groups. Working in groups, students study the materials about education in different European countries (each group studies one country); the information is summarized in the table (annex No.2). Every group presents their work.

5. Using the information from their tables, students compare the stages of education in different countries. They say what is similar/same and different. The teacher adds some information and provides explanation if necessary.

6. The teacher invites students to watch videos about innovative schools around the world (for example, 13 innovative schools which you would like to visit (video in English): <https://www.youtube.com/watch?v=dtPniT0p9K4> ; 10 countries with the best education systems in the world (video in English): <https://www.youtube.com/watch?v=6xhfnjEf8C0>)

7. The teacher invites students to express their opinions and draw a mind map “What does quality and modern education mean?”. Students show their group work.

8. The teacher encourages students to participate in the discussion:

- Why should I study in Latvia?
- What would I change in the Latvian education system if I was the Ministry of Education? Why?

Reflection:

To get feedback from students about the course of the class, the teacher offers to perform the evaluation of the class using the method of unfinished sentences:

- During the class I have acquired, learned...
- Today my most important discovery was...
- The material/information/skills I acquired during the class will help me/will be useful...
- I would also like to learn, acquire...

Debriefing

- The photographs showing how students in different regions around the world get to their schools are copied to A4 sheets (each photograph separately) and put on the walls in the classroom.
- The teacher prepares photo and video materials for demonstration in class, information materials for working in groups taking into account current events, information availability, and students' interests.
- Recommended group size – 3-4 students. Every group studies information about the education system in one European country, summarizes the information in the table, and presents it to other students.

Follow-up/Inspiration for the future

How the outcomes will be presented?

1. Students make presentations about their work to other students.
2. The article about the class and photos are posted at the school's webpage.

References/Further reading

1. What does quality education mean? Prime Minister and ministers answer (2015): <https://www.izm.gov.lv/lv/aktualitates/1079-kas-ir-kvalitativa-izglitiba-atbid-ministru-prezidente-un-ministri>
2. UNESCO: Quality education is everyone's responsibility: <http://www.unesco.lv/lv/izglitiba/unesco-kvalitativa-izglitiba-ir-visu-iesaitito-pusu-atbildiba/>
3. What is quality and modern education? (video, Latvian): https://www.youtube.com/watch?v=Qovm7J6_pnQ
4. Education at a glance. OECD indicators 2019(English): <https://www.izm.gov.lv/images/aktualitates/2019/EAG2019LVA.pdf>
5. How children around the world get to school (video, English): <https://www.youtube.com/watch?v=k9K1t8b9t3s>
6. Schools at different countries around the world <https://spoki.lv/foto-izlases/Skolas-dazadas-pasaules-valstis/664393>
7. What does the class look like in 27 countries around the world (video): <https://www.youtube.com/watch?v=UApQk25v8Ro>
8. Scenes from schools around the world (video): <https://www.youtube.com/watch?v=at2gAjtsgtk>
9. 10 most unusual schools in the world (video, English):
<https://www.youtube.com/watch?v=Nz0-6iQwVsg>
<https://www.youtube.com/watch?v=AuWfpTmds0I>
10. 13 most innovative schools you would like to attend (video, English): <https://www.youtube.com/watch?v=dtPniT0p9K4>
11. 10 countries with the best education systems in the world (video, English): <https://www.youtube.com/watch?v=6xhfnjEf8C0>
12. Why should I study in Latvia? Study in Latvia! <https://www.youtube.com/watch?v=bUw4p6dn4vM>
13. Education in the UK:
The UK Education System (For Non UK Students):
<https://www.youtube.com/watch?v=Md8yxDaV1IQ>
British Education System Explained: <https://www.youtube.com/watch?v=bhdHI1Gk0ko>
A School Day in the UK: https://www.youtube.com/watch?v=RFLWE1mqH_8
14. Foreign education systems (Latvian): <http://www.aic.lv/ENIC/lat/enic/shemas/Arzemju%20izglitibas%20sistemas.html>

Annex 1 Pathway to school



Annex 1 Pathway to school



Annex 1 Pathway to school



Annex 1 Pathway to school

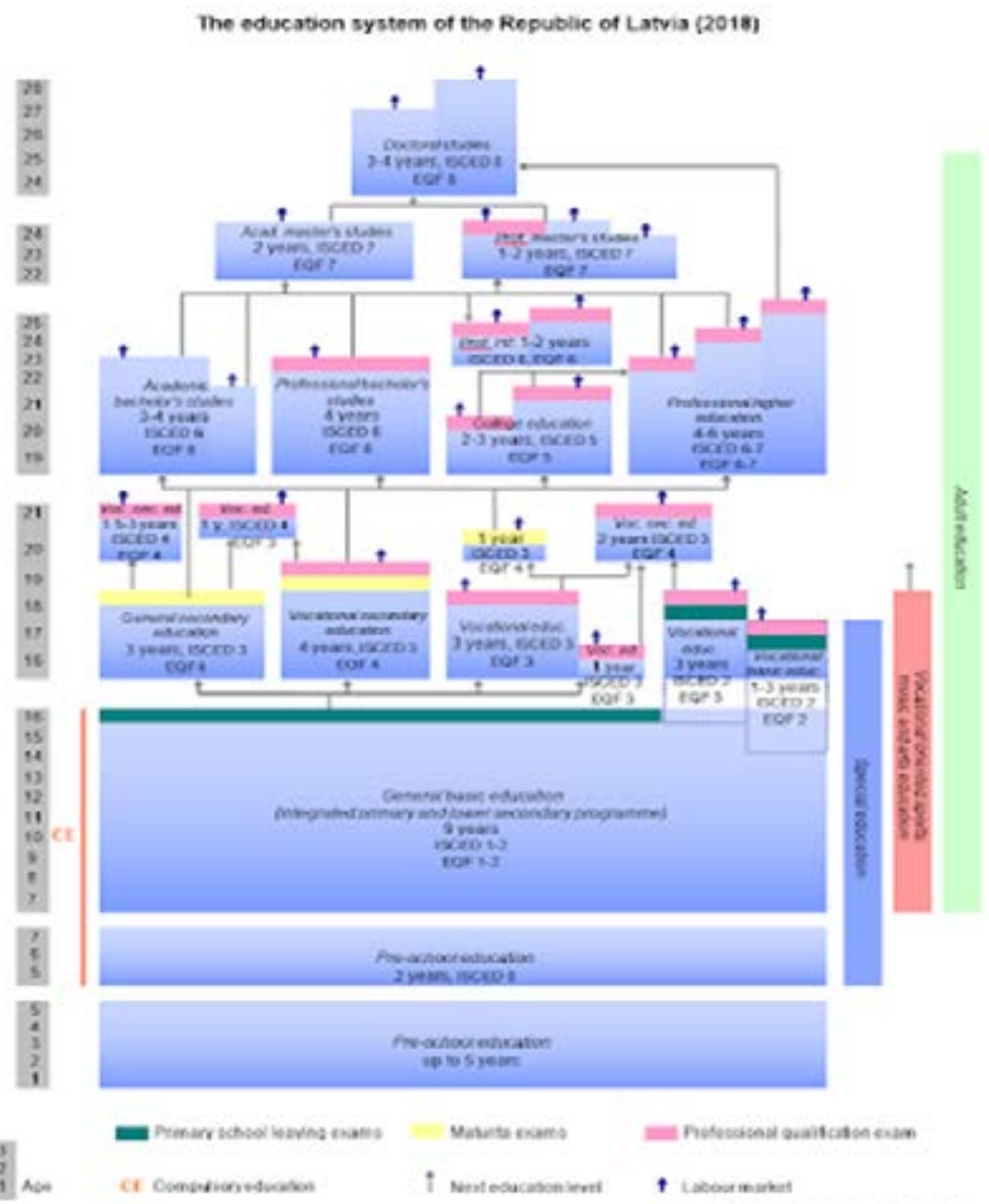


Worksheet
Topic “Quality Education”

Country: _____

Start school at the age of...	Compulsory education (how many years)	Primary school	Secondary school	High school	Notes

Study in Latvia! <https://www.youtube.com/watch?v=bUw4p6dn4vM>



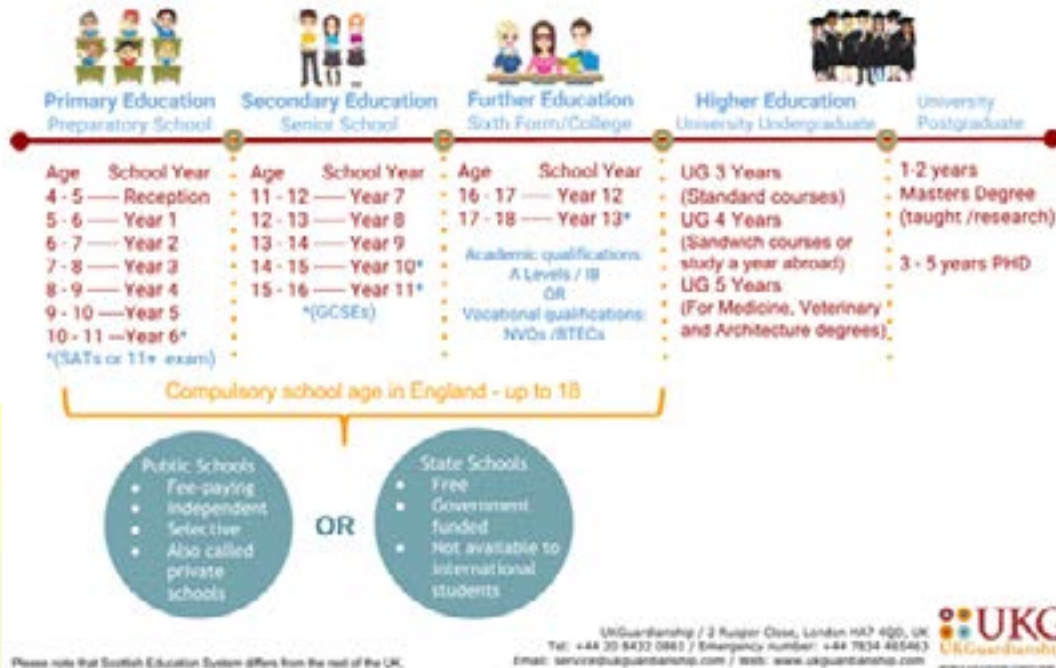
The UK Education System (For Non-UK Students):

<https://www.youtube.com/watch?v=Md8yxDaV1IQ>

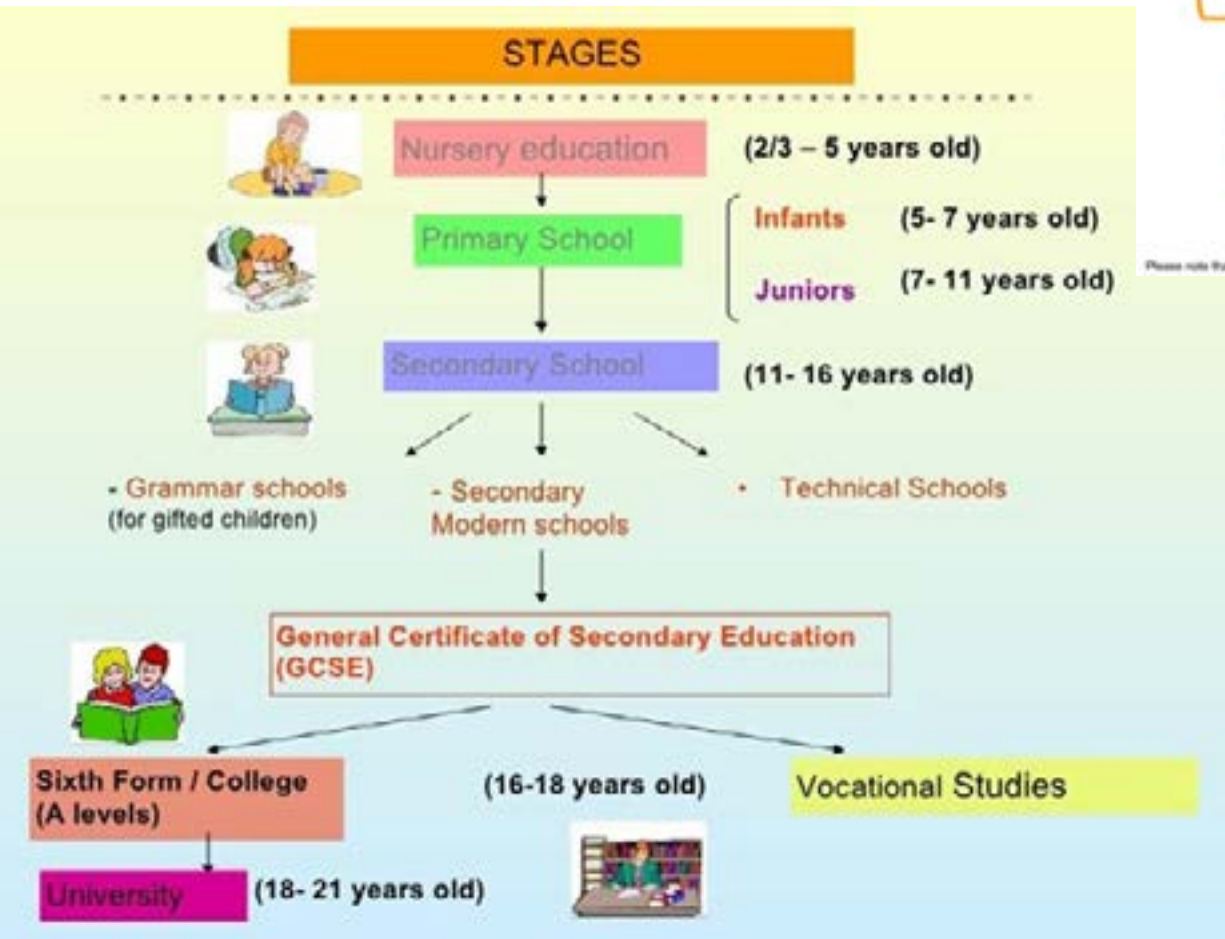
British Education System Explained: <https://www.youtube.com/watch?v=bhdHI1Gk0ko>

A School Day in the UK: https://www.youtube.com/watch?v=RFLWE1mqH_8

UK Education System



Please note that Scottish Education System differs from the rest of the UK.



Annex 5

Foreign education systems

<http://www.aic.lv/ENIC/lat/enic/shemas/Arzemju%20izglitiba%20sistemas.html>

LEARNING TOOL 6

Pupils-mentors (peer mentoring)

21st century skills addressed

Character
 Citizenship
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Develop and maintain diverse and positive relationships in contexts of collaboration, cooperation, and mutual help
- Develop self-confidence, motivation to learn, self-regulation, initiative and informed decision-making
- Integrate thinking, emotion, and behaviour for increasing autonomy
- Assume an increasing responsibility to take care of yourself, others, and the environment and to actively integrate into society
- Recognise education as a public good, a global common good
- Be able to motivate and enable others through participatory methods to demand and take advantage of educational opportunities
- Become aware of the importance of building a sustainable future and to be involved in active citizenship projects
- Get personally involved with EDS, contributing, and facilitating the implementation of quality education at different levels
- Promote cooperation between peers to conduct their studies and school tasks in a progressively more efficient way

Activity details

Pupils-mentors

- receive adequate training on topics central to the practice of peer mentoring;
 - help to integrate new pupils into the school environment, promoting bonds with their classmates;
 - support mentors in the acquisition and consolidation of the learning experiences.
- Mentoring students
- get involved in the project with their tutors and the rest of the group.

Coordinator Teacher

- promotes and participates in training activities and dynamic meetings within the project scope;
- selects, guides and supervises student-tutors.

Class Directors

- collaborate in identifying pupils with the profile to join the project;
- articulate with the project coordinator and families.

Parents

- authorise their minor(s) to get involved in the project;
- monitor the development of activities and results.

Material – Library

Duration - one school year

Group number - one tutor for every three students

Instructions

FIRST MOMENT

- Presentation of the volunteer project to attract mentoring students.
- Identification of pupils who need mentoring with the support of class directors/teachers.

SECOND MOMENT

- Interested pupils fill out an application form.
- The pupils involved (mentor and mentee) are committed to commit themselves to the achievement of the mutual help project to promote the construction of higher quality learning.

THIRD MOMENT

- The activities are carried out during the pupils' free time in the School Library space.
- Each pupil-mentor will be responsible for a group of pupils-mentees.
- Monthly, a monitoring meeting will be held between the pupils-mentors and the teacher responsible for the project.
- Monthly, feedback from mentees will be collected.

FOURTH MOMENT

At the end of the school year, a project report will be presented, assessing its impact through the administration of a questionnaire to pupils (mentors and mentees) based on the quality of experiences they promote with their peers and the opinions expressed by all, orally or in writing, based on the ideas raised by completing the following expressions:

Thankfully...

It was a pity that ...

It was good that ...

Tips for the teacher

In an initial phase, this dynamic should be applied in the class context, due to the logistics inherent in schedules.

It is important to identify times in the schedule of each class, when it is opportune for those pupils to implement this initiative.

To avoid overloading the pupils' "teaching" schedule, this dynamic can be implemented on a rotating basis between several subjects in each class.

Debriefing

In addition to the monthly monitoring meetings, mentors and mentees involved will be able to make suggestions through a suggestion box at the Library for improving the project.

Follow-up/Inspiration for the future

Identify issues in the curriculum that are most unsuccessful, and then create a group of mentor volunteers to help mentee colleagues in difficulty on days dedicated to these more challenging topics.

References/Further reading

- Baudrit, A. (2009). Tutoria. Riqueza de um Método Pedagógico (The Mentoring. The Richness of a Pedagogical Method). Porto: Porto Editora
- Duran, D. e Vidal, V. (2007). Tutoria [Mentoring]. Porto Alegre: Artmed
- Glasser's Learning Pyramid – Pirâmide do Conhecimento
- Education for Sustainable Development Goals
- Exit Profile of Students Leaving Compulsory Education
- Basic skills and competencies for the 21st century
- Youth empowerment

Annex

Experimental protocols and reflection guidelines appropriate to the group activities, whenever relevant.

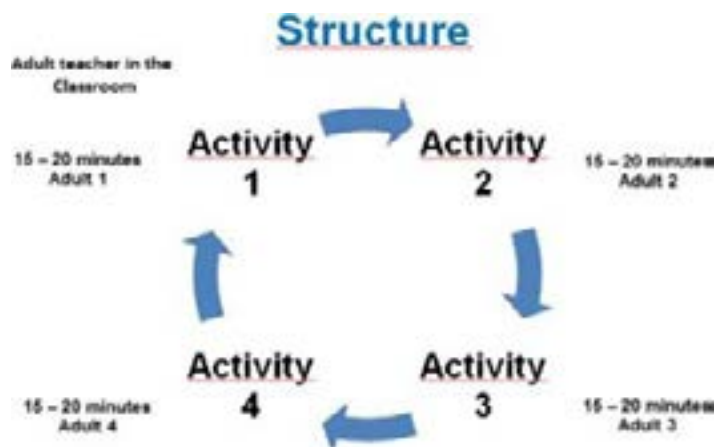
Good Practice

Interactive Groups

Description:

The SDG4 (Quality and Inclusive Education) good practice “Interactive Groups” is framed on the Learning Communities - Include-Ed Project, which has been adopted by many Portuguese schools since 2017. The interactive groups are a way to organise the classroom based on evidence given by the international scientific community and contrasted with the traditional practice in the classroom at education levels. Steps1:

- 1 – Invite voluntary community members to participate;
- 2 – The teacher organises heterogeneous student groups (6 or 7). Heterogeneity is guaranteed regarding knowledge level, skills, gender, culture, language, etc. The teacher also decides on which group tasks and materials to be developed. Interactive Groups are often used in the learning of core subjects such as languages (national and foreign) and mathematics, although they also work effectively in other fields such as physical education. Group tasks can be learning activities, exercising previous learning or consolidating learning.
- 3 – A 90-minute session is scheduled with the adults on the class and organised according to the following structure:



- 4 – With the students grouped and an adult assigned to each group, the session is divided into short periods from 15 to 20 minutes. Each volunteer has the same role that is encouraging the interaction and supporting dialogical learning. In each period, each group must undertake a specific instrumental activity. These activities are done on rotation; therefore, within one session, each small group has experienced four sessions, each one conducted by a different adult.

Link to website:

<https://www.dge.mec.pt/projeto> https://www.schooleducationgateway.eu/files/esl/downloads/12_INCLUD-ED_Interactive_Groups.pdf

Country and location:

The Learning Communities pilot project were carried out on different Portuguese schools across the country:

- Agrupamento de Escolas do Cerco do Porto (Porto)
- Agrupamento de Escolas de Cristelo (Paredes)
- Agrupamento de Escolas Fernando Casimiro Pereira da Silva (Rio Maior)
- Agrupamento de Escolas João da Rosa (Olhão)
- Agrupamento de Escolas da Marinha Grande Poente (Marinha Grande)
- Agrupamento de Escolas N.º 1 de Serpa (Serpa)
- Agrupamento de Escolas Piscinas de Olivais (Olivais)
- Agrupamento de Escolas de Resende (Resende)
- Agrupamento de Escolas de Santo António (Santo António da Charneca)
- Agrupamento de Escolas de Vila Nova da Barquinha (Vila Nova da Barquinha)

Actors/partners:

Teachers, students, and educational community.

Objectives:

To analyse and apply educational strategies that contribute to social cohesion in the context of a knowledge-based European society, providing key elements and action lines to improve education and social policies.

Results:

The visible results are related to educative success and social cohesion.

- Improves the academic results of all students, especially those who have greater difficulty.
- Improves coexistence, generating democratic and inclusive learning spaces.
- Improves the participation of families and the whole community.

Improves social cohesion by promoting dialogue and cooperation between all social agents.

Why is it considered a good practice?

- it is based on principles of equality and solidarity;
- it is based on a community-based approach and guided by dialogical learning, which includes egalitarian cultural dialogue, cultural intelligence and equality, and meaning transformation and creation;
- there is evidence (including scientific) of school improvement, educational success and social cohesion;
- it is possible to transfer those improvements to other contexts;
- involves all school community, not only school agents such as teacher and students but also families, neighbors, stakeholders, volunteers and other professionals;
- it makes possible to achieve the EU's goals in terms of school dropping out (it should be less than 10%), concerning education level (at least 40% of the young generation should have a university degree in 2021), among others.

Elements of replicability in other contexts:

- It is based on a solid theoretical research;
- It is possible to overcome the contextual perspectives that legitimate inequalities and use successful international actions as a basis for education and social policies;
- The Successful Educational Actions have already been transferred to other contexts with excellent results, since they were not simply transposed but were recreated in dialogue with local people and institutions.

MODULE 2

GENDER EQUALITY (SDG5) AND THE ACQUISITION OF 21ST CENTURY SKILLS

INTRODUCTION

The overall aim of Sustainable Development Goal 5

The Sustainable Development Goal 5, “Gender Equality”, strives to achieve gender equality and to empower all women and girls. According to the United Nations (2015, p.6)¹², the main reason this goal should be achieved is the fact that every single woman and girl has the right to be treated equally and without the fear of physical or sexual abuse/violence, since the achievement of full human potential and of sustainable development is not possible if one half of humanity continues to be denied its full human rights and opportunities. Additionally, granting the equal rights and opportunities to women and girls is the fundamental foundation for a sustainable and peaceful world.

But still today we know that violence against women is a very crucial problem – for example 18% of ever-partnered women and girls aged 15 to 49 years have experienced physical and/or sexual partner violence. Although women make 39% of the workforce, only 27% of managerial positions are held by a woman. In 18 countries, husbands have the right by law to prevent their wives from working and in 39 countries sons and daughters do not have equal inheritance rights. Those mentioned are just some of the problems women and girls must face today¹³.

As part of the sustainable development goal 5 nine targets have been set to change the unfavourable situation of women and girls (United Nations, 2015)¹⁴:

- 1) End all forms of discrimination against women and girls.
- 2) End all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.
- 3) End all harmful practices, such as child, early and forced marriage and female genital mutilation.
- 4) Recognize and value unpaid care and domestic work by providing public services, infrastructure and social protection policies. Promote shared responsibility within the household and the family.
- 5) Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.
- 6) Ensure universal access to sexual and reproductive health and reproductive rights.
- 7) Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.
- 8) Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
- 9) Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

12 United Nations A/RES/70/1 (2015) Resolution Transforming our world: the 2030 Agenda for Sustainable Development. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

13 UN Women, SDG 5: Achieve Gender Equality and Empower All Women and Girls. <https://www.unwomen.org/en/news/in-focus/women-and-the-sdgs/sdg-5-gender-equality>

14 United Nations, Sustainable Development Goals. <https://www.un.org/sustainabledevelopment/gender-equality/>

- 4) Recognize and value unpaid care and domestic work by providing public services, infrastructure and social protection policies. Promote shared responsibility within the household and the family.
- 5) Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.
- 6) Ensure universal access to sexual and reproductive health and reproductive rights.
- 7) Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.
- 8) Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
- 9) Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

Why is SDG5 important for education community?

Educational community has a vital role to play in making sure that the Sustainable Development Goal 5 will be successfully achieved. Equal access to good education is an important part of girls' and women's empowerment. According to UNESCO, more girls than boys still remain out of school. It has been estimated that 16 million girls will never have the opportunity to go to school, while out of 750 million adults without basic literacy skills, two thirds are women¹⁵. Moreover, the Education 2030 Framework for Action¹⁶ recognizes that gender equality requires a multi-dimensional educational approach that 'ensures that girls and boys, women and men not only gain access to and complete education cycles, but are empowered equally in and through education' (p.28).

If girls receive proper education, there will be a considerable boost in gender equality – educated women earn more than those without education; each additional year in education is associated with lower chances of getting married or having a child as a child; education has been seen as an important factor to successful family-planning and sexual education; and the more educated the woman is the more agency and social capital she will have in her life. But what keeps girls out of school? There are several possible answers: poverty, minority status, geographical isolation, early marriage, disability, pregnancy, gender-based violence, traditional attitudes about the status and role of women, etc (Wodon et al., 2018, p.3-5)¹⁷. Therefore, it should be educational community's special interest to detect the obstacles which might be stopping girls from getting good education in their communities and to then tackle these obstacles. Moreover, education community has an important role to play in ensuring gender equality in society.

Education community can play a significant role in the effort to achieve wider gender equality by addressing social norms and gender expectations; by promoting new patterns of beliefs and attitudes based on non-discrimination and non-violence; and by avoiding the reproduction or reinforcement of social inequalities. The education community must be sensitive to the physical, psychological and social differences between male and female learners, but should value and respect both equally and provide equal opportunities to all learners. This requires action at multiple levels, ensuring equality of access 'to education (providing equal opportunities for learning), within education (gender-sensitive, non-discriminatory and transformative learning environments, educational contents, and pedagogies), and through education (equality of outcome, life and work opportunities)' (UNESCO, 2013, p.2)¹⁸.

15 UNESCO Institute for Statistics (2019) Gender Equality in Education. <http://uis.unesco.org/en/topic/gender-equality-education>

16 UNESCO (2016) Education 2030: Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4. <https://unesdoc.unesco.org/ark:/48223/pf0000245656>

17 Wodon, Q., Montenegro, C., Nguyen, H. and A. Onagoruwa (2018) Missed Opportunities: the High Cost of not Educating Girls. <https://www.globalpartnership.org/sites/default/files/2018-07-gpe-high-cost-of-not-educating-girls.pdf>

18 UNESCO (2013) Education Sector Technical Notes: Gender Equality in Education. <https://unesdoc.unesco.org/ark:/48223/pf0000222121>

Key dimensions of Sustainable Development Goal 5

To reach the full potential of SDG5, then equal access to education, health care, decent work and representation in political and economic decision-making processes are required. These are crystallized in the learning objectives set by UNESCO regarding all SDGs (2017, p.25)¹⁹. Concerning SDG5:

A) The cognitive learning objectives indicate that the learner should understand basic gender concepts and get informed about gender discrimination, gender violence and inequality, while at the same time s/he has her/his own culture as a reference point to compare to global norms. Moreover, the learner should comprehend the role of education, technology and legislation in empowering and ensuring the full participation of all genders.

B) The socio-emotional learning objectives indicate that the learner should be able to recognize and question traditional perceptions of gender roles; identify and speak up against all forms of discrimination; empower those who may still be disempowered; reflect on her/his own gender identity; and feel empathy and solidarity with those who differ.

C) The behavioural learning objectives indicate that the learners should be able to empower themselves and other who are discriminated against because of their gender; participate in and influence decision-making regarding gender equality; observe and identify gender discrimination; and implement, support and evaluate strategies for gender equality.

The interplay between Sustainable Development Goal 5 and the acquisition of 21st century skills

To achieve the sustainable development goal 5 which seeks to ensure gender equality for everyone and everywhere, education is crucial part and foundation for further success. Every girl and woman should have access to education and right to acquire 21st century skills to give their contribution to the society and fulfil their dreams and callings. Successful accomplishment of the SDG 5 ensures that almost half of the world population would access education and therefore acquire 21st century skills.

As one of the main ideas behind the concept of 21st century skills is to prepare people for the rapid changes and all possible challenges that future holds, it is inevitably necessary to engage all people regardless of their gender. If society wants to be well prepared for all the obstacles and opportunities the future holds for us, it is important not to hold back half of its potential – girls and women.

Two of the key concepts of 21st century skills are creativity and innovation. As it is widely known innovation and creativity prosper when different people have the freedom and means to express themselves freely and without any constraints. To great successful social or technological innovation which would make life easier for many people, it is essential that the voices of women and girls must be heard, and their experiences involved. That can only be fully achieved when the gender equality is granted for everyone and everywhere.

¹⁹ UNESCO (2017). Education for Sustainable Development Goals: Learning Objectives.

<https://unesdoc.unesco.org/ark:/48223/pf0000247444>

LEARNING TOOL 1

Gender equality is our mission

21st century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Gain a general understanding of what is gender inequality
- Come across examples of gender inequality and discuss them
- Be able to make a link between gender inequality and 21st century skills
- Have an understanding of what should be done to make things change and move towards gender equality

Activity details

Material: Whiteboard, projector, laptop, speakers, candy/ stickers, True/ False statements handout, Gender enrolment in school handout, pieces of paper, Malala Yousafzai handout, lightbulb-shaped paper, 'Who said this?' handout, 'From Where I stand' Survey handout, 'From Where I stand' Poster

Duration: 2x40 minute lessons

Group number: 10-15 students (aged 12-15 years)

Instructions

LESSON 1 (40 mins)

Activity 1: candy/ stickers distribution (5 mins)

1. Give students candy/ stickers (or anything else you see fit) but distribute them unevenly randomly. Give yourself the largest portion and say you got the most because you are the oldest. Ask if they think this is fair. Ask students to justify their opinion.
2. Divide students into two groups (girls/ boys) and distribute candy again, giving the girl group less than the boy group. Ask if they think this is fair and to justify their opinion. Ask if they think this is actually happening in the world.
3. Introduce inequality/ gender equality as the topic of the lesson.

Activity 2: To me inequality means.../ Gender Lightbulb (10 mins)

1. Hand out lightbulb-shaped pieces of paper (Annex) and ask students to write down what inequality means to them or give an example of when they felt they were discriminated because of their gender (they can do both if they like).

Note: we use lightbulbs as we wish to throw some 'light' to this matter and situations that should stop occurring.

2. The teacher or a student to read some of the notes out loud.
3. Give the actual definition of inequality (Annex). Ask if it is close to what they have written down. Discuss.

Note: the lightbulbs can be hung in the classroom/ school so they can be seen.

Activity 3: True or False? (10 mins)

Note: for this activity students can either work by themselves or as groups.

1. Give students some statements regarding gender equality all around the world (i.e. statistics, numbers, real-life stories) (Annex). Make sure they understand the vocabulary.
2. Ask students to say which statements they think are true and which they think are false. Ask them to justify their answers.
3. Give them the right answers (Annex) and discuss.

Activity 4: School and gender equality (5 mins)

1. Give students rates of gender enrolment in school (Annex).
2. Let them observe them for a while and then discuss. Do they think this is fair? Can we talk about gender equality if the amount of boys and girls going to school is not the same? What problems can this cause?
3. Ask students what they think gender equality means and what the world would be like if it was established. They can give definitions, words, or phrases.
4. Give the definition of gender equality (Annex) and discuss.

Activity 5: "From Where I Stand" introduction (10 mins)

1. Explain that people are trying to establish gender equality globally and that there is a global project aiming to gather as much data as possible regarding the matter in order to bring change to the world. Explain that they are going to take part in this wonderful initiative.
2. Show students the short call-to-action video from Emma Watson <https://vimeo.com/174213067>.
3. Give students the survey form (Annex) and ask them to complete it at home as homework.
4. Explain that in the next lesson we are going to gather the data and make a poster with it which will then be uploaded on the project's global platform.

LESSON 2 (40 mins)

Note: before the lesson starts, gather all the completed survey forms brought in by the students. Explain that you are going to use them towards the end of the lesson.

Activity 1: What's a man and what's a woman? (5 mins)

1. Hand out pieces of paper and ask students to describe what it means to be a man and what it means to be a woman (i.e. they can either write the three first words that come to mind for each or they can draw a picture for each).
2. Mix the pieces of paper up and have students read out loud the paper they have in their hands.
3. Find differences and similarities in sayings/ drawings. Ask why they think there are certain similarities/ differences in what they have produced. Ask if they think there is such a thing as 'boy things' or 'girl things'. If yes, ask them to give examples. Ask what burdens may rise the fact that we 'label' things as 'boy/girl things'.

Activity 2: Malala's story (10 mins)

1. Give the story handout to students (Annex). Either the teacher or the students read the story out loud. Ask students to try to work out if they know who the story is about.
2. While reading, pause between each paragraph and ask a question (Annex) for students to discuss for 30 seconds between each paragraph.
3. When you finish the story, you can reveal that this girl is Malala Yousafzai and this happened between 2008 and 2012. In 2014 she was awarded the Nobel Peace Prize and is now a leading global advocate championing the equal right to education for all, especially for girls.
4. Discuss/ Ask follow-up questions (Annex).

Activity 3: Who said this? (10 mins)

Notes: students can either work by themselves, in pairs, or in groups.

1. Hand out a paper with statements spoken by real people (Annex) and ask students to decide whether they think each statement is most likely to have been spoken by a male or female person and where they think that person comes from (i.e. continent, country).
2. Give the right answers (Annex) and discuss.
3. Ask students how they felt when they were given the answers, what problems these people face, what are the causes of the problems, and what are the solutions.

Activity 4: "From Where I Stand" poster (15 mins)

1. The students handed in at the beginning of the lesson, give them instructions (Annex) and guide them to calculate their gender ratio and complete the poster (Annex) colouring each side of the image, proportional to the ratio.
2. Show and tell - have the students share and compare their posters. As a class, can they reach some kind of conclusion or average for their findings and results?
3. Have the students discuss what the outcome means to their community in the context of gender equality. How far away are they from the goal of 50:50?
4. Discuss the outcome of the survey. Do their findings reflect the stories we have seen? Did anything surprise them?
5. Ask the students to think or write down the top three things they might personally be able to do to make sure the gender ratio is closer to a 50:50 ratio of leaders when they are older.

Tips for the teacher

- 1) Make sure your students are familiar with the UN Global Goals for Sustainable Development (and explain that Gender Equality is Goal #5 to be reached by 2030). You can use this video to familiarise them with the topic: <https://vimeo.com/138852758>
- 2) Be aware and act with caution regarding students who may face discrimination or conditions very similar to the ones discussed in the lesson.
- 3) Make your classroom a safe place for all your students through making sure that all students can speak their minds or remain silent if they want to. They should all feel comfortable at all times.

Debriefing

- Ask students what they thought of the whole process and what they think they have gained from it. What have these lessons taught them that they didn't know before?
- Ask them to write down the top three things they think people should do to make sure the gender equality is established. It can be something minor (i.e. done by a person) or of a larger scale (i.e. done by a government, country).
- Their notes can be put up in the classroom/ school for everyone to see and remember.

Follow-up/Inspiration for the future

- Students can present their product to their classmates (organise a presentation at school so other students can attend).
- Students to act as ambassadors to raise awareness on the matter to their peers (lesson shout-outs, video to raise awareness etc.)
- Students to keep a calendar on the actions they take (either as individuals or groups) towards gender equality establishment.

References/Further reading

- Anderson, M., Sedghi, A. (2015). “International Women’s Day: Number of female lawmakers doubles in 20 years”.
<https://www.theguardian.com/global-development/datablog/2015/mar/08/international-womens-day-number-of-female-lawmakers-doubles-in-20-years>
- Arnold-Foster, A. (2015). “How I teach students about equality: only Smarties have the answer”.
<https://www.theguardian.com/teacher-network/2015/jan/28/teach-students-equality-smarties>
- “Cambridge English Dictionary”.
<https://dictionary.cambridge.org/dictionary/english/inequality>
- “Equal rights – what gets in the way?” (2016).
<https://www.womankind.org.uk/docs/default-source/Fundraise-/lesson-plan.pdf>
- “From Where I Stand” (2016).
<http://cdn.worldslargestlesson.globalgoals.org/2016/07/Final-Gender-Equality-Lesson-Plan-1.pdf>
- Murimirwa, A. (2016). “Everybody Wins When Girls Can Stay In School”.
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
- “The World Is Not Equal. Is That Fair?” (2016).
<http://cdn.worldslargestlesson.globalgoals.org/2016/05/The-World-Is-Not-Equal.-Is-That-Fair.pdf>

INTRODUCTORY:

UN Global Goals for Sustainable Development video

<https://vimeo.com/138852758>

Sustainable Development Goals

THE UN GLOBAL GOALS
For Sustainable Development



LESSON 1:

Activity 2: To me inequality means.../ Gender Lightbulb
Lightbulb

Definition of Inequality

Inequality can be described as:

1. the unfair situation in society when some people have more opportunities, money, etc. than other people.
2. a situation in which money or opportunities are not shared equally between different groups in society.

“Cambridge English Dictionary” <https://dictionary.cambridge.org/dictionary/english/inequality>

LESSON 1:

Activity 3: True or False?

True or False? statements – Students' Copy

1. Globally, women occupy less than a 25% of all seats in parliament.
2. In the UK twice as many women as men rely on state benefits.
3. In the UK two thirds of pensioners living in poverty are women.
4. Educated girls in sub-Saharan Africa will earn up to 25% more, start businesses, and reinvest 90% in their families.
5. Uneducated girls in sub-Saharan Africa are three times likely to become HIV positive than educated ones.
6. Girls that get to go to school in sub-Saharan Africa have more, less healthy children, who are 40% less likely to live past the age of five.
7. Educated girls tend to be less vulnerable to violence and exploitation.
8. Become role models for the next generation of children, driving change from the local to the global level.
9. As many girls as boys finish secondary school.
10. Girls who finish school are more likely to live a healthy life.

True or False? statements – Teacher's Copy

1. Globally, women still occupy less than 25% of all seats in parliament.
True. Inter-Parliamentary Union. (2015).
<https://www.theguardian.com/global-development/datablog/2015/mar/08/international-womens-day-number-of-female-lawmakers-doubles-in-20-years>
2. In the UK twice as many women as men rely on state benefits.
True. Mordaunt et al. (2003). "One in Four".
3. In the UK two thirds of pensioners living in poverty are women.
True. Mordaunt et al. (2003). "One in Four".
4. Educated girls in sub-Saharan Africa will earn up to 25% more, start businesses, and reinvest 90% in their families.
True. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>

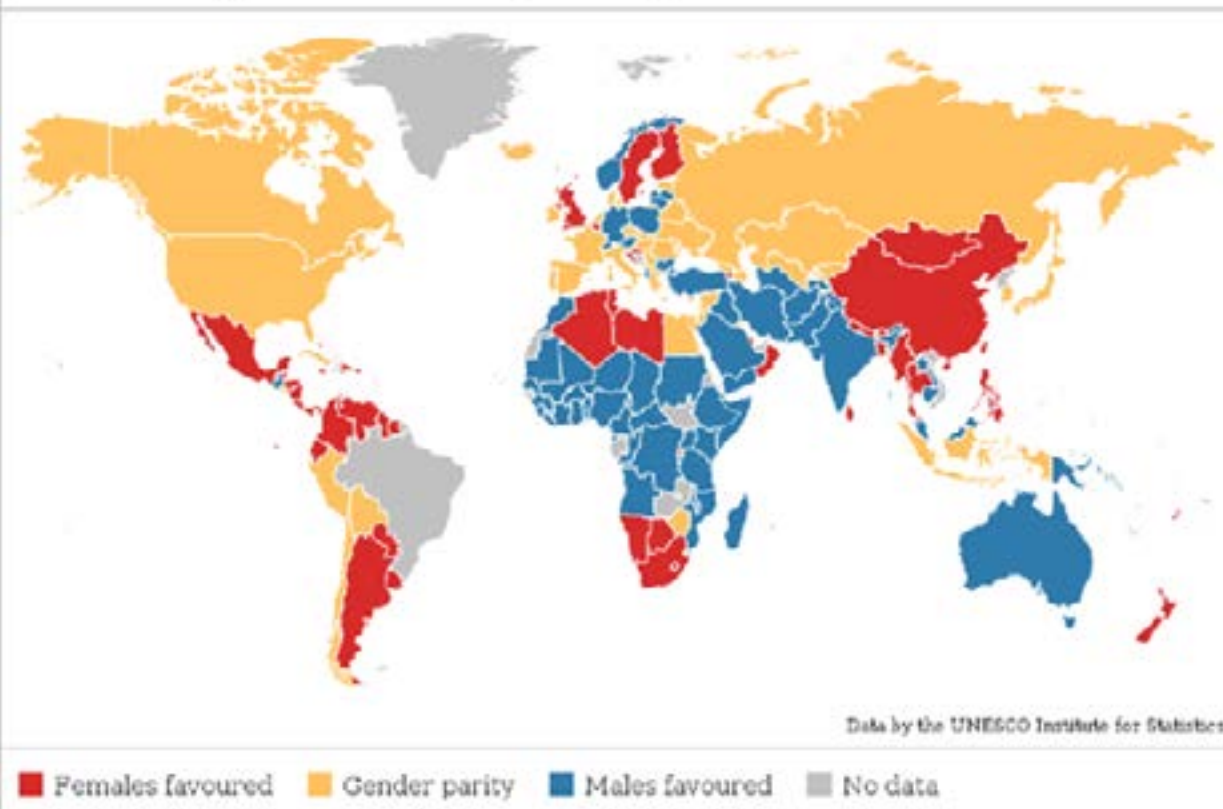
5. Uneducated girls in sub-Saharan Africa are three times less likely to become HIV positive than educated ones.
False. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
6. Girls that get to go to school in sub-Saharan Africa have more, less healthy children, who are 40% less likely to live past the age of five.
False. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
7. Educated girls tend to be less vulnerable to violence and exploitation.
True. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
8. Educated girls are more likely to become role models for the next generation of children, driving change from the local to the global level.
True. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
9. As many girls as boys finish secondary school.
False. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>
10. Girls who finish school are more likely to live a healthy life.
True. Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".
<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>

LESSON 1:

Activity 4: School and gender equality

Rates of Gender enrolment at school

Gender parity index for the gross enrolment ratio in secondary education (2015)



Definition of Gender Equality

Gender equality: Equality is when everybody is treated in the same way and has the same rights and opportunities, regardless of who they are, what they do, or where they are born and live. 'Gender equality' is when everyone has the same rights and opportunities regardless of their gender, and girls and boys are valued equally by everyone.

Murimirwa, A. (2016). "Everybody Wins When Girls Can Stay In School".

<http://cdn.worldslargestlesson.globalgoals.org/2016/06/19-Everybody-Wins-When-Girls-Can-Stay-in-School.pdf>

LESSON 1:

Activity 5: "From Where I stand" survey form

Short call-to-action video from Emma Watson

<https://vimeo.com/174213067>

"From Where I stand" survey form

"From Where I Stand"

A Survey of Your Local Community Influencers and Decision Makers.

Fill in your survey by putting a cross in the relevant box.

	Female	Male
POLITICAL LEADERSHIP		
Your Prime Minister / President		
The person that represents you in your national parliament		
LOCAL LEADERSHIP		
The local leader of your district or town council / tribal chief / head of county / mayor etc.		
LOCAL COMMUNITY INFLUENCERS AND DECISION MAKERS		
Your head teacher		
Your doctor		
The boss of one of your parents		
The head of your local police		
Your local bank manager		
Newsreader on the TV news channel you watch or the editor of the newspaper you read		
The lead singer of your favourite song		
The coach of your sports team (optional)		
Your religious/spiritual or pastoral leader (optional)		
TOTAL:		

Note: Some people may not identify as either of these particular genders, you can add an inclusive third column if you wish.

LESSON 2:

Activity 2: Malala's story

A Powerful Story – Students' copy

Once upon a time, there was a young girl who loved going to school. However, she lived in an area where some political leaders didn't want her to go to school. They used to attack the schools and try to stop girls going to school.

So one day this young girl, who was only eleven years old at the time, started to make speeches and write blogs saying that girls should be allowed to go to school as well.

However, the people in power, who didn't want girls to go to school, wanted to frighten her to stop her telling people these things. They knew lots of people around the world were listening to what she was saying, so they made it clear that they would harm her if she kept saying these things.

The young girl did not stop saying her opinions. So one day, when she was fourteen years old, a man came onto the bus when she was on her way back from school and shot her. The bullet hit her head. Luckily, this young girl did not die.

She was taken to another country and she survived. She went on to finish school and continues to tell the world that girls should be allowed to go to school.

A Powerful Story – Teacher's copy

Once upon a time, there was a young girl who loved going to school. However, she lived in an area where some political leaders didn't want her to go to school. They used to attack the schools and try to stop girls going to school.

Question: What would you do if the people with political power in your area attacked your school and said you (whether you are a boy or a girl) weren't allowed to go anymore?

So one day this young girl, who was only eleven years old at the time, started to make speeches and write blogs saying that girls should be allowed to go to school as well.

Question: If you had been harmed for saying your opinions and survived, would you stop after that?

She was taken to another country and she survived. She went on to finish school and continues to tell the world that girls should be allowed to go to school.

Question: What do you think of this girl? Do you think what she did made an impact? Why/ why not?

A Powerful Story – Follow-up questions

1. Is Malala Yousafzai is a role model for you? Why / why not?
2. Women can be as good at being leaders and role models as men.
3. Do you think we need more role models like Malala in the world and our local community?
4. Could you be someone like Malala, passionate about something you believe in, in your local community?

LESSON 2:

Activity 3: Who said this?

Who said this? – Students' copy

Read the following statements. Decide whether you think each statement is most likely to have been spoken by a male or female person and where the person comes from.

	Male/ Female/ Either?	Where from?
1. 'Several times my older brother has beaten me up. He also tells me 'you go ahead and go to school and I'll throw acid on you.'		
2. 'When I complained about not getting paid, he called the police to beat me up.'		
3. 'Once I <u>arrived</u> I was introduced to a lady. She took my travel documents and my mobile phone. She said she had bought me, she owned me and that I had to pay back the debt.'		
4. 'I wanted to get an education, but my parents were determined to marry me off.'		
5. 'When my mother died in <u>childbirth</u> I had to give up school to care for my brothers and sisters'		
6. 'When they gave me the <u>job</u> they said they weren't sure that I'd 'hack the pace'. <u>So</u> they said they'd pay me less until I'd proved myself.'		
7. 'In the morning, I fetch water, then I walk to school. One day I arrived late. As punishment my teacher asked me to crawl on my bare knees across the ground from the school gate to the classroom.'		

LESSON 2:

Activity 3: Who said this?

Who said this? – Students' copy

1. 'Several times my older brother has beaten me up. He also tells me 'you go ahead and go to school and I'll throw acid on you.'
Spoken by an 18 year old girl in Afghanistan whose brother wants her to marry to bring in dowry money. Education is compulsory in Afghanistan, but many girls are prevented from going to school
2. 'When I complained about not getting paid, he called the police to beat me up.'
Spoken by a 16 year old boy in India, given to be a bonded labourer to pay off a family debt when he was 12. Many children from poor families in Nepal, India and Pakistan are given to be bonded labourers, virtual slaves, to work usually for nothing.
3. 'Once I arrived I was introduced to a lady. She took my travel documents and my mobile phone. She said she had bought me, she owned me and that I had to pay back the debt.'
A girl who came to England as a tourist to learn English who was forced to take drugs and work as a prostitute. Both men and women are trafficked in the UK. 77% people trafficked worldwide are women.
4. 'I wanted to get an education but my parents were determined to marry me off.'
Spoken by Himanot, an Ethiopian girl married at 13. Every year millions of girls worldwide marry before they are 18, often in return for money given to their families. Many of them have not yet reached puberty.
5. 'When my mother died in childbirth I had to give up school to care for my brothers and sisters.'
Girls in developing countries routinely shoulder the greater burden of domestic work, including collecting water. This can mean they do not have time for school
6. 'When they gave me the job they said they weren't sure that I'd 'hack the pace'. So they said they'd pay me less until I'd proved myself.'
An experienced woman bus driver in the UK. The average pay for women in the UK is 15% less than for men doing similar jobs. Employers sometimes justify lower pay for women by saying that they will not be able to do a job as well as men.
7. 'In the morning, I fetch water, then I walk to school. One day I arrived late. As punishment my teacher asked me to crawl on my bare knees across the ground from the school gate to the classroom.'
A schoolgirl from Sierra Leone where violence against women is widespread.

LESSON 2:
Activity 4: "From Where I Stand" poster

Instructions on completing "From Where I Stand" poster

1. Calculate your gender ratio:
Total the number of crosses in each column and put that number in the bottom row. Add the column totals together. For example if you have answered every question then the sum of all the columns will be 12.

How to calculate your ratio:

$$\frac{\text{Female column total} \times 100}{\text{sum total}} : \frac{\text{Male column total} \times 100}{\text{sum total}}$$

So for example, if you answered all the questions and recorded 2 females and 10 males in your survey, your calculation would be:

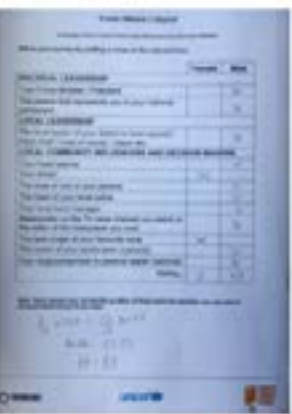
$$\frac{2}{12} \times 100 : \frac{10}{12} \times 100$$

$$= 16.66 : 83.33$$

$$= 17 : 83$$

Now express your ratio like this %females : %males e.g. 50 : 50 or 17 : 83 The sum of the two sides of your ratio should equal 100 and remember to put the female figure on the left, the male figure on the right.

2. Complete your poster:



Fill in the boxes at the top of the poster
We want to know where you are but if you don't want to include your name, that's fine.

Take your ratio for the female side e.g. 17
Colour in the shape on the female side that represents 17% on the scale, this would be an approximate shape slightly smaller than the figure outline at the 20% mark.

Using a different colour do the same for the male side on the right.

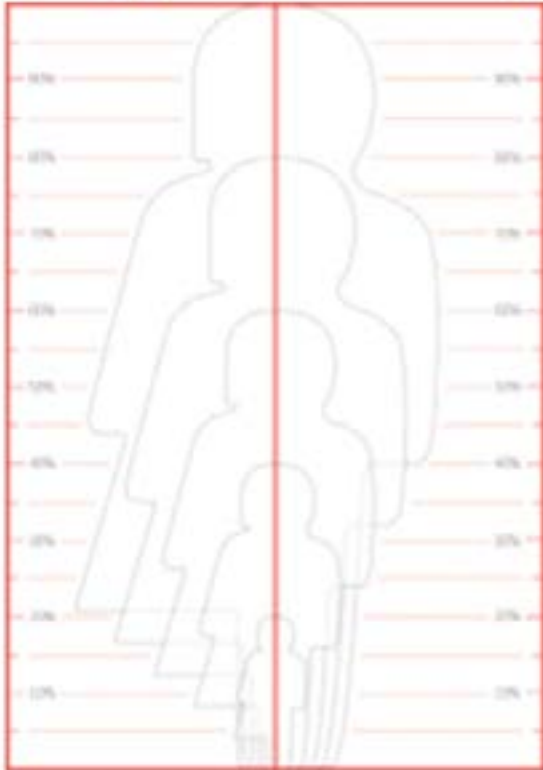
Write your ratio clearly in the box below your image so that we can see it.



From Where I Stand



School Name	Town/District/Region	Flag
	Country	



These are my results of a survey looking at the ratio of community influencers and decision makers who are female & male.

Female	:	Male
	:	

@TheWorldsLesson #FromWhereIStand in # _____
my gender ratio is : #GlobalGoals

Annex

LESSON 2:

Activity 4: “From Where I Stand” poster

3. Share your results:

Visit <https://worldslargestlesson.globalgoals.org/FromWhereIStand> and input your data onto the world map or take a photo of your poster and post it to us on Twitter, Facebook or Instagram.

Accurately copy and complete this post to make sure we can capture your information.

.@TheWorldsLesson #FromWhereIStand in #[insert your country] my gender ratio is x:y (insert your gender ratio women : men) #GlobalGoals

“From Where I Stand” poster

LEARNING TOOL 2

Gender stereotypes and STEAM educational paths

21st century skills addressed

Character
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Learn what are STEM and STEAM in education
- Raise awareness about the effects of gender stereotypes and the choice of STEM/STEAM educational paths for women
- Establish a bi-weekly lesson dedicated to the STEM/STEAM and gender stereotypes, in order to deepen student knowledge about the topic
- Be able to apply 21st century skills in the process of gender equality awareness

Activity details

Material:

- articles and researches about STEM/STEAM and gender related stereotypes that affects the access for women to STEAM educational paths.
- white paper sheets (the big format), coloured post-it notes and writing tools, for the panel.

Duration: 90 minutes

Group number: it depends on the number of students in the class, group of 5 or six students are preferred. Mixed (by gender) groups are mandatory.

Target audience: student from 12 to 15 years old.

Instructions

1. The teacher organizes the class in mixed (by gender) groups, according to the number of students and gives 5 minutes to let students nominate one or two spokespersons for each group.
2. Working in groups: each group is going to discuss the information each member found and each group is going to select 3 keywords that represents the group's ideas and opinion about the topic, and write them on 3 different post-it notes. The group is going to write a summary that synthesize the group's information.
3. Collective activities: firstly, the spokesperson for each group will read the summary about the information/knowledges on gender related stereotypes that affects the access for women to STEAM educational paths. Secondly, each spokesperson will read the selected keywords for each group.
4. Conclusion: a brief common debate will follow. Students will express their ideas and opinions and choose (by democratic vote, for example raising hands) 1 post-it note for each group in order to create a panel. The panel will be placed in the class.

Tips for the teacher

- 1) Before the lesson, the teacher assigns to students the task of collecting and summarizing articles and materials about the topic. According to the knowledge about students' levels and personalities, the teacher can suggest websites or links to specific articles.
- 2) During the common debate, the teacher has the role of mediator for potential conflicts that may arise during the expression of ideas and opinion, but with the reminder that each student is a mediator of his/her behaviour as well.
- 3) During the final part in which students choose the keywords in order to create the panel, the teacher will monitor that each student will express his/her vote and opinion.

Debriefing

- Ask students what they thought about the whole process and to give a vote about the class performance, in order to boost their self-evaluation skills
- Ask students to express their opinion about the learning to learn process (during the homework): how their ability to look for information on different tools is increasing?
- Ask students to explain how the group work enabled them to enrich their knowledge about the topic
- Ask students what they think about the value of learning from others and contributing to the other's learning.

Follow-up/Inspiration for the future

After the first class about raising awareness on STEM/STEAM and gender-based stereotypes, the teacher will establish, together with students' agreement a calendar with bi-weekly lessons dedicated to the topic.

During the week, the teacher is going to assign topic-based homework. The teacher can suggest websites or provide any kind of material for the topic. It is essential to remark and keep students aware about the "learning to learn process", in which they are able to regulate their own process of learning and to boost them to try different tools for learning and finding information.

Each scheduled lesson will foresee 4 stages:

- a first stage of group work, in which each group is going to share the new information, create a brief summary about, choose 3 key words and write them on 3 different post-it notes. The teacher will emphasise the importance of cooperating in teams, to learn from others and to contribute to other's learning process.
- a second stage of common discussion, in which each spokesperson will read each group summary.
- a third stage in which each spokesperson will read the 3 keywords.
- a fourth stage in which students will vote for choosing 1 post-it note for each group and add them to the panel.

References/Further reading

<https://ec.europa.eu/research/swafs/index.cfm?pg=policy&lib=education>

https://ec.europa.eu/research/swafs/pdf/pub_science_education/KI-NA-26-893-EN-N.pdf

http://www.eurosteamproject.eu/res/Comparative_analysis_report_vlatest.pdf

<https://www.stemcoalition.eu/publications/strengthening-steam-education-eu>

<https://www.schooleducationgateway.eu/en/pub/latest/practices/steam-learning-science-art.html>

<http://www.eun.org/focus-areas/stem>

Annex

N/A

LEARNING TOOL 3

Sport and Gender equality

21st century skills addressed

Character
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Explore the reality existing in your country about gender equality in sport environment
- Raise awareness about women's full accessibility in all kind of sports
- Boost students' social and emotional abilities
- Boost students' in raising innovative ideas for daily life problem solving
- Make students aware about the 21st century skills and their link with their learning processes

Activity details

Material:

- articles about gender stereotypes and sport
- white paper sheets (the big format) and writing tools, for the presentation

Duration: 90 minutes

Group number: it depends on the number of students in the class, Group of 5 or six students are preferred. Mixed (by gender) groups are mandatory.

Target audience: student from 12 to 15 years old.

Instructions

1. The teacher organizes the class in "learning/working islands" in order to split students in mixed (by gender) groups.
2. According to the number of students in the class, each student or in pairs, read the informations they have found about gender and sport.
3. Working in groups: each group is going to discuss the topics of the articles. The discussion in each group is going to be based on the "I statement model" and each student of the group is going to express his/her feelings and emotions about the topic and the reason why these emotions came out. Each student is asked to act respecting self-regulation is social behaviour.
4. Working in groups: In a second stage each group cooperates in the creation of a poster in which are expressed the emotions and feelings of the group's members about the topic. Each group is going to present to the class the "group panel".
5. Common discussion: After all the groups present their works, the teacher is going to lead a common debate in which students are welcomed to exchange their opinion and what can be done in everyday life in order to booster the positive feelings/emotions and transform the negative ones, and thus contribute in the reduction of gender based attitudes in sport environment.
6. Conclusion: students will again work in groups and create small panels with the ideas they suggested to implement in their daily life in order to reduce gender stereotypes in sport. The panels will be exposed in a dedicated space in the class.

Tips for the teacher

- 1) Before the lesson, the teacher assigns to students the task of collecting and summarizing articles and materials about the topic. According to the knowledge about students' levels and personalities, the teacher can suggest websites or links to specific articles.
- 2) During the group work, the teacher has the role of mediator for potential conflicts that may arise during the expression of feelings and emotions, but with the reminder that each student is a mediator of his/her behaviour as well.
- 3) During the final part of the common activities, the teacher encourages students to think about stereotypes about women and sport that they encounter daily. During the common discussion, the teacher will mediate in order to give to every student the opportunity to express himself/herself and suggest some strategies for everyday boosting of positive feelings and emotions and the transformation of the non-positive ones.

Debriefing

- 1) Ask students what they thought about the whole process and what they have learnt.
- 2) To foster students' self-evaluation, ask to students to agree on a common mark for the results of the activities performed during the lessons.
- 3) Ask students to choose from 1 to 3 among the ideas about daily life and gender stereotypes in sport, and implement it/them in their lives, by sharing with their relatives and group of pairs.

Follow-up/Inspiration for the future

- after the class, the teacher is going to organize with the school master and the other teachers an open lesson in a common space, available at the school premises. The intention is to inform all the students of the schools about the class activity and its results. The teacher will ask to each group of students to elect one or two spokespersons for each group, that will explain to the open lesson the content of their group's panel.
- in the class, the teacher and the students agree that one lesson per month will be dedicated to the topic. The lesson will be registered on the class calendar. During the month students will dedicate part of their homework to the search and the record of any information they might find on the internet. During the dedicated lesson, each student is briefly going to present to the class what he/she found. The teacher can guide a small debate to let students sharing their feelings/emotions about the new materials and information. If new ideas, about students' daily lives and their encounter with gender based stereotypes in sport may arise, they can be added to the panels, with post-it notes for example or other writing tools.

References/Further reading

<https://sustainabledevelopment.un.org/sdg5>

https://ec.europa.eu/sport/policy/society/gender_en

https://scholar.google.com/scholar?as_ylo=2019&q=sport+and+gender+equality&hl=en&as_sdt=0,5&as_vis=1

<https://www.unwomen.org/en/news/stories/2020/3/news-sport-for-generation-equality>

<https://en.unesco.org/themes/gender-equality-sports-media>

Annex

N/A

LEARNING TOOL 4

The Role of Women in Society

21st century skills addressed

Character

Collaboration and Teamwork

Communication

Critical Thinking and Problem Solving

Objectives

With this tool, students are expected to:

- Know that equality between men and women is one of the European fundamental values
- Explore information on the role of women in society
- Raise awareness of women's full and effective participation and equal opportunities for leadership at all decision-making levels in political, economic and social life
- Study and summarize information on famous women in Latvia and in the world

Activity details

Materials:

- A4 format mind map (annex No.1) and writing tools
- PowerPoint presentation (annex No.2)
- A video about famous women in Latvia and in the world

Length: 2 hours

Target audience: 4th – 5th grade students (10-11 years old)

Instructions

What can we do in order to resolve the problem/situation?

1. Students get an understanding of why it is important to learn the topic of the class.
2. Working in groups: students make mind maps “What does it mean to be a woman today? What does it mean to be a man today?” Groups present the mind maps they have made.
3. Students participate in the discussion:
 - What are the main stereotypes about the role of a woman in society?
 - What does “gender equality” mean?
 - Why is “gender equality” important?
4. Students collect and summarize information about famous women in Latvia and in the world (two persons). In pairs students make presentations using the information they have found.
5. Students show their presentations to other students.
6. Students watch a video about famous women in Latvia and in the world.
7. Students do the quiz.
8. Students provide the evaluation of the class and their contribution.

Tips for the teacher

What is the problem/situation? What do we know about the problem/situation? What should we know? How can we know about it? How can we organize our research?

1. Before the class, the teacher encourages students to collect and summarize materials about famous women in Latvia and in the world (every student collects information about 2 persons). In pairs students make presentations using the information they have found.
2. The teacher encourages students to think why it is important to learn about this topic, explains in what way the topic will be learned, and identifies the objectives of the class.
3. The teacher encourages students to work in groups and make mind maps “What does it mean to be a woman today? What does it mean to be a man today?” Groups present their mind maps.
4. The teacher encourages students to reflect on the problems they encounter in society, and offers questions for discussion:
 - What are the main stereotypes about the role of a woman in society?
 - What does “gender equality” mean?
 - Why is “gender equality” important?
5. The teacher introduces facts and figures on gender equality, giving specific examples.
6. The teacher invites students to show the presentations about famous women in Latvia and in the world, they have made at home (work in pairs).
7. The teacher invites students to watch a video about famous women in Latvia and in the world.
8. The teacher encourages students to do the quiz and answer questions about famous women in Latvia and in the world.
9. In order to receive feedback on the progress of the class, the teacher encourages students to evaluate the class and their contribution.

Debriefing

Information that can be useful for acquiring the topic:

Discussion: What does “gender equality” mean?

Gender equality is a situation where the role of men and women in the development of society is recognised as being equal, they are granted equal rights and equal responsibility, equal access to resources and opportunities for their use. The contribution of men and women to the benefit of society and their problems are perceived as equal.

Gender equality means not equality between women and men but equal opportunities for both genders.

Under the influence of socialization, awareness of one’s gender and gender social roles are formed – everything that people say or do consciously or unconsciously, showing that they are either a woman or a man. These are manners, speech, contact with people, style of dress, interests, and habits.

“Frames” created by society based on prejudices, uncritical assumptions and biased assessments of the characteristics inherent in men and women (including roles, occupation, physical characteristics) are called gender stereotypes.

Gender stereotypes very often form the basis for gender discrimination, preventing people of a certain gender from choosing a certain type of employment or behaviour.

Why is “gender equality” important?

By providing women and girls with equal access to education, health care, decent work and representation in political and economic decision-making processes, it contributes to a sustainable economy and will be beneficial for society and the humanity in general.

On average, 20% of Latvians believe that gender discrimination is common in Latvia.

The study shows the society considers housekeeping (79.6%), cooking (73.3%), helping children with their studies (43.7%), as well as raising children (43.3%) and taking children to school (34.7%) to be typical women’s responsibilities in family life.

Making repairs at home (70.9%) and providing for the family’s financial support are considered to be men’s responsibilities.

In Latvia, the representation of women in decision-making processes has increased significantly in recent years.

Women comprised one third of the members elected to the Saeima in 2018 (31 women out of 100 members of parliament or 31%), compared with fewer women elected in parliament in neighbouring countries (28% in Estonia, and 21% in Lithuania).

The Cabinet of Ministers, including the Prime Minister, consists of 14 ministers, three of whom are women (21%). Since the restoration of independence of the Republic of Latvia, there have been 14 Prime Ministers, of which only one was a woman. During this period, Latvia has had 6 Presidents, one of whom was a woman.

In 2019, the Saeima Speaker was a woman. In total, there have been 9 Saeima Speakers since the restoration of independence of the Republic of Latvia, 4 of whom were women.

At least two or three women have always been elected to the European Parliament to represent Latvia. Three women out of 8 members of the EU parliament were elected in the 2019 election, while 4 women and 4 men became members of parliament.

Judicial system

In Latvia, women are more frequently employed as judges than men: in 2018, 79% of judges were women. Since 2008, this indicator has increased by 5%. The highest percentage of women is in the first instance courts and district courts.

Also see references to the websites listed in the “References/Further Reading” section.

Follow-up/Inspiration for the future

How the outcomes will be presented?

1. Students make presentations about their work to other students.
2. After the class, students’ works are put for display at the school’s hall, so all students could see them.
3. The article about the class and photos are posted at the school’s webpage.

Why is “gender equality” important?

By providing women and girls with equal access to education, health care, decent work and representation in political and economic decision-making processes, it contributes to a sustainable economy and will be beneficial for society and the humanity in general.

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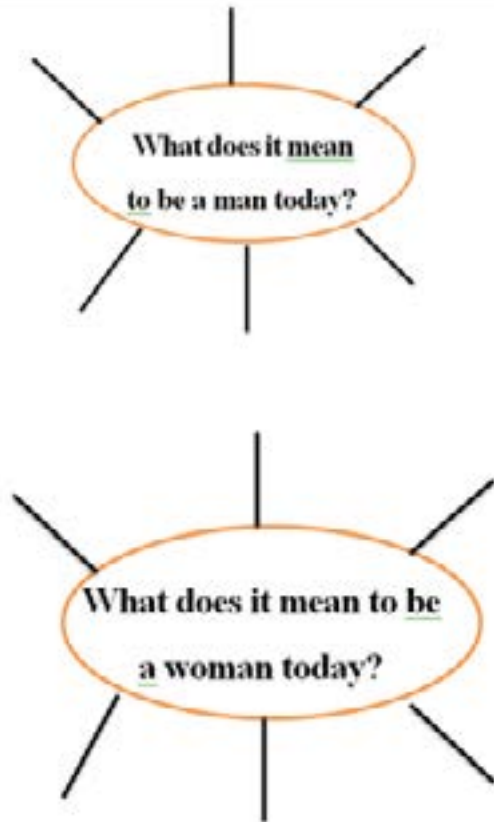
Follow-up/Inspiration for the future

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3. The article about the class and photos are posted at the school’s webpage.

References/Further reading

1. The UNO Goal 5: Achieve gender equality and empower all women and girls <https://www.un.org/sustainabledevelopment/gender-equality/>
2. Women’s equality in Latvia: some figures and facts: <http://www.lm.gov.lv/lv/aktuali/presei/86654-sieviesu-lidztiesiba-latvija-dazi-skaili-un-fakti-7539>
3. Only 16% of people think that there is gender equality in Latvia: <https://www.tvnet.lv/6541293/tikai-16-iedzivotaju-uzskata-ka-latvija-pastav-iriesu-un-sieviesu-lidztiesiba>
4. In Latvia, women earn 18% less than men. Latest European Gender Index data: <https://www.la.lv/sievietem-latvija-ienakumi-ir-par-18-mazaki-ne-ka-iriesiem-jaunakie-eiropas-dzimumu-lidztiesibas-indeksa-dati>
5. Power and decision-making: <https://www.csb.gov.lv/lv/dzimumu-lidztiesiba/vara-un-lemumu-pienemsana>
6. What is the role of men and women in Latvian society?: <https://jauns.lv/raksts/sievietem/260253-kada-ir-iriesu-un-sieviesu-loma-latvijas-sabiedriba-petijuma-dati-ir-nepieludzami>
7. Women who changed world history: <https://www.historyextra.com/100-women/100-women-results/3/>
8. Brilliant Latvian women who you have never heard about: <https://www.letthefourneybegin.eu/brilliant-latvian-women/>
9. 10 most influential women in the world (video, ANG): <https://www.youtube.com/watch?v=fviGUdiQweE>



LEARNING TOOL 5

How could I wear your shoes?

21st Century skills addressed

Character
Collaboration and Teamwork
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Stimulate the critical reflection about the gender inequity that still dominates in the social models of the third millennium, helping to understand this is a transversal phenomenon that also affects the societies that are considered more advanced and not only those linked to ancient social and religious traditions
- Encourage the use of creative solutions when tackling gender problems, favouring a reading of reality that is autonomous and free from the conditioning of the “pack”
- Acquire awareness of the opportunities for assistance guaranteed by national and international bodies to which citizens can appeal when faced with a situation of gender inequity

Activity details

Material

A deck of playing cards.

Smartphones, tablets or other devices connected to the Internet. You need at least one for every 3/4 students.

Basic school stationery (sheets of paper, pens/pencils).

Easily available objects that may be necessary for the realization of the short dramatizations that each group will be called to propose to the rest of the class.

Duration

about 100 minutes, divided into two 50-minute modules

Group number

3/4 students per group, depending on class size

Instructions

FIRST LESSON

- The first module starts with a warm-up phase in which the teacher/teacher asks the class some questions capable of arousing curiosity and reflection on the subject from everyone, male and female. Examples: Do you know what the expression 'gender equality' refers to? Is it true in your opinion that women's brains are different from men's? Are there activities that have to be done by men and other things that have to be done by women? Who established this and how?

Those who ask the questions will obviously be careful to express themselves in such a way as to contain as much as possible the physiological male-female division that certain topics can provoke and the inappropriate comments from students. This start-up phase will last about 10 minutes.

Once the students' questions and reactions are exhausted, the teacher/teacher will not provide answers but will declare the objective of the activity, which is to induce students to reflect on their own beliefs, which may be based on unfounded stereotypes and preconceptions.

At this point the class is divided into groups of 3/4 people. It is important to ensure that the composition of the groups is completely random, even with the (calculated) risk that they will be entirely male and/or female groups. To do this we can use e.g. a deck of cards managed by the teacher/teacher with the help of the first two students who volunteer. All figures and numbered cards that exceed the number of groups to be formed are removed from the deck. Example: if the class consists of 24 pupils, 6 groups of 4 pupils each will preferably be formed. The cards with king, queen and jack, and those whose value is higher than 6 will be removed from the deck. The remaining cards will then be shuffled and randomly distributed among the students, giving one each. Each group will be formed by the four students who have received the card of the same value (and of different suits): all 6, all 5, etc. It is possible that the number of students in the class will not allow to form groups with the same number: in this case it will not be a problem if one group will have one more or one less student than the others.

- The groups formed in this way come together, with pen and paper at their disposal, and start working with the aim of producing a list of 3/4 recurring situations in real life that from their point of view represent discrimination against the female universe. In this phase, the teacher/teacher does not intervene to let the reflection arise exclusively from the students' sensitivity. The time dedicated to this phase will be about 15 minutes, at the end of which the teacher/teacher will invite each group to identify a speaker who will briefly explain to the rest of the class which are the alleged gender discriminations he has identified as most important.

- At the end of the exposure by each group, the teacher/teacher will summarize on the blackboard (better LIM if available) the situations that have emerged, which could easily be the same by several groups. Using a criterion of recurrence and/or relevance, the teacher/teacher will identify as many cases of gender inequality as the number of groups in which the class was divided, and will assign the task for the next lesson: each group will have to prepare a 2-3 minute dramatization, in which they will stage the situation assigned to them, trying to bring out the negative aspects that need to be corrected in order to meet a principle of gender equality.

If possible, when assigning the themes, the teacher/teacher should try to make each group develop one of the situations that they had highlighted in their analysis work.

SECOND LESSON

- Following the instructions given by the teacher/teacher at the end of the previous lesson, the groups take turns performing their dramatization, if possible, taking advantage of a little more space than is available in the classroom usually used by the class (school's hall, courtyard, larger classroom, etc.). The performances will be carried out in the order determined by the number that each group was drawn with the card game of the previous lesson (first the group composed by the numbers 1, then 2, 3 etc.). Or vice versa, starting from the group with the highest number). The other students will not only be spectators: each one individually, and not in groups, will try to grasp the negative emotions and the incorrect behaviours that emerge from each situation represented, and will pin them on a sheet of paper. The teacher, who knows the class, will decide whether to put the name and surname of each student on the sheet or to request that the reports be submitted anonymously.

The representations should not take more than 20 minutes in total.

- At the end of the dramatizations, the teacher/teacher will collect the sheets with the students' impressions and propose a brief sharing, commenting with the class what has been seen and what broadly emerges from the notes. In this way, the negative, ugly, unfair situations that everyone has witnessed are further highlighted, and the class is ready for the next step.

- The groups are reconstituted and each of them will be given the task of searching on the Internet, using their own devices, which are the international, national and local bodies/organisations that protect women from the dangers and injustices that the class with the help of the teacher/teacher has identified and deepened also with the help of the short dramatization. The most important websites found by the group are saved on the device or pinned on a sheet of paper and then shared with the rest of the class.

- In the last 5/10 minutes, the teacher/teacher gives the correct answers to the questions asked in the warm-up phase and asks each group to read the results of the research done on the Internet. If they have left obvious gaps, the results will be supplemented by the teacher/teacher with the most important sites. In closing, he/she recommends that children at home should look more closely at how these bodies act to defend women's rights where they are violated or not respected.

Tips for the teacher

1) The teacher/teacher will take care of preparing the necessary material and preparing in advance the spaces to be used, in order to avoid unnecessary waste of time.

2) The teacher/teacher will have to pay a lot of attention to the questions to be asked to the class during the warm-up phase, which will have to be calibrated according to the age of the students, the composition of the class, the presence of disabled people, foreigners etc. The stimulus offered by these questions will in fact be fundamental for the motivation transmitted to the class with regard to the topics dealt with.

3) After the first lesson, once the topics on which the attention of the class will be focused will be defined, the teacher/teacher will independently carry out a research on the network about the support bodies that oversee gender equality, in order to already have a clear picture of the situation and to be able to promptly integrate the research made by the students if they are found to be incomplete.

Debriefing

Based on the response received from the class, the teacher will consider how to continue the discussion with further insights in subsequent lessons. In order to collect feedback from the students, satisfaction questionnaires can be used, whose preparation can refer to the various existing digital tools (Plickers, Google forms, etc.).

The analysis of the feedback received will allow the teacher to ascertain if and to what extent the activity carried out has produced for the class as a whole and for individual students a growth in terms of acquiring 21st century skills.

Follow-up/Inspiration for the future

In the weeks following the activity the teacher will have the opportunity to observe the behaviour of the class and the male-female group dynamics, focusing on the possible occurrence of different attitudes compared to the past and on the awareness of their rights by the female component.

Further activities can be planned if necessary, to encourage the consolidation of the transversal skills that the activity intends to strengthen.

Annex

N/A

LEARNING TOOL 6

Equality of gender

21st century skills addressed

Character

Communication

Critical Thinking and Problem Solving

Objectives

With this tool, students are expected to:

- Gain awareness of this social problem
- Get enlightened on the issue
- Learn about proactive measures

Activity details

Material: Pictures, white/blackboard, projector, computer/smartphone, videos

Duration: 4 activities x 50 minutes each (100 minutes for the younger pupils)

Group number: 25-30 students

Instructions

Activity 1

- The introduction to the theme is done by playing a little role: two 5th form pupils from different sexes take turns to leave the classroom. The first one to remain is the boy and he has to act out some instructions given by the teacher (e.g. Run like a girl! Jump like a girl! Fight like a girl! Throw like a girl! Laugh like a girl!) Then the same instructions are given to the girl. Afterwards the same role-play is performed by the 9th form pupils. The purpose is to demystify any gender prejudice. If the outcome is not as expected, the teacher projects the “always” advertisement video where girls can be seen doing the same things as boys.

Activity 2

- Figure1 is projected and the whole class will place the adjectives according to each gender

Activity 3

-The teacher divides the board into two parts with two subtitles: agree and disagree, the teacher sticks on the board speech balloons containing gender stereotypes.

The teacher asks if those statements make any sense or are just gender stereotypes which must be wiped out. Students should stand up and line up under each subtitle according to their opinion. A little debate is held, and students are asked to redo the previous exercise(fig.1)

Activity 4

-Figure 2 is projected and students are supposed to express their opinion, and, in the end, they must copy the vocabulary onto their files.

Activity 5

-A handout containing household chores is given to the pupils so that they commit themselves to helping at home.

Activity 6

-An image (fig.3) portrays women as being fragile is shown in order to trigger a little debate.

Activity 7

From this activity on, only pupils from the 9th form are participating.

-A definition of Gender equality is presented and then students infer which areas of society women are more discriminated (fig.4).

Activity 8

-Pupils gather in groups (4 groups) each group chooses a picture, write a small paragraph describing what they see and then present it to the class.

Activity 9

Some facts and figures about women discrimination around the world are presented in order to trigger the curiosity to know more.

Activity 10

Pupils are asked to think about three actions that could improve the equality of gender.

Activity 11

In order to promote gender equality, pupils build sentences and hang them on their classroom walls.

Activity 12

Pupils form groups of work and do researches on one of the themes presented. The papers have a deadline of a week.

Tips for the teacher

- 1) Ensure the level of discussion is appropriate to the age, context and understanding of the children in the class.
- 2) The younger students only participate until activity 6.

Debriefing

At the end of each class, the teacher asks for pupils' feedback on what they have learnt.

Pupils are to hand a final self-assessment report mentioning commitment in the tasks, and a comment on the impact the content of these classes have had on them.

Follow-up/Inspiration for the future

1. Posting their works on the walls of school and school's webpage.
2. Creating QR codes with more information on "equality of gender" and display them on the walls of the school library.
3. Creating a "No prejudice club"

References/Further reading

<https://www.dailymail.co.uk/femail/article-4623586/Why-men-truly-weaker-sex.html>

<https://www.historyextra.com/100-women/100-women-leaders-and-royalty/>

<https://www.youtube.com/watch?v=iCwKM6uB71I>

<https://believe.earth/en/10-ways-to-promote-gender-equality-in-daily-life/>

<https://camfed.org/latest-news/films/sisters/?>

Annex

For Activity 1

Instructions for the role- play

Run like a girl!
 Jump like a girl!
 Fight like a girl!
 Throw like a girl!
 Laugh like a girl!
 Talk like a girl!

For Activity 2

What adjectives/nouns would you choose to characterize men/women? Place each adjective accordingly.

Dominant	submissive	emotional	passive	Housework	worldly	obedience
Smart		Logical	decisive		dolls	<u>active</u>
Independent	sports	dependent		leadership	trousers	fragile
	skirts	Weak-minded	indecisive			



For Activity 3

Society has progressed past outdated gender stereotypes. Or, has it?
Place yourself under “Agree” or “Disagree” group. State the reasons for your choice.

Gender stereotypes	Agree	Disagree
Real Men Don't Cry Real Men Are the Breadwinner Women Are Quiet and Passive Women Should Look Flawless Women should do all the household chores		

For Activity 4

Which chores are more suitable for girls/ women and which are for boys/men? Write each chore under male/female.

HOUSEHOLD CHORES MALE FEMALE



iron clothes



rake the leaves



make the bed



wash the dishes



do the laundry



cut the grass



vacuum



wash the windows



water the plants



feed the cat



cook dinner



sweep the floors



wash the dog



clean up



take out the trash

For Activity 6

Describe the image. What message is conveyed in this picture? What does it mean? Do you agree? Justify your opinion.



Good Practice

A Women's History Archive: Cyprus Library Online for Gender (CLiO for Gender)

Description (max. 5 lines):

The project aims to collect primary sources regarding women's history in Cyprus which will concern the period between 1878 and 1960 (such as old newspapers, interviews, archive material, photographs etc.) that will be concentrated in a digital online archive which will be open to the public. It also aims to examine and evaluate the potential impact of knowledge regarding women's history on contemporary stereotypes and beliefs on gender.

Link to website: <http://www.clioforgender.com/>

Country and location: Cyprus

Actors/partners:

The project is implemented by Promitheas Research Institute; Center for Gender Equality and History (K.I.I.F); and the University of Cyprus.

The project is implemented under the program Restart "Social Innovation 2016-2020" of the Research Promotion Foundation and is co-funded by the Republic of Cyprus and the EU Regional Development Fund.

Objectives:

The objectives of the project are to:

- promote the history of women in Cyprus while tackling a series of issues
- reinstate and recover the historical knowledge regarding women
- deconstruct history myths and stereotypes referring to the history of genders
- demonstrate the importance of women's contribution to the progress and development of the Cypriot society
- contribute towards the direction of gender equality through an innovative path that will acknowledge the gap in historiography in regards to women and the fact that history remains gender biased
- empower and encourage women to demand their rights and equality

Results:

- An online data base – The Cyprus Library Online for Gender (CLiO) that will be openly accessible to all and will host all the data collected during the implementation of the project
- A report on the modern and contemporary history of women both locally and internationally
- An extensive research aiming to examine and evaluate the potential impact of knowledge regarding women's history on contemporary stereotypes and beliefs on gender. This stage will involve a group of students with the aim of studying and evaluating the impact that knowledge on women's history may potentially have against gender stereotypes and relevant beliefs.

Why is it considered a good practice? (max. 8 lines):

Because this will address one of the major contemporary social challenges in European societies, Cyprus not excluded: gender inequalities and social stereotypes. These inequalities and stereotypes, which place women in a disadvantageous position, are produced and reproduced constantly via various mechanisms and institutions; history is an essential part in this process because it determines today's beliefs and attitudes

- Its digital archive allows for extensive replicability to other local contexts and/or addition of other forms of neglected histories

Elements of replicability in other contexts (max. 5 lines):

- Online data base - Data will include primary sources such as interviews, and secondary sources such as publications in newspapers and magazines, archives of individuals or of organisations etc.
- Online library that will operate via a data search engine.

SUSTAINABLE CITIES & COMMUNITIES (SDG11) AND THE ACQUISITION OF 21ST CENTURY SKILLS

INTRODUCTION

Overall Aim of Sustainable Development Goal 11

Following many other previous initiatives, in 2016 the United Nations adopted a global Agenda with objectives and targets of sustainable development oriented to year 2030. The framework includes and describes in a very effective way 17 main Goals, one of which concerns cities and human settlements, in order to make them inclusive, safe, resilient and sustainable²⁰.

Cities are hubs for ideas, commerce, culture, science, productivity, social, human and economic development. Urban planning, transport systems, water, sanitation, waste management, disaster risk reduction, access to information, education and capacity-building are all relevant issues to sustainable urban development.

In 2008, for the first time in history, the global urban population outnumbered the rural population. This milestone marked the advent of a new 'urban millennium' and, by 2050, it is expected that two-thirds of the world population will be living in urban areas. With more than half of humankind living in cities and the number of urban residents growing by nearly 73 million every year, it is estimated that urban areas account for 70% of the world's gross domestic product, generating economic growth and prosperity for many. But, at the same time, this process will go on producing severe challenges, to be carefully managed through a clever social planning.

Given the importance of this topic to global development efforts, recent movements pushing to address sustainable development from an urban perspective have taken place throughout the world, and Europe is at the forefront.

Local authorities and communities are asked to work together to renew and plan our cities and human settlements so as to foster community cohesion and personal security and to stimulate innovation and employment, increasing the so-called 'livability' of cities.

Topics and problems to deal with are really overwhelming, and of course the territorial differences among the planet areas require different policies and strategies. But there is good news: as of the beginning of 2019, 150 Countries had developed such policies, and almost half are already implementing them.

Why is it important for educational community?

Taking account of the entire set of Sustainable Development Goals fixed in the 2030 Agenda of the UN, it appears quite clear that the future of humanity and of our planet lies in our hands. But it lies also in the hands of today's younger generation, who will pass the torch to future generations.

Educational community is therefore highly interested in these topics, because a clever education of today's pupils, able to open their eyes on these global challenges, will form the basis for a future capacity to manage them. Besides, considering specifically the SDG concerning sustainable cities and communities, it's important to stress the cross-cutting nature of urban issues, which have an impact on a number of other Sustainable Development Goals, including that related to educational issues.

Living in cities can facilitate the accessibility to educational facilities, and this is no doubt a very positive aspect because it contributes to spread literacy and numeracy also in developing Countries, and to increase the rate of upper education in the most developed ones. But living in cities opens the doors to a number of social and relationship problems typical of urban agglomerations (risk of ethnic conflicts, drugs and alcohol abuse, violence, stressed-out and vulnerable kids, etc), that the educational institutions must be ready to tackle with efficacy.

The target we can find in the Agenda 2030, is to ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

²⁰ UN Sustainable Development Goals, Knowledge Platform, <https://sustainabledevelopment.un.org/topics/cities/documents>

Key dimensions of Sustainable Development Goal 11

The exodus from rural and peripheral areas towards cities seems to be inexorable, more or less everywhere in the planet. More than half of the world population live in cities. By 2050, 6.5 billion people - two-thirds of all humanity - will be urban. Cities occupy just 3 percent of the Earth's land but account for 60 to 80 percent of energy consumption and at least 70 percent of carbon emissions. The rapid growth of cities — a result of rising populations and increasing migration — has led to a boom in mega-cities, especially in the developing world, and slums are becoming a more significant feature of urban life: even if considerable progress has been made in 2019 in reducing the proportion of the global urban population living in slums, more than 1 billion people continue to live there.

In such a context, sustainable development cannot be achieved without significantly transforming the way we build and manage our urban spaces. The UN 2030 Agenda selected for this topic a panel of important targets, to be achieved through the joint commitment of upper and lower authorities, business stakeholders and community members. So, by 2030 it will be essential, let's say mandatory, to take the initiative and change course in several fields considered as key elements.

- The vast majority of urban people breath poor-quality air, influencing negatively many factors related to the living in cities. First of all, health of the citizens, highly influenced by pollution. In 2016, 9 in 10 people living in urban areas still breathed air that did not meet the World Health Organization's air quality guidelines values.

- About waste management, globally, 2 billion people have no access to waste collection services and 3 billion people lack access to controlled waste disposal facilities. With increasing urban populations and the existence of consumer-oriented economies amid rising income levels and rapid urbanization, it is estimated that the total waste generated in the world will double from nearly 2 billion tons in 2016 to about 4 billion tons by 2050. And an eventual selfish consideration in Europe, based on the idea that waste problems mainly affect cities on the other side of the world, would be blind and strategically wrong.

- Environmental sustainability is at risk also because of excessive expansion of uncontrolled concreting, contributing to stole green areas. In order to safeguard the livableness of cities, it would be fundamental to preserve non-urbanized spaces, through their reconversion to a balanced mixture of accessible green areas, pedestrian and bike path, and maybe also urban vegetables gardens. Globally, urban areas are expanding at a faster rate than their populations. Between 2000 and 2014, areas occupied by cities grew 1.28 times faster than their populations. Better management of urban growth will be crucial in order to guarantee sustainable urbanization.

- The role of transport in sustainable development was first recognized at the 1992 United Nation's Earth Summit and reinforced in its outcome document, Agenda 21. The global attention to transport has then continued, and in the 2030 Agenda sustainable transport is mainstreamed across several SDGs and targets, especially those related to food security, health, energy, economic growth, infrastructure, and cities and human settlements. The importance of transport for climate action is further recognized, given the fact that close to a quarter of energy-related global greenhouse gas emissions come from transport and that these emissions are projected to grow substantially in the years to come. Besides, by 2030 policy makers will be asked to find a solution for the social impact of transport solutions in cities and human settlements, providing access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

The interplay between Sustainable Development Goal 11 and the acquisition of 21st Century skills

People living in an urban context are those who can show at the maximum level the characteristics of the humankind as 'social animal'. Compared to those living in rural and marginalized areas, where population density is lower and the opportunities to cross and interact with other people in regular daily activities are a bit reduced, urban citizens need to quickly acquire more elements of the so-called 'soft skills' known as 21st Century Skills. These skills are needed to exploit opportunities and to participate fully in society.

So, if the objective of an educational process is a capacity building of students (alias future adults) to help them understanding the meaning of sustainable cities and communities as affordable and resilient places with green and culturally inspiring living conditions, the soft skills they will need cross the entire set of 6 global competences as defined by Michael Fullan, but concern specifically Citizenship and Teamwork elements.

In the same way, soft skills related to Problem Solving and Creativity may be highly helpful when thinking for instance about the reduction of the environmental impact of cities or the accessibility to safe and inclusive green and public spaces.

LEARNING TOOL 1

Safe cities create a better life – stop the violence

21st Century skills addressed

Character
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Understand what violence is and how it can exist in different forms
- Develop solutions for preventing violence
- Self-regulate in social behaviour
- Develop empathy and ability to care for others
- Learn from others and contribute to other people's learning
- Raise innovative ideas and non-traditional solutions
- Apply critical thinking and problem solving to evaluate different sources of information and arguments relevant to SDG11
- Respond positively towards achieving SDG11

Activity details

Material – see annex

Duration – 2h 20min

Group number 15-20 students (5TH grade, age 10-11)

Instructions

Lesson one (50 min)

1. Students watch a video about school bullying.
2. Students answer questions about violence. Some of the questions are:
 - What other different forms of violence they know of?
 - Where do these types of violence happen?
 - Do you hear about violence on the news?
 - Do you think your city is safe?

3. Students work in groups and do a mind map "Factors that lead to violence"
4. Students discuss their ideas in class.

Lesson two (1h 30min)

1. Students visit a local police station and get information on violence from officers.
2. Students work in groups and do an online research "What Can Kids Do To Stop Violence"
3. Students do a presentation with their conclusions and ideas
4. Students present their conclusion.

Tips for the teacher

- 1) Teacher shows video about bullying as a form of violence.
- 2) Teacher asks as many students possible.
- 3) Teacher starts a discussion on factors that lead to violence.
- 4) Visiting police station is optional. You can invite a police officer to come and talk in class.

Debriefing

Students design and hand out posters against violence. Students can also do a short video on bullying in school. Teacher can invite a police officer to talk in classroom if it not possible to visit a police station. Students can write post it notes with their thoughts on violence.

Follow-up/Inspiration for the future

Information in social media, school's webpage.

References/Further reading

<https://www.youtube.com/watch?v=IwN5pP0ayfg>

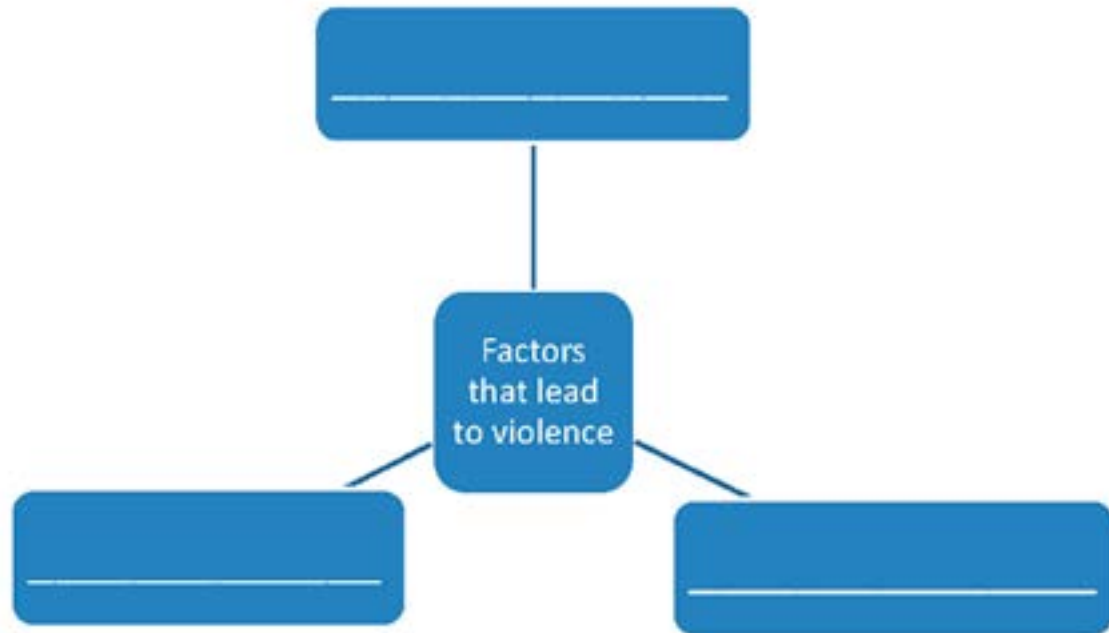
<https://www.pta.org/home/family-resources/safety/School-Safety/Checklist-to-Help-Prevent-Violence-in-Schools>

http://www.lapdonline.org/crime_prevention/content_basic_view/1360

- 1. Mind map "Factors that lead to violence"

Causes of Violence

Think of some of the factors that lead to violence and list them below.



Name _____

Safe Cities Create a Better Life

Stop the Violence in Your Community

For the first time in history, there are more people around the world living in cities than there are living in rural areas. While this global migration to urban areas is improving the living standards there are also many cons.

One of our biggest concerns is **VIOLENCE.**

Violence Comes in Many Forms

Every day the news is flooded with stories of different types of violence. On what seems like a daily basis, we're bombarded with relentless reports of violence .

It's easy to say we're against violence. But actively working to make the peace in our community is a little more difficult. It means we understand what violence is. And we know it when we see it. One thing is to be informed, find out what is out there, and get involved.

So how can we prevent violence and help our community become a safer place?

Settle arguments with words, not fists or weapons.

Learn and practice ways to keep arguments from becoming violent.

Report any crimes or suspicious actions to the police, school authorities, and parents.

Get involved to make school safer and better
(creates posters against violence and drug use)

Conclusion:

Violence is preventable. By learning how to stop it from an early age we become better citizens and we help our community become a better and safe living place.

LEARNING TOOL 2

Better places to live (urban action plans)

21st Century skills addressed

Character
 Citizenship
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Making possible the action of young citizens (schoolchildren and students) for the realization of better cities - Provide tools and methods of knowledge, critical thinking and creative thinking to make them protagonists of the requalification, transformation and urban regeneration necessary for the rebirth and modernization of cities
- Remove the obstacles that, due to their young age and lack of life experience, may hinder them in the recognition of their ideas and related visions of cities of the future, thus promoting the listening and enhancement of their proposals
- Enhance their creativity and confidence in new technologies for the development of new urban strategies

Activity details

Material

post it, A3 size sheets, pens, pencils and city maps.

If an adequate number of devices connected to the network (at least one for each group) are available for the students, the game can also be made in digital key with the simple use of Google Maps.

Duration

3 hours (if necessary, the game can be shortened by reducing the number of factors taken into account and the variables of the logical framework)

Group number

Maximum number of students per group: 5

Instruction

STEP 1 - PREPARATION

Once the ice has been broken with the class through a brief introduction to the sustainability of the urban environment in which one lives, the teacher/teacher will arrange the pupils in the most appropriate way for the activity to be carried out.

Form groups of up to 5 members. The size of each group will obviously depend on the number of students in the class: the optimal number will be 3-4 students per group. It is suggested to create groups composed with a random method, using a creative method that the teacher/teacher will propose involving the pupils (drawing from a deck of cards, drawing numbered tickets from any kind of box/bag, etc.). However, if there are students from outside the city in the class, it will be preferable that those from the same village can be included in the same group.

The teacher/teacher will propose at this point to the class divided into groups to analyse the factors of the game, articulated in:

10 “components” (the basis for the action, see Annex 1), numbered from 1 to 10.

10 “priorities” (the values, contexts, sectors or references that connote the components, see Annex 2) which will be indicated with the first 10 letters of the alphabet or with different colours.

In this way, combinations of components and priorities will be created and indicated in a matrix with the corresponding values, for example A1, B1, A2, B2 etc., which will form the logical framework on which each group can work, providing all their ability to design, with flair, imagination and practical sense.

Each group will discuss internally thinking about its own city/village and what it needs most to become beautiful and liveable, finally coming to formulate its own original logical framework (see example in Annex 3). The latter will be displayed in a table that the group will draw and fill out on an A3 sheet. The table will display horizontally (rows) the 4 components considered most important by the group and vertically (columns) the 4 priorities, understood as the urgencies to be met. In this way each group will develop logical frameworks reasonably different or very different from each other, according to the sensitivity and interests of its components.

Each group has at this point a logical framework, written on sheet A3, and a post-it block. To continue the work, it is time to open a map of the city, as detailed as possible, in the workspace of each group. It will be adapted from time to time according to whether it is a technical map, which allows the precise identification of places and spaces, or a tourist-descriptive map, where a summary identification of macro-zones will be possible. Alternatively, students will be able to use devices connected to the Internet and on which it is possible to consult Google Maps or Apple Maps.

STEP 2 - CREATIVE ELABORATION

Once the components and priorities to be tackled have been chosen, and inserted into the logical framework, the map of the city will help to identify the precise points on which to intervene with improvement actions to satisfy the intersection between components and priorities. A brief description of the “things to do”, those considered the most important, will find space in the post-it notes that will be pasted in the precise points found on the map of the city. It will be for example the transformation of an unused parking lot into an equipped park, the painting of the facade of a historic building long neglected, the maintenance of a water fountain, the purchase of new books for children in the municipal library, etc..

Each action description must be rubricated (analogy with naval battle) with:

- the number referring to the relative priority among the 4 selected;
- the letter referring to the relative component among the 4 selected;
- In the table thus created, the intersections between components and priorities give rise to 16 boxes, which could potentially correspond to 16 improvement actions. Each group is not asked to identify and describe 16 actions in as many post-it: the minimum creative effort required is 1-2 proposals from each member of the group, but it will be the teacher/teacher who will set the precise rules, also evaluating how much time to leave to the groups to reflect and elaborate their ideas. Among the actions proposed by each group there must be at least one action referring to each priority and each component.

STEP 3 - CHECK FOR RETURN

After having checked the proposed actions by re-reading the relevant descriptions in the post-it (with possible additions, corrections, replacements) and with respective alphanumeric signatures, each group will be ready to present the final result of its work, which will consist of

- the map accompanied by post-it notes containing the description of the actions with the relative alphanumeric signatures;
- the logical framework with the boxes filled with the relative alphanumeric signatures and indication of the actions with some keywords that make them recognizable;
- presentation of the proposed actions to the rest of the class, also trying to emphasize relationships and links between them.

Tips for the teacher

The teacher/teacher will participate for a few minutes in the activity of each group, providing some ideas both for the working method and for the choice of components and priorities from which the proposed actions should result. He will also support the groups, if necessary, in order to avoid that the descriptions given are too general, giving suggestions on how to circumscribe them with regard to both places and assumptions and motivations.

Knowing the urban context in which the pupils are acting, the teacher/teacher will take care to prepare some cases and examples of the 10 priorities and 10 components in advance of the activity.

The teacher/teacher will carry out a mediation work on the language during the activity in order to adapt the explanation of each concept to the greatest possible ease of understanding.

Debriefing

After the presentation to the class of their action plan, each group is called to express some comments on the plans of the others, according to an order defined by the teacher/teacher who will conclude the work by collecting the respective materials accompanied by the overall calculations of the number of actions for each priority and how many actions for each component. This will make it possible to find out how many reiterations/omissions of priorities or components have taken place and this data can offer some interpretative elements on what the dominant interests of the class are.

Follow-up/Inspiration for the future

The game can be repeated several times, in a properly planned time frame, for example forcing the groups (in case they remain the same) to modify the logical framework, choosing parameters all different the second time and partially different (2 out of 4) to the third edition. Likewise, the game lends itself to developing an attitude to the observation of urban issues in the most articulated dynamic problems/solutions or project/realization. This could be translated in the invitation to each student to collect in a diary a personal list of “components”, possibly accompanied by photographs of the places to which they refer or could refer. And again, the game is also suitable to leave the school to be proposed outside as a service to the community: a group of citizens, a neighborhood community, etc. also making mixed groups between citizens and students.

References/Further reading

- La città dei bambini e delle bambine (<http://www.cittabambini.it/wp/>)
- Ezio Manzini, Politiche del quotidiano
- Bruno Munari, Fotocronache (<https://www.abebooks.it/ricerca-libro/titolo/fotocronache-munari/>)
- www.loquis.com

Annex

Annex 1: 10 “components” (the bases for the action) numbered from 1 to 10

- 1 - obvious problems to solve
- 2 - ugly places or spaces to be eliminated or improved
- 3 - beautiful places or spaces to enhance
- 4 - abandoned places or spaces to be rehabilitated
- 5 - examples of good practice (from other cities) to imitate
- 6 - a person to be entrusted with a role to coordinate the rebirth of a space in the city
- 7 - an action of the highest symbolic value
- 8 - a place (of the heart?) to rediscover
- 9 - a new idea for the city
- 10 - a dream to accomplish

Annex 2: 10 “priorities” (the values, contexts, sectors or references to connote the components) indicated by the first 10 letters of the alphabet or by a color

- A (RED) - Beauty: monuments, exemplary creations, research of the highest quality
- B (YELLOW) - Health: nutrition education, healthy lifestyles, sport, prevention and care
- C (GREEN) - Ecology: protection of the environment and nature, combating pollution
- D (ORANGE) - Integration: acceptance and dialogue with diversity
- E (MAGENTA) - Learning: learning and/or teaching continuously
- F (BLUE) - Equity: equal opportunities, combating inequalities
- G (VIOLET) - Employment: widening job and employment opportunities for all
- H (BLUE) - Economy: economic development, pursuit of prosperity, distribution and redistribution of wealth
- I (BROWN) - Society: guarantees, protections and assistance for families and individuals: kindergartens, schools, training, care, pensions, social shock absorbers, disabilities, etc.
- L (PORPORA) - Culture: cultural assets and their enhancement, cultural productions in different sectors

Annex 3: Example of a logical framework

	D abandoned places to rehabilitate	E examples to imitate	H a place (of the heart?) to rediscover	K a new idea for the city
1 beauty				K.1 A theme park with the ruins of a former furnace
5 learning	D.5 An unused municipal building to be used as a new kindergarten			
7 job		E.7 Cities that offer socially useful jobs to young people who have completed compulsory schooling but no longer work or study.		
10 culture			H.10 A historic city palace to be assigned to the activities of a cultural association	

LEARNING TOOL 3

Sustainable food production - the vegetable garden, horizontal and vertical

21st century skills addressed

Communication

Collaboration

Creativity

Objectives

With this tool, students are expected to:

- Become aware of why there is a need for cultivating your own vegetables
- Acquire knowledge of the important conditions of vegetable cultivation
- Learn to collaborate and brainstorm on different possibilities to cultivate vegetables in and around their own home
- Draw sketches of vegetable gardens and communicate new knowledge of how to cultivate vegetables vertically and horizontally

Activity details

6 lessons (45 min.)

6th grade (11-12 years)

Materials: a stopwatch

Instructions

Warm up/introduction (Lesson 1 and 2)

The students will watch the short movie-clip (<https://youtu.be/xyCRY70WrPE>) as a “silent movie”. This will be an introduction to city gardens and the need for more vegetable gardens.

Afterwards the teacher will facilitate a conversation around the questions “Why is it important to produce more vegetables yourself?” and “What does a plant need to grow?”.

The teacher introduces the term “vegetable garden” to the students and give them some time for brainstorming on how to cultivate vegetables vertically. The teacher will show some pictures on the smartboard/blackboard.

Drawing of a sketch

The students draw a sketch of their own home on paper (building and surroundings: apartment, balcony, house, garden, yard etc.).

The idea phase (Lesson 3)

The students will present and explain their drawings, as well as exchange ideas on how it is possible to cultivate a vegetable garden based on their sketches. The teacher will use a structure called inside/outside Circle. It will be done on time; 2 minutes to present the sketches, 2 minutes to brainstorm new ideas and 2 minutes to write down/draw the new ideas. After the first presentation, the circle of students rotate 3 times, so the students end up in front of a new person. Once again, the two students will exchange ideas on how to cultivate both vertically and horizontally based on each other’s sketches. The rotation of the circle should be repeated 3 times. Finally, the students will end up in front of the person, whom they are going to collaborate with in the next lessons.

Construction/production (Lesson 4-lesson 5)

The students will work in pairs and create and design a sustainable vegetable garden for a townhouse, which will be based on their ideas from the previous lesson. The teacher will encourage the students to use both vertical and horizontal areas. The product is a mood board/illustration with drawings, pictures of constructions and beds for cultivation of a vegetable garden as well as an overview of the desired vegetables.

Evaluation (Lesson 6)

The presentation of the projects will take place in double circles (inside/outside Circle). The students will present and display their mood boards/illustrations on time (2 minutes for each group) and give feedback before the circle rotates. They repeat the presentation 3 times. In that way, they will have the chance to improve their presentation as well as witness 3 different presentations. The following document can be used for feedback: two stars and one wish.docx

Tips for the teacher

- 1) Vertical garden: do an image search on vertical gardens.
Video about vertical gardening: https://youtu.be/3Ww2TP_tU7o

Debriefing

The mood boards/illustrations can be exhibited.

Follow-up/Inspiration for the future

- If a math teacher is linked to the course, it would make sense to draw a correct plan drawing.
- They can expand their sketches by making a physical 3D-model of it, using card board boxes or an online 3D-program like Tinkercad or SketchUp.
- Instead of physical mood boards, it is possible to use Padlet (<https://padlet.com/>) to create an interactive mood board.

References/Further reading

Vertical garden <https://astra.dk/tildinundervisning/lodrette-haver-engeineering-udfordringen>

Annex

The annexes are integrated as links in the description above.

LEARNING TOOL 4

Air quality

21st Century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Understand the importance of air quality
- Develop solutions for improving air quality
- Self-regulate in social behaviour
- Learn from others and contribute to other people's learning
- Raise innovative ideas and non-traditional solutions
- Apply critical thinking and problem solving to evaluate different sources of information and arguments relevant to SDG11
- Respond positively towards achieving SDG11

Activity details

Material – see annex

Duration – 2 h 10 min

Group number 15-20 students (5TH grade, age 10-11)

Instructions

Lesson one (40 min)

1. Students answer questions about air pollution and air quality. Some of the questions are:
 - What are the most common air pollutants?
 - Who is suffering the consequences of pollution?
 - How can we improve the quality of the air?
 - How does the quality of the air affect our health?
2. Students take a quiz (see annex)
3. Students discuss their answers.

Lesson two (1 hour 30 min)

4. Students learn about air quality index. (see annex) Students learn to :
 - define air quality index
 - describe how the air quality index is determined
 - identify ways to help improve the air quality index
5. Students do an online search Real-time air quality index visual map and compare between different cities in their country (link in references)
6. Students create air quality awareness posters.

Tips for the teacher

- 1) Teacher asks questions and tries to ask as many students as possible possible.
- 2) Teacher gives quiz sheets and invites students to discuss and compare answers.
- 3) Teacher introduces the lesson about air quality index.
- 4) Teacher helps students create awareness posters.

Debriefing

Students design and hand out awareness posters. Students can also conduct a survey out of school about the air quality in their city or do a research on local factories and how they affect the air.

Follow-up/Inspiration for the future

Information in social media, school's webpage.

References/Further reading

<http://aqicn.org/map/macedonia/>

1. Quiz "Air pollution"



Read the statements down below, than circle the answer you believe is correct.

1. **The use of deodorants and other sprays does not pollute air.**
TRUE FALSE
2. **Gas-powered vehicles pollute air less than oil-powered vehicles.**
TRUE FALSE
3. **Air pollution is only a problem in big cities.**
TRUE FALSE
4. **When the air is polluted, you can always see and smell it.**
TRUE FALSE
5. **Air quality has improved over the past 30 years.**
TRUE FALSE
6. **Bus transportation contributes to less pollution than transport by car.**
TRUE FALSE
7. **Pollution is changing the natural cycle of earth.**
TRUE FALSE
8. **Clean air is the responsibility of industry alone.**
TRUE FALSE
9. **Factory smoke pollutes the air but does not pollute the soil.**
TRUE FALSE
10. **People die because of pollution each year.**
TRUE FALSE

Name _____

2. Lesson “Air Quality Index”

Air Quality Index (AQI)

The AQI is an index for reporting daily air quality. It tells you how clean or polluted your air is, and what associated health effects might be a concern for you. The AQI focuses on health effects you may experience within a few hours or days after breathing polluted air.

How Does the AQI Work?

Think of the AQI as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 represents good air quality with little potential to affect public health, while an AQI value over 300 represents hazardous air quality.

An AQI value of 100 generally corresponds to the national air quality standard for the pollutant, which is the level EPA has set to protect public health. AQI values below 100 are generally thought of as satisfactory. When AQI values are above 100, air quality is considered to be unhealthy—at first for certain sensitive groups of people, then for everyone as AQI values get higher.

Understanding the AQI

The purpose of the AQI is to help you understand what local air quality means to your health. To make it easier to understand, the AQI is divided into six categories.

Each category corresponds to a different level of health concern. The six levels of health concern and what they mean are:

“Good” AQI is 0 to 50. Air quality is considered satisfactory, and air pollution poses little or no risk.

“Moderate” AQI is 51 to 100. Air quality is acceptable, however, for some pollutants there may be a moderate health concern for a very small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.

“Unhealthy for Sensitive Groups” AQI is 101 to 150. Although general public is not likely to be affected at this AQI range, people with lung disease, older adults and children are at a greater risk from exposure to ozone, whereas persons with heart and lung disease, older adults and children are at greater risk from the presence of particles in the air.

2. Lesson “Air Quality Index”

Ways to Improve Air Quality in Our Cities

1. Renewable fuel and clean energy production

The most basic solution for air pollution is to move away from fossil fuels, replacing them with alternative energies like solar, wind and geothermal.

2. More space for bicycles and public transport.

Alternative mobility patterns can also stem threats posed by air pollution and climate change. Many communities are investing more in public transport and bike lanes. Especially in big cities, e-bikes are good alternatives to private cars.

3. Greening the city

Plants also help improving a city's air quality. They convert carbon dioxide into oxygen, filter particulates out of the air and help to cool down cities subject to the “urban heat island” effect. Parks, green belts and green roofs are very important for a city's climate.

4. Energy conservation and efficiency

Producing clean energy is crucial. But equally important is to reduce our consumption of energy by adopting responsible habits and using more efficient devices.

LEARNING TOOL 5

Ecology means sustainability

21st Century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

The proposed activity foresees an educational-didactic path addressed to pupils of classes I - II - III of the Italian Secondary School. In terms of age, the target group is therefore students from 11 to 13 years of age.

With this tool, students are expected to:

- Become motivated to regulate their own way of behaving, both at school and in their living environment, assuming correct and responsible behaviour towards themselves and the environment, with a particular emphasis on the city or country in which they live
- Learn how to recognise the cause-effect links between their actions and the surrounding environment which in fact is an essential element in training young people who are responsible and sensitive to the issue of sustainability
- Become aware that they are part of the environment in which they live
- Recognise situations of environmental degradation of their city and feel the need for requalification
- Understand the need to behave in a way that protects and defends the surrounding environment
- Adopt the concept that public goods belong to everyone, including his own, and must therefore be safeguarded and treated with respect
- Understand the importance and necessity of separate waste collection
- Develop cognitive, evaluation, decision-making and initiative skills

Activity details

Materials: classroom equipped with interactive whiteboard, basic stationery (recovery sheets, pens, pencils, highlighters, etc.); digital devices able to take pictures, better if smartphone or tablet (possibly one for each student)

Duration: 2 hours (if necessary, the game can be shortened by reducing the time spent on the return phase)

Group number: groups with maximum 4 students each group

Instructions

STEP 1

- The first phase will last 5-10 minutes and can then be placed at the end of a lesson dedicated to another topic. The teacher/teacher will use this short time to announce to the pupils, without giving too many explanations and thus feeding their curiosity, that for the next lesson they will have to take some pictures (with smartphone, tablet or digital camera) of the place where they usually spend their free time with friends (public park, equipped playground, outdoor sports field, etc.). The photos - the teacher/teacher will explain - should be taken with the aim of portraying not the "panorama", as if they were postcards, but the details of the area concerned, such as the pavement, any fences, waste bins, sports facilities, children's games, etc.. The electronic devices with the photos recorded inside should be brought to school in the next lesson.

STEP 2

- In the next lesson, entirely dedicated to the realization of the activity, the teacher/teacher will first of all acquire as many photos as possible taken by the students, through bluetooth connection, sending by e-mail, sharing with the class computer or other means. The photographic materials collected in this way will be projected on the interactive whiteboard so that everyone can see them and comment with the class on the feeling of functionality and cleanliness, or dirtiness and neglect, transmitted by the photos.

The teacher/teacher will lead the debate by stimulating students to reflect on the importance of good maintenance and cleanliness of the spaces in which they spend their free time, as far as both game aims are achieved and dangers deriving from unhealthy places are avoided: a degraded place is not only dangerous, but also attracts further degradation and discourages the presence of other children/youngsters and other families.

This part of the photo projection and general discussion will take no more than 20 minutes.

- Pupils are then invited to form small groups, which the teacher/teacher will take care to shape according to the need to avoid that students attending the same place of youth aggregation are part of the same group. Therefore, a logic as random as possible will be privileged, in order to force the members of a group to reflect as “external observers” on the situation of a given place examined by each colleague of the same group.

The task that the teacher/teacher will assign at this point to the various groups consists in:

- a) analysing in detail the photos of the places portrayed by each member;
- b) noting on any sheet of paper the weaknesses that prevent a pleasant and safe use;
- c) briefly describing the cleaning/requalification/maintenance interventions that in the opinion of the groups would be necessary to make those spaces more pleasant, clean, safe, usable.

- Once the work of the groups has been completed, the sheets of paper with the reports and suggestions to improve the usability of the places of aggregation analysed will be photocopied (or photographed by the students with their devices), so that one copy will remain in the possession of the respective groups and the other will be given to the teacher/teacher. The teacher/teacher will arrange them through simple computer presentations (supports such as Power Point, Prezi, Mentimeter or even a simple scan of the sheets produced by the groups can be used, as long as they are sufficiently clear and legible).

- In phase 3 (debriefing, see below) the groups will return to the class.

Tips for the teacher

- The teacher/teacher will participate for a few minutes in the activity of each group, providing some ideas both for the working method and for the choice of the cleaning/maintenance interventions to be proposed in order to make the aggregation spaces more pleasant. As far as possible, the teacher/teacher will then try to direct the students’ choices towards interventions of limited scope, which do not involve significant investments or changes in the urban planning of the cities/villages.

- If one or more students report that they cannot have digital tools to photograph the places where they usually are with friends, the teacher/teacher will propose to join other students who have them and, if possible, attend the same places. To carry out the activity it is sufficient that at least part of the class can make photographic reportages on which to discuss within the groups.

Debriefing

In turn, each group will present to the class its critical reflections on the place under consideration and explain the improvement proposals made. The teacher/teacher will lead the debate and allow the other groups to make constructive observations, making the proposals even more credible and pleasant.

The best ideas, evaluated in this way at the teacher/teacher’s unquestionable judgement, will be conveyed to the outside through the communication channels of the school and the 21C-SDG project, with the aim of bringing them to the tables of the local administrations able to intervene in the most appropriate way.

Follow-up/Inspiration for the future

The activity, if effectively carried out and with the convinced participation of the class, is able to generate positive effects not only on the overall growth of transversal skills of students, but also on the role of the school in the social fabric of the city, stimulating the adoption of improvements that would benefit the community.

Annex

N/A

LEARNING TOOL 6

Sustainable cities and communities: think to act!

21st Century skills addressed

Citizenship
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Develop and apply critical thinking skills
- Use creativity and imagination to find solutions for sustainable urbanisation
- Learn how to work in team and cooperate for achieving SDG11
- Showcase genuine interests and abilities to solve complex real-world problems that affect sustainability
- Work goal-directed towards green development

Activity details

Material: UNESCO SDG11 infographic (annex 1), projector, YouTube videos (references 2, 3, and 4), smartphones, online collaborative mural (ex. Padlet, Annex 3)

Duration: 4 activities approximately 50 minutes each

Group number: 20-30 students

Instructions

Activity 1

- Thinking about sustainable cities and communities. Why does it matter?
- The theme introduction is done by presenting and discussion the UNESCO infographic about SDG 11 (Annex 1) or/and UN videos (suggested on the reference list or other in their mother language) about sustainable cities and communities (teachers can choose video or the image according to the children age).

Tasks:

- Each child will test their ecological footprint, share, and discuss the results (<https://www.footprintcalculator.org/>);
- In group, children will think about their cities and/or communities, and list some situations that favor, as well as factors that prevent it from being more inclusive, resilient, safe and sustainable.

Activity 2 – Thinking about the home-to-school travel. How to make it more sustainable?

- Each child will search their home location on Google map and record the distance, the transportation means and the time it takes from home to school (Annex 2);
- In groups, children will compare their notes and make a simple graphic with the collected data (total distance, transportation means, and time spent on travels)
- Teacher will talk about and discuss the environmental impact of the different transportation methods (e.g. reference 6);
- Children will review their graphics and list measures to reduce the environmental impact of their home-to-school travels and increase life quality.

Activity 3 - Thinking about school, home and leisure activities. How to make them more sustainable?

- Children will test their knowledge about lifestyle and sustainability (reference 7);
- Each group will talk about their daily habits and the places they visit frequently, and then answer 3 questions (is that safe? Is that clean? Is that eco-friendly?);
- Teacher will list the places and discuss the answers of the entire classroom; Teacher will challenge the students to deep search about real-world problems which affect sustainability and possible solutions.

Activity 4 – Acting. How to make our community and city more sustainable?

- In groups, children will produce small videos, city model photos or infographics to present their research results and the SDG11 activities developed on a Classroom Padlet (Annex 3);
- Dissemination activities will be carried out with the involvement of the entire school community.

Tips for the teacher

- 1) Make sure every child can participate on the activities and be listened
- 2) You can choose the language for the ecological footprint test
- 3) Guide the discussion and provide supplementary research material if needed
- 4) If possible, invite community member to talk about particular topics (energy, green areas, safety, environment, ...)
- 5) Encourage students to think beyond the presented situation and time/location.

Debriefing

At the end of each class, the teacher asks for pupils' feedback on what they have learnt.

Pupils are to hand a final self-assessment report mentioning commitment in the tasks, and a comment on the impact the content of these classes have had on them.

Follow-up/Inspiration for the future

1. Images and videos can be available at social media and school site
2. Infographics can be displayed on classroom walls and schools' common areas

References/Further reading

- 1 - https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/07/11_Why-It-Matters-2020.pdf)
- 2 - <https://youtu.be/Qky8NVaAfk8>
- 3 - <https://youtu.be/NVz1thUnMLk>
- 4 - <https://www.youtube.com/watch?v=kBcxLLNajWM>
- 5 - <https://www.footprintcalculator.org/>
- 6 - <https://greenliving.lovetoknow.com/low-impact-living/what-are-most-earth-friendly-transportation-methods>
- 7 - <https://www.nationalgeographic.com/environment/global-warming/green-lifestyle-quiz/>

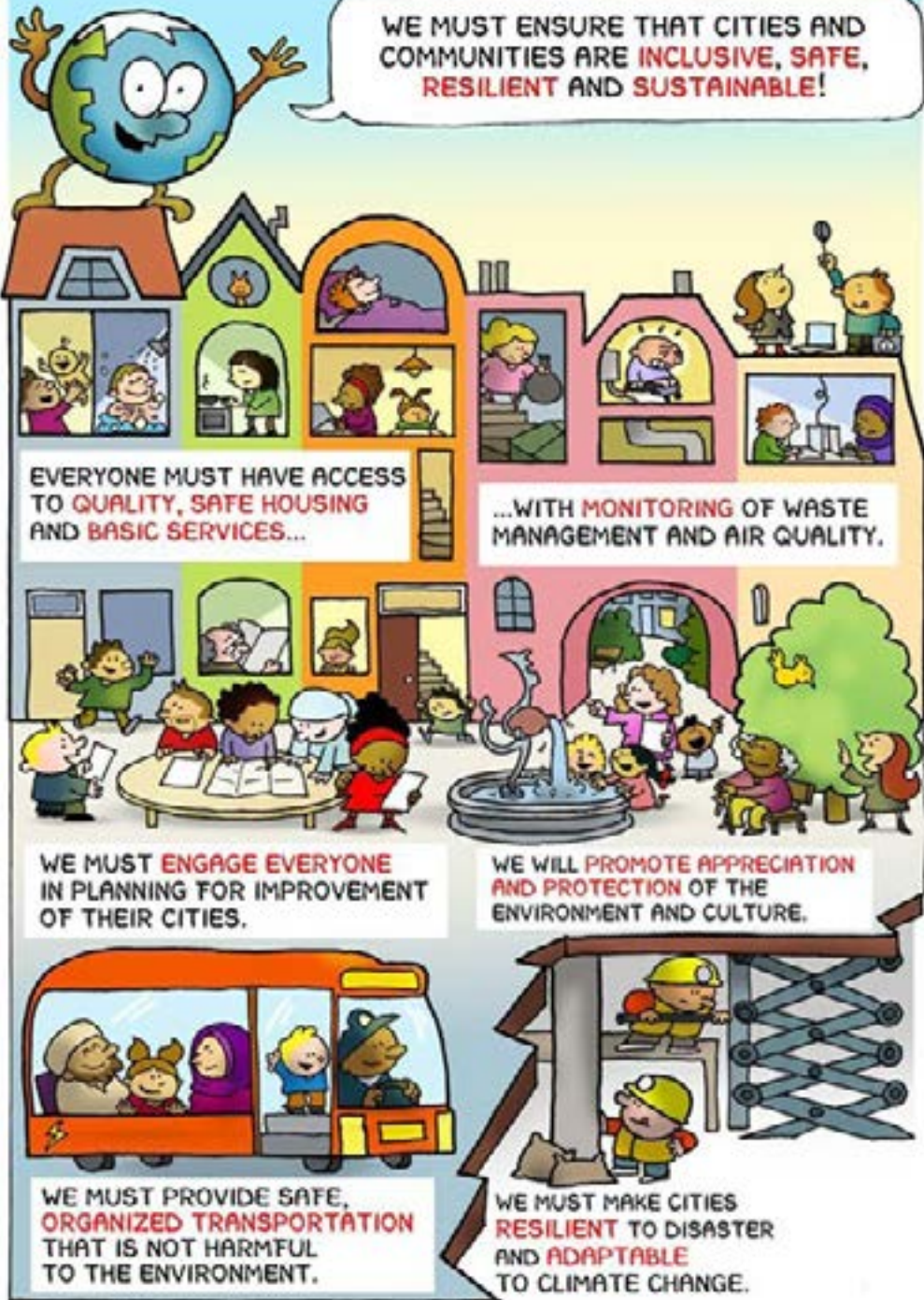


GOAL 11: SUSTAINABLE CITIES AND COMMUNITIES

BY: MARGREET DE HEER



WE MUST ENSURE THAT CITIES AND COMMUNITIES ARE **INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE!**



EVERYONE MUST HAVE ACCESS TO **QUALITY, SAFE HOUSING AND BASIC SERVICES...**

...WITH **MONITORING OF WASTE MANAGEMENT AND AIR QUALITY.**

WE MUST **ENGAGE EVERYONE** IN PLANNING FOR IMPROVEMENT OF THEIR CITIES.

WE WILL **PROMOTE APPRECIATION AND PROTECTION** OF THE ENVIRONMENT AND CULTURE.

WE MUST PROVIDE **SAFE, ORGANIZED TRANSPORTATION** THAT IS NOT HARMFUL TO THE ENVIRONMENT.

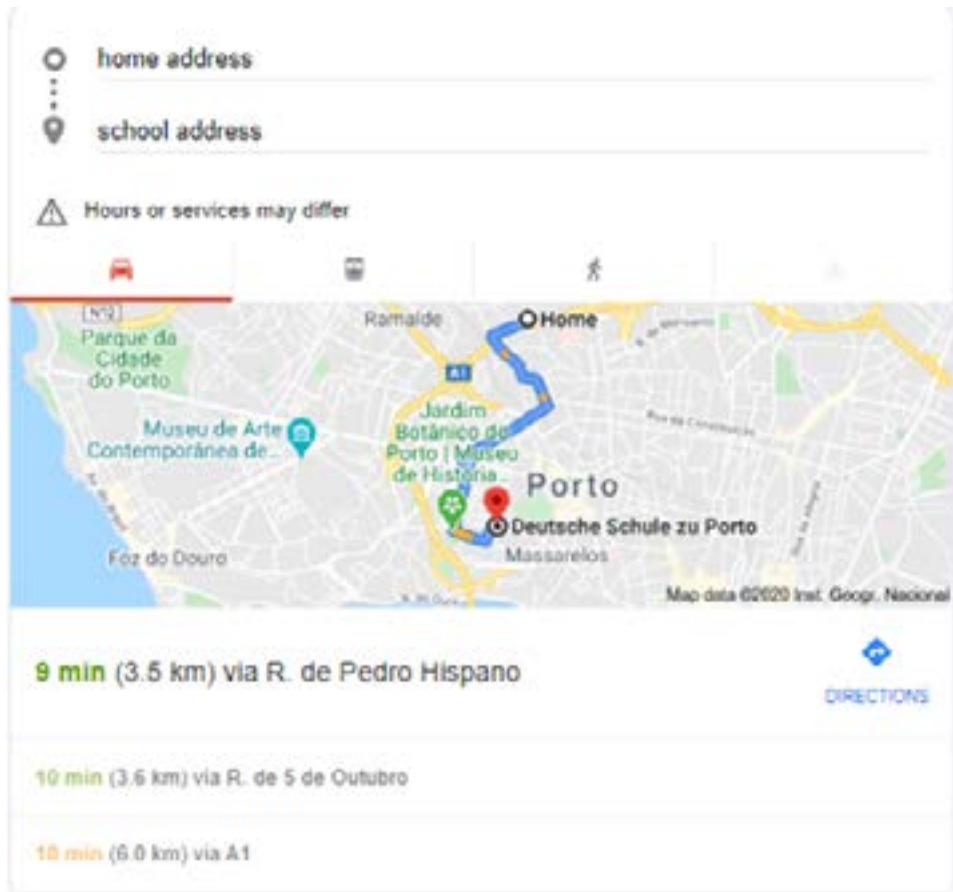
WE MUST MAKE CITIES **RESILIENT TO DISASTER AND ADAPTABLE** TO CLIMATE CHANGE.

Annex

Annex 1 | Activity 1. Sustainable cities and communities

Source: https://c15a759148e3465cc1e0-b5c37212e1d32204235caf5298e9144a.ssl.cf5.rackcdn.com/2016/06/A-To-Do-List-for-the-Planet_Page_12_Image_00011.jpg

Annex 2 | Activity 2. Google search sample



Annex 3 | Activity 4. Padlet sample



GOOD PRACTICE

BUNET Bike's Urban NETwork Torino

Description (max. 5 lines):

Among the numerous initiatives of the City of Turin to promote the use of the bike, the one perhaps more long-lived and most successful is BUNET, acronym that forms a word that in the Piedmontese language refers to a delicious cake with chocolate and macaroons.

In terms of sustainability, Bunet is instead a real “navigator”, that allows the citizens to plan their journeys by bike, taking into account three parameters: safety (choice of cycle paths, streets with little traffic, unique senses, Zone30), speed and altitude. The service is available from all mobile devices (Android, iOS and Windows) and can be used both by those who have their own bike and those who use the city bike-sharing service. The app is also available in English and French, therefore allowing an easy use by foreign tourists too.

Link to website: <https://www.bunet.torino.it/>

Country and location: Turin, Piedmont (Italy)

Actors/partners:

Municipality of Turin

5T - Telematics Technologies Transport Traffic Turin (private company)

Objectives:

Reducing vehicular traffic in an urban environment

Reducing environmental and noise pollution

Combining mobility needs and physical activity to promote a healthy lifestyle

Ensuring innovative forms of sustainable tourism

Results:

The project, active since 2014, has given excellent results. Turin, the Italian city of the automobile, was considered a city potentially dangerous for bikers, mainly because of the intense and fast vehicular traffic in the numerous treed alleys of great flow.

Thanks to this and other projects in recent years, the bicycle has become part of the culture and mobility habits of Turin citizens, who currently make a massive use of it in safer conditions.

Why is it considered a good practice? (max. 8 lines):

The Bunet app is connected to the bike sharing service [TO]BIKE of the City of Turin and allows you to know in real time the data on availability and location of bicycles.

The service has been developed using Open Source technologies (in particular Open StreetMap and Open TripPlanner) and has therefore involved a fairly low financial investment, against which goals of great value have already been achieved. Bunet represents a simple but brilliant idea.

Elements of replicability in other contexts (max. 5 lines):

Bunet represents an easily replicable model, at low cost, in every urban centre large or small. The conformation of the territory, with more or less marked differences in height, obviously affects the possibility of using classic bikes. The app, however, has features that make it an element of great use even if the means of transport is an electric bicycle or scooter.

RESPONSIBLE CONSUMPTION AND PRODUCTION (SDG12) AND THE ACQUISITION OF 21ST CENTURY SKILLS

Introduction

Overall Aim of Sustainable Development Goal 12

Introduction of responsible consumption and production is of a particular importance for practical and day-to-day implementation of the goals of sustainable development. Sustainable living is a lifestyle that aims to reduce the use of the individual and society's natural and personal resources. By applying or modifying the methods of transport, energy consumption and nutrition, carbon dioxide emissions are reduced. Achieving responsible production and consumption enables environmental, social and economic needs to be met without compromising these factors for future generations. In fact, this philosophy is based on the principle of "intergenerational equality". If this principle is not respected, then the environmental damage done today, passes into the future.

Sustainable development and design are key factors for sustainable living. Sustainable development refers to the development of appropriate technology that is a key element of sustainable life practices. In return is the use of these technologies in the infrastructure.

The concept of responsible consumption and production is aimed at preserving natural ecosystems and its natural wealth, while raising environmental quality and overall the quality of life. It means that man would use nature as much as its renewal allows, and will protect it from degradation. The point is that it provides the opportunity for further advancement of civilization, with moderate consumption of resources and space. Responsible production and consumption should be trade-off for the destructive effects of human activities.

Given the constraints of space and resources, the idea of giving up the need to abandon constant emphasis on production to meet new needs, that is, the idea of slowing down, and, at some point, stopping economic development to protect the environment, quality of life, and generally because of people themselves, is spreading. The change in the way people consume is one of the most important principles. Through responsible consumption, resources are used only to satisfy basic human needs and necessities, not for luxury.

This process can be achieved gradually, through the development of environmental awareness, by increasing the accountability of state institutions, by properly revising the existing economic and legal system, by increasing the involvement of science, society organizations and educational institutions for solving current environmental problems.

Why is it important for educational community?

A well-educated person is much more than simple ability to reproduce facts and data. What the teachers and educators are supposed to strive for is to equip their students with the necessary skills of the 21 Century in order to enable them to contribute and develop as active members of the society and to inspire them to make positive changes. Hence, the need to invest in the improvement of the education formal or nonformal. Introducing the goals of sustainable development since young age through interactive, didactical approach will help build future generations aware of the problems and challenges that they will face and provide them the skills to overcome them. Introducing the Eco Standards and paying more attention to sustainable development in the curriculum of all teachers, regardless the subject they teach in the last four- five years now has brought about positive changes in the eco mindset of our students and our society as well. This has helped to build a new generation of youngsters aware of the global problems of the 21 century such as global warming, greenhouse effect, destruction of the ozone layer, renewable resources, pollution, sustainable development etc. It is by encouraging students through various activities in the educational process that the students are introduced with the ways and importance of responsible consumption and production and thus acquire knowledge and skills for effective usage of natural resources. Just as it is widely accepted that children should be introduced to sports, music or languages early in their life if they are to develop a high proficiency it is equally as important to be introduced to the goals of sustainable development and responsible consumption and production respectively. If are to have a responsible well educated adult member of our communities and society in general we must start shaping that person and developing it starting since preschool and primary school via creative ways of teaching, introducing modern communication, innovative approaches and bearing in mind the development of the six important 21 century skills (character, citizenship, collaboration and teamwork, communication, critical thinking and problem solving and creativity and imagination.

The key dimensions covered by the goal of “Responsible consumption and production” are sustainable use of energy, food, water, as well as proper use of waste and their environmentally friendly disposal.

1. Sustainable use of energy

Energy is used on a daily basis in schools, at home, at work and even during recreation. Efficient use of energy is one of the simplest ways to reduce environmental pollution. Saving it also helps save world resources such as natural gas, oil, water, and thus helps save money on daily bills. Conscientious use of energy reduces air and water pollution, making the environment a better place for living.

The term energy efficiency is associated with two possible meanings. One refers to appliances and the other refers to measures. An energy efficient appliance is a device that has a high degree of beneficial effect, it has a small loss of energy in the process of transforming one type of energy to another. Measures taken to reduce energy consumption, whether technical or else, are high in all respects. In the future, we need to be more responsive to: replacing non-renewable fuels with renewables; placing insulation in a room that is heated or cooled; installation of measuring and control devices; control of the amount of sunlight entering the premises, etc. Energy is of utmost importance for the growth and development of all mankind and should, therefore, be used rationally.

2. Sustainable use of food

Globally, foodstuffs represent 48% and 70% of the environmental impacts, on land and water resources, respectively; consumption of meat, dairy products, and processed foods increases rapidly with income. Industrial agriculture production is a major source of raw materials and it is energy intensive. Industrial agriculture systems usually require extensive application of irrigation systems, extensive pesticide and fertilizer application, intensive tillage, concentrated production, etc. The results of these industrial agricultural stresses are: water mass depletion, chemical leakage, soil erosion, land degradation, loss of biodiversity and other environmental problems. On the other hand, significant carbon dioxide emissions that disrupt the climate are driven by long-haul food transport. A sustainable food acquisition tool is buying locally and seasonally. Buying food from local farmers reduces carbon production and stimulates local economy. Seasonal food production does not require energy intensive production in greenhouses, extensive irrigation, plastic packaging, import of non-regional foods, etc. On the other hand, local products are usually fresher, unprocessed and claimed to be more nutritious.

3. Sustainable water consumption

Another factor for sustainable living includes water consumption and usage since the one thing that no one can live without is water. Its sustainable consumption has broader implications on humanity. At the moment people are using one quarter of the total fresh drinking water on The Earth in natural circulation. Population and demand of water are in constant increase. On the other hand, lack of safe and pure water causes millions of death cases each year. Currently in the world, a total of 748 million of people do not have access to safe drinking water.

Because of this, we should implement sustainable water consumption through series of simple everyday measurements. These include looking into the efficiency of the domestic appliances and gadgets in our homes and school, careful water consumption in the open and awareness of daily water consumption.

4. Proper usage of waste and their ecological disposal

With the increase of world population and abundance the consumption of different materials in number, diversity and transport have also increased. It has been estimated that by 2050 humanity may consume 140 billion tons of minerals, mines, fossil fuels and biomass per year (three times more than now) unless the rate of economy growth decreases in reference to the rate of natural resources consumption.

The effective consumption of resources can be achieved by implementation of recycling, materials which can be recycled and reused, locally available materials, materials which use production of resources and durable material as much as possible. Dematerialization is supported by the ideas of industrial ecology, eco-design and usage of ecological labels. Apart from the well-known “reduce, reuse and recycle” the consumers use their purchase power for ethic consumption. People are the only creatures on our planet that produce waste. We produce 2.12 billion tons of waste every year. If we load this waste in trucks and drive one after the other, we can circle the planet 24 times. The basic rules of waste management include the so called “three R principle”- REDUCE, REUSE, RECYCLE. What we propose is to teach the students the meaning of this principle and to implement simple activities in this respect such as: learn how to decrease the usage of materials that create a great deal of waste, show them how in a creative way they can reuse a waste material and create something new, beautiful, different and useful and teach them about the importance of recycling. What we believe could be beneficial for all on the long run is to provide the teachers and educators with significant amount of materials and resources which they can use in their curriculum and afterschool activities and encourage them to implement the sustainable development goals in their educational process.

The interplay between Sustainable Development Goal X and the acquisition of 21st century skills

The so-called new generation or the “Z” generation are young people born after the year 1997. Some of the characteristics about them are the fact they are pragmatical, focused on saving, reducing, mobile literate, preferred sense of originality and usage of the social media networks such as Snapchat and Instagram. The statistics show that 98% of them possess smart phones; 92% have left digital trace; 50% use The Internet more than 10 hours a day, 70% of them watch YouTube more than two hours a day ,40% of them show phone addiction, 80% feel stress when apart with their electronic device. Therefore, facing with these facts before us, we are left with nothing but to adapt to these new changes and use them in a more practical way. Furthermore, by using the tools of the 21 century we should aim to bring the importance or responsible consumption and production closer to our students. Having in mind that our students’ focus of attention is on the new tools the module itself will use them. Via research, power point presentations, case study, video preparation, analysis our students will get to know the key elements of responsible consumption and production and followed by practical implementation.

LEARNING TOOL 1

Safe Waste Reuse as an Efficient Teaching Resource

21st Century skills addressed

Character
 Citizenship
 Collaboration and Teamwork
 Communication
 Critical Thinking and Problem Solving
 Creativity and Imagination

Objectives

With this tool, students are expected to:

- Learn how to use and produce in sustainable ways
- Explore global problems (using deep understanding and different values and worldviews)
- Learn creative ways to use materials more than once in their original form instead of throwing them away after each use
- Work goal-directed
- Learn which materials can be recycled
- Learn about the “three R’s”
- Improve cooperation and presentation skills
- Be able to make smart and informed decisions
- Respond positively towards achieving SDG12
- Get inspired by different examples of good practices regarding SDG12
- Share openly their opinions and beliefs in class

Activity details

Material - see annex

Duration – 2 hours

Group number – 3-4 groups, 5 students each (5TH grade, age 10-11)

Instructions

What can we do to solve the problem/situation?

Lesson one (1 hour)

1. Students in groups create a mind map with the products they use on a daily basis and their packaging.

2. Students develop a chart: Things that are recyclable and things that are non-recyclable
3. Students study the “The three R’s” (reduce, reuse, recycle)
4. Students discuss ways to reduce waste and ways to reuse old packaging and brainstorm ideas how these materials can be used in the classroom.

Lesson two (1 hour)

5. Students create a text composition with the ideas to reuse products and materials needed for the project
6. Students carry out the project
 - Collect recyclable materials
 - Recreate things that can be used in the class room
 - Make a presentation with the facts and how the final product was made.

Tips for the teacher

What do we know about the problem/situation? What do we need to know? How can we know it? How can we organize our study?

1. The teacher divides students into small groups and gets students involved in discussion of the products that are mostly used on daily basis.
2. The teacher encourages students to think of:
 - What products they use mostly?
 - Which of those things are recyclable and which are non- recyclable?
 - What is the meaning of “The three R’s”?
 - What is the impact of recycling on the environment?
3. The teacher explains the meaning of “The three R’s” and talks about rethinking which products to buy.
4. Students come to conclusion:
 - what products are mostly used and which of them can be reused more than once
 - how recycling is good on the environment
 - how people can reuse old materials in the classroom.
5. Teacher invites students to share their ideas of the products they want to create and the materials they will use
6. Teacher encourages students to explain the process of creating their projects.



Debriefing

The annex includes mind map, a worksheet and example of a presentation tutorial on how the product was made. Students can also make a video with an instruction tutorial. Students can create a questioner about safe waste reuse and conduct a survey outside of school.

Name _____

RECYCLING SORT

Think about things that can be recyclable and things that are not.
List them down below.

Recycling 	Trash 

Follow-up/Inspiration for the future

How the outputs will be present?

- Presentation with the findings and ideas how to reuse products in classroom.
- Tutorial presentation with photos and instructions on how to reuse products in the classroom.
- Information in social media

References/Further reading

<https://greencoast.org/3rs-of-waste-management/>

<https://www.wildlifehc.org/an-introduction-to-the-three-rs-of-sustainability/>

<https://www.theworldcounts.com/stories/Recycle-Facts-for-Kids>

<https://www.youtube.com/watch?v=vNyv4fGRO5o>

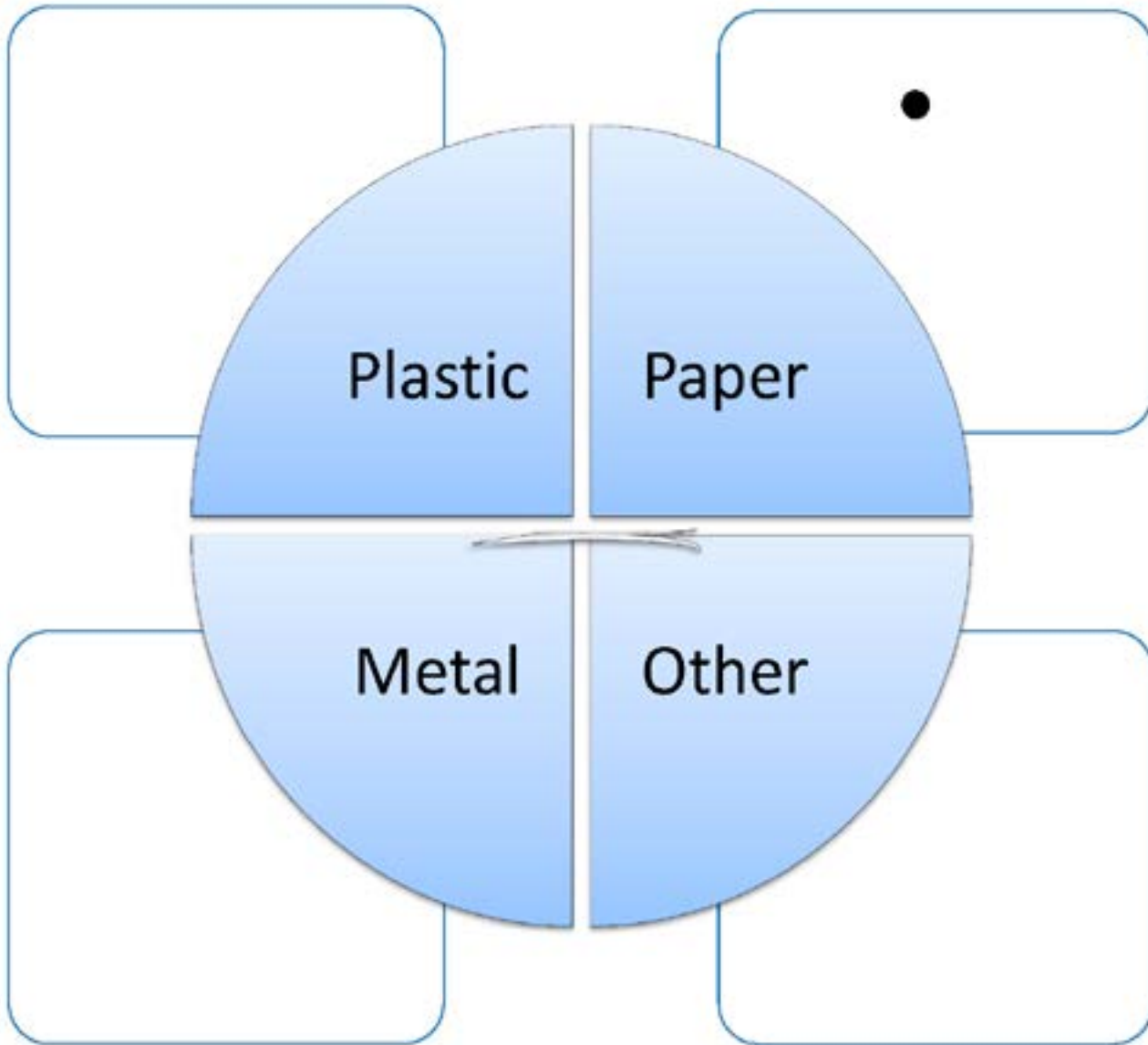
<https://www.youtube.com/watch?v=7UuUeoyYmxI>

<https://www.conserve-energy-future.com/reduce-reuse-recycle.php>

Annex

1. Chart

Products we use everyday



Annex

2. Mind Map

3. Presentation

THE THREE R'S

REDUCE, REUSE, RECYCLE



What exactly is "waste?"

Waste is anything we throw away or get rid of, that doesn't get used

HOW CAN YOU HELP?

You can help by learning about and practicing the three R's of waste management: **Reduce, reuse, and recycle!** Practicing all three of these activities every day is not only important for a healthy environment, but it can also be fun too.

3. Presentation

REDUCE

A key part of waste "reduction" is "conservation" – using natural resources wisely and using less than usual in order to avoid waste.

REUSE

You can "reuse" materials in their original form instead of throwing them away, or pass those materials on to others who could use them too! Remember, one man's trash is another man's treasure!

RECYCLE

Don't toss everything in the trash. Lots of things (like cans, bottles, paper, and cardboard) can be remade into either the same kind of thing or new products. Making new items from recycled ones also takes less energy and fewer resources than making products from brand new materials.

SO HOW CAN WE RECYCLE WASTE INTO USEFUL CLASSROOM PROPS?

Here are some ideas

3. Presentation

Theater and puppets



The theater is made from an old cardboard box and the puppets are made from old paper and old clothing fabrics



Baskets and geometric shapes made from old ice-cream sticks

Geometric shapes made from old plastic straws



THIS IS HOW WE IMPLEMENT
THE "THREE R'S" IN YOUR
CLASSROOM

SHARE SOME OF YOUR
IDEAS

Energy-efficient house

21st Century skills addressed

Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Understand that saving of electricity and natural resources is essential for our future
- Develop an understanding of simple measures for reducing consumption of electricity and natural resources, and of the cost of using electrical appliances
- Examine materials used for constructing houses from the viewpoint of their chemical, aesthetic and environmentally friendly properties
- Assess features of the construction materials; availability of eco materials in Latvia
- Improve cooperation, presentation, and assessment skills

Activity details

Materials: see the annex

Length: 3 hours

Target audience: 8th grade (20-30 students)

Instructions

What can we do in order to solve the problem/situation?

1. Students create a mind map with the most important things they cannot imagine their lives without.
2. Students develop a chart: Benefits and Flaws of Eco-houses and Energy-Efficient Houses.
3. Students make presentations about the materials which are used for building houses, and about the energy-efficient electrical appliances and light bulbs.
4. Group work on classification of electrical appliances from the viewpoint of their energy-effectiveness.
5. Students make a list of electrical appliances they use at home and calculate their electricity consumption over a week.
6. Students develop instructions: measures to reduce consumption of natural resources (water, electricity, and gas).
7. Students study modern construction materials, their features and use; fill in work sheets.
8. Students evaluate benefits of modern construction materials and create a mind map about what areas materials can be applied in and for what purposes.
9. Students carry out experiments with modern construction materials in order to evaluate their energy-efficiency:
 - Research into material features.
 - Research into features of composite materials.
 - Creation of composite materials.
10. Tasks options: Creating a drawing of an energy-efficient house model OR Creating an energy-efficient house model, presentation:
 - Abstract
 - Layout
 - Materials used
 - Electrical appliance used
 - Presentation of work.

Tips for the teacher

What do we know about the problem/situation? What should we know? How can we know about it? How can we organize our research?

1. The teacher encourages students to talk about the most important things which it is impossible to imagine our lives without, guiding the students' responses to reflect on global goals, especially emphasizing the climate change.
2. The teacher gets students involved in the discussion on the following issues:
 - What kind of house would they like to live in?
 - What is house renovation?
 - What is an energy-efficient house?
3. The teacher encourages students to provide definitions of:
 - Eco-house
 - Energy-efficient house
4. The teacher encourages students to answer the questions:
 - What are the benefits and flaws of eco-houses?
 - What are the benefits and flaws of energy-efficient houses?
5. Students come to the conclusion:
 - What materials should be used for construction of houses;
 - What kinds of electrical appliances and light bulbs to use.
6. The teacher encourages students to discuss what they should know in order to build their house/to rebuild their house/to renovate their house.
7. Students search for and learn the information from the Internet about eco-houses and eco-villages in the EU-member states.
8. The teacher invites students to inform their parents about the opportunities for improving their houses.

Debriefing

The annexes include worksheets, mind maps, and examples of presentations that can be adapted to fit students' abilities, age, and experience, and the achievement of the objectives set by the teacher (duration and number of classes). The tasks are, for example, to make a list of electrical appliances students use at home and calculate their electricity consumption over a week; to develop instructions: measures to reduce consumption of natural resources (water, electricity, and gas).

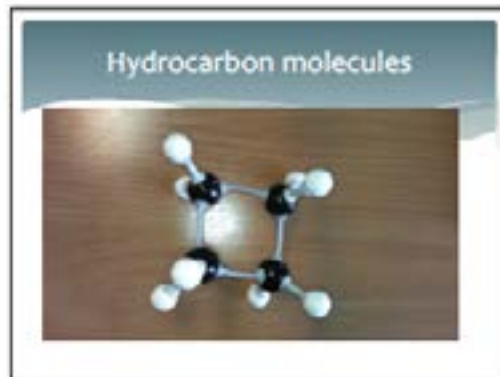
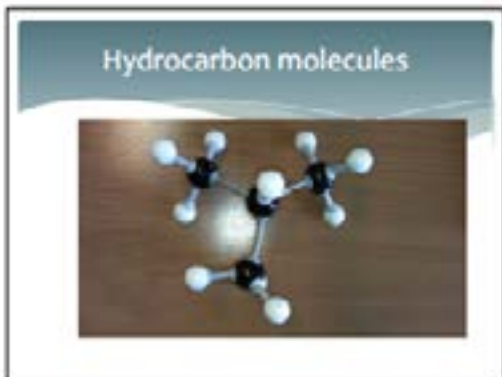
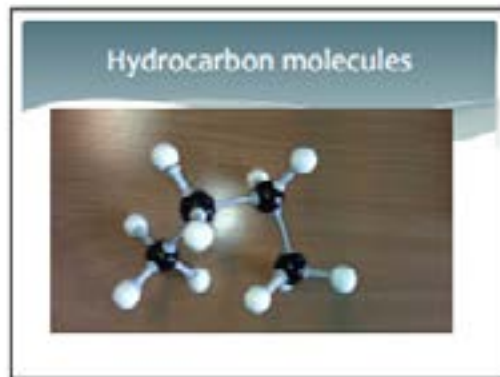
Follow-up/Inspiration for the future

How are results presented?

1. Students assess their and other groups' work (Creating a drawing of an energy-efficient house model OR Creating an energy-efficient house model, presentation).
2. Presentations of drawings and models at school.
3. Information in social media, school's webpage

References/Further reading

1. <https://www.slideshare.net/siltinam/energoefektivite-sabiedriskaj-sektor-125779377> Building's energy efficiency
2. <https://www.slideshare.net/siltinam/latvenergo-ee-kaataupiit-13656006> How to live in a renovated house
3. http://www.rea.riga.lv/files/eku_energoefektivitate_skolenu_rokasgramatata_IUSES.pdf Building's energy efficiency
4. <https://www.elektrum.lv/lv/majai/energoefektivitate/aktualitates/atcelts-puteklsuceju-energoefektivitates-markejums-1> Vacuum cleaner energy labelling annulled
5. http://www.videsvestis.lv/wp-content/uploads/2019/10/VidesVestis_2019_3.pdf Scandinavian eco villages
6. <https://www.pdfFiller.com/jsfiller-desk18/?projectId=371265490#79e1c-ec73d116ab154aaa40ab50db45c> Study on construction materials



Hydrocarbon classification

Hydrocarbon type	Characteristic chemical bonds	General formula	Example
Alkane		C_nH_{2n+2}	
Alkene		C_nH_{2n}	
Alkydine		C_nH_{2n-2}	
Alkyne		C_nH_{2n-2}	

Alkane Homologous Series

General formula: C_nH_{2n+2}

Name	Molecular formula
Methane	CH_4
Ethane	C_2H_6
Propane	C_3H_8
Butane	C_4H_{10}
Pentane	C_5H_{12}
Hexane	C_6H_{14}
Heptane	C_7H_{16}
Octane	C_8H_{18}
Nonane	C_9H_{20}
Decane	$C_{10}H_{22}$

Annex

1. Presentation

Modern Materials

No.	Materials	Use	Features
1.	Nanomaterials		
2.	Nanocoating		
3.	Smart materials - photosensitive materials		
4.	Smart materials that change form		
5.	Smart materials that adapt and transform		
6.	Composite materials		
7.	Bioplastic		

Check of material's features

Features	Material No 1	Material No 2



- ### Development of composite material
- Take a piece of cotton fabric 30x14.5
 - Take a piece of polyethylene sheet 25.5x 14
 - Place the cotton fabric and polyethylene above it on the ironing board.
 - Cover both materials with baking paper.
 - Press the hot iron on the surface of the paper for about half a minute.
 - Take the paper off and let the fabric cool down.

Assessment

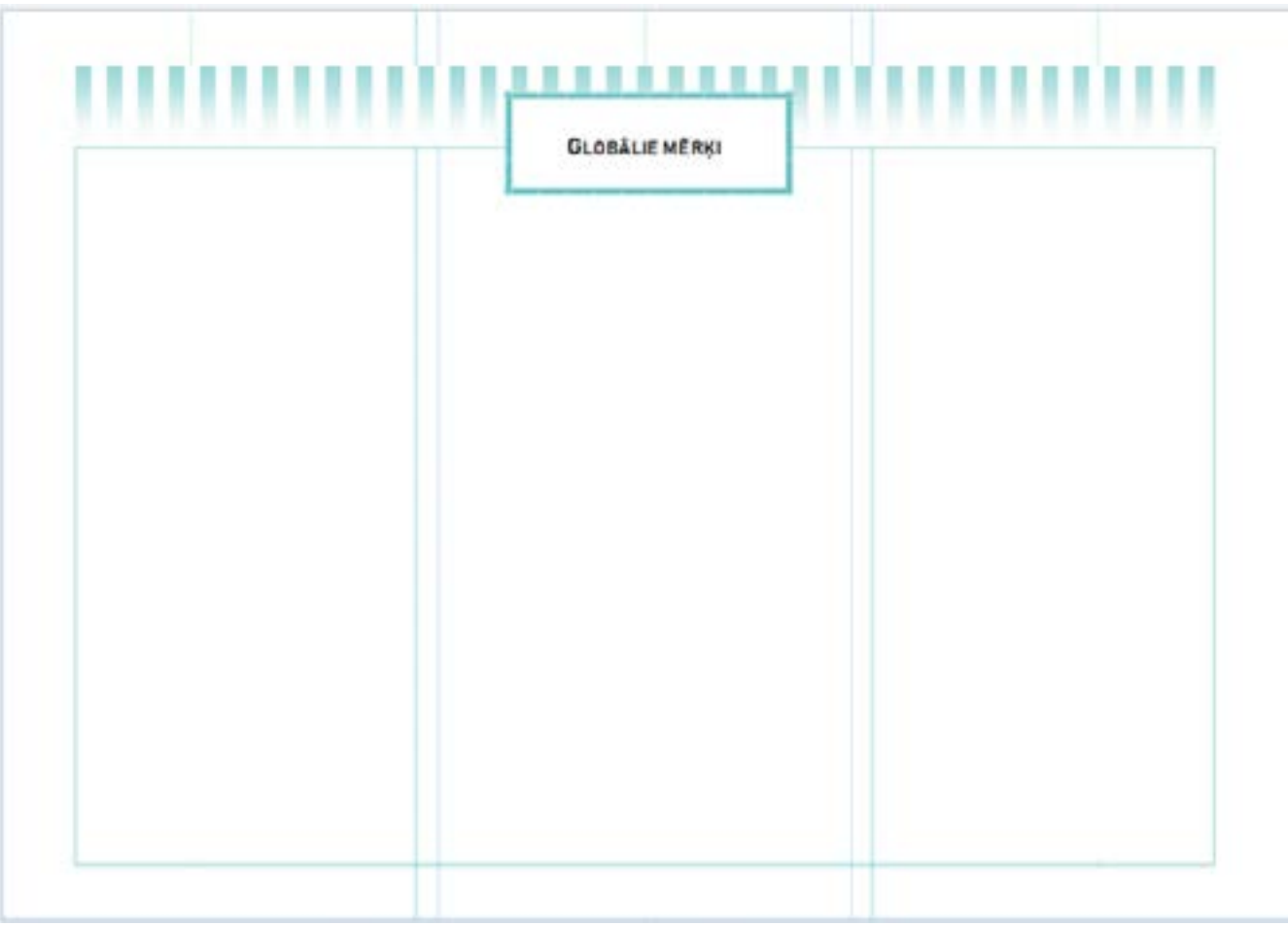
What have I learnt?	What process is?

Conclusions

Annex

1. Presentation

2. Mind Map “Global Goals”



3. Advantages and Disadvantages

Eco house		Energy-efficient house	
Advantages	Disadvantages	Advantages	Disadvantages

4. Classification of electrical appliances according to the level of their energy efficiency, for example:

Vacuum cleaners

In 2014 the energy label for vacuum cleaners was introduced that that would simplify customers' selection of a new vacuum cleaner. The colourful label indicated the carpet and hard floor cleaning performance classes, as well as the dust re-emission class, however, in early 2019 the label was annulled. This means that it will no longer be possible to see this label either in shops or in online stores.

Why was it annulled?

The UK company Dyson that manufactures vacuum cleaners exclusively without dust bags won a court case against the European Commission (EC) with the argument that the energy label misleads consumers about vacuum cleaner efficiency. The vacuum cleaner energy consumption was determined through tests that were conducted to the vacuum cleaners with their dust bags or containers empty. However, it does not reflect the real-life use when, while cleaning the house, the dust bag is full of dust thus affecting the vacuum cleaner's energy efficiency.

Will the label return?

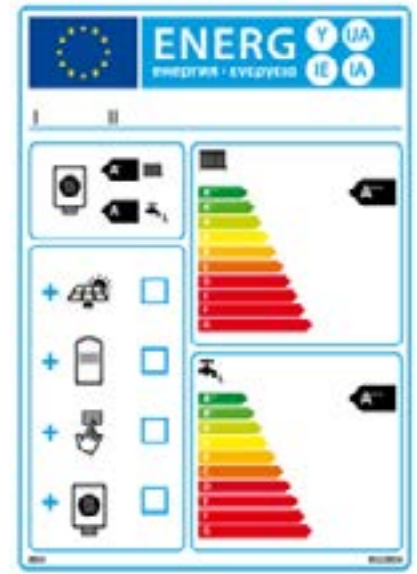
The European Commission is currently reviewing whether short-term changes to the energy label regulation for vacuum cleaners can be made. If so, then a new energy label could be released within a year. In the opposite case, it will take at least two years before we will see a new energy label on vacuum cleaners in our shops.

How to choose a vacuum cleaner now?

As before, a vacuum cleaner should be selected based on its type, functionality, dust collecting method and devices, but it will not be possible to assess its energy efficiency and cleaning class.



Washing machines
Irons, hair driers, dish washing machine, and other electrical appliances



5. Modern materials, their features and use

No.p.k.	Materials	Features	Use
1.	Nanomaterials		
2.	Nanocoating		
3.	Smart materials – photosensitive materials		
4.	Smart materials that change form		
5.	Smart materials that adapt and transform		
6.	Composite materials		
7.	Bioplastic		
8.			
9.			

Features	Course of work	Observations		Conclusions	
		material	material	material	material
Density					
Elasticity					
Hardness					
Melting temperature					
Conductibility					
Exposure to substances (salts)					

Annex

6. Research into material features

7. Development of composite materials

Description of the situation.....

Research problem.....

Hypothesis.....

Working tools, substances.....

Course of work.....

Registration of the data obtained

Features	material	material	Composite material

Analysis of the results, assessment.....

Stop food waste

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Become aware of food waste at all stages of food production from manufacturer to consumer
- Analyse and produce statistic to engage people to stop wasting food
- Examine the food waste in local food stores to become aware of the amount of wasted food and the possibilities to decrease the waste
- Produce and distribute dishes made of wasted food from the local food stores
- Become aware of ideas to reduce their personal waste of food and are able to argue about their willingness to change behaviour and the additional effect

Activity details

Material:

1. Video clip and websites/handouts where the students can find information about food waste - nationally and globally.
2. A computer programme to produce Infographics/diagrams
3. Access to local food stores
4. Access to a school kitchen with big pots and if possible juicers, bowls and cutlery to serve the produced food
5. Video clip and websites/handouts with inspiration on how to decrease personal food waste as well as facts and numbers about food waste.

Duration: 4 x 90 minutes

Instructions

1. Module: 90 minutes
 - Introduce the term 'food waste' and focus on the three different types of food waste: food waste, hidden food waste and residual production.
 - Use video clip and websites/handouts where the students can find information about food waste - nationally and globally.
 - The students examine simple numbers that are part of the description of the amount of food waste on local, national or international level. The students produce an infographic with a simple and plain diagram and a slogan, which animates an understanding of the big amount of food waste in one of the stages of food production (from manufacturer to consumer).
 - The students show their infographic to another group and receive feedback. The students finalize their infographics and hang them on the wall.

Examples:

<https://www.valuwalk.com/2017/06/food-waste/>

<https://foodsecurityfoodjustice.files.wordpress.com/2018/12/food-waste-infographic.png>

Website, Danish:

https://astra.dk/sites/default/files/2015-06-08_bliv_klog_paa_baeredygtighed_og_mad.pdf

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<https://www.stopspildafmad.dk/madspildital.html>

Website, English:

<https://stopwastingfoodmovement.org/food-waste/food-waste-facts/>

DK: Movie about global food waste:

<https://www.youtube.com/watch?v=aKGjEndEhgg>

2. Module: 90 minutes

Introduction:

Is it possible to produce delicious food from food waste?

Some food stores try to minimize their waste of food:

<https://www.tvsyd.dk/artikel/kristian-bekaemper-mad-spild-og-hjaelper-udsatte>

When are food products unsuitable for human consumption?

(Be aware of mould that increases the risk of getting cancer.)

- The students will purchase discarded food products in stores and ask the store about their strategy for less food waste. The collected products will be placed in the classroom.

- The students will make suggestions on what to produce with the collected items.

This process is important, as it increases the students' feeling for the project.

(It is always a good idea to produce soup. Buy some additional bouillon and cream, which will guarantee that the students will eat the food. The wasted fruit is perfect for smoothies.)

- Begin to prepare the food.

3. Module: 90 minutes

- Prepare the dish.

- The students eat the dish and/or share it with other students on the school. The food could also be saved for a future event.

4. module: 90 minutes

How do we reduce food waste in the individual housekeeping?

	Time	Activity
Teacher	5-10 min.	Introduction
Groups of 2 students	5 min.	Find as many ideas as possible to reduce food waste. Write them in the correct spaces in the activity sheet.
Groups of 2 students	10 min.	Use the website to be inspired and come up with more great ideas. The students need to write down 10 ideas on the activity sheet in prioritized order.
The groups will work together in pairs - in 3 different constellations	15 min.	Compare and introduce arguments in favour of the order.
Groups of 2 students	5 min.	Select the 3 best initiatives/ideas for your family.
	25 min.	Write a short speech that will convince your family that it is a good idea. If applicable, record the speech.
	20 min.	The speeches will be given/displayed in class.

The students are encouraged to give the speech at home.

Activity sheets:

[Limit your family's waste of food.](#)

Link for inspiration to reduction of food waste:

<https://stopwastingfoodmovement.org/food-waste/avoid-food-waste-traps/>

Tips for the teacher

1) Food stores are contacted before the course to make sure it will be possible for the students to purchase food products. An agreement is made regarding a short interview about what the store is doing to reduce food waste. The agreement will also indicate whether the students will pick up the food products themselves or if a teacher will accompany them.

(It is our experience in Denmark that food stores are more than willing to participate)

Plan the process in accordance with the age of the students and the stores' willingness to participate. Older students are able to contact the stores themselves.

If the store cannot provide food products, you can make an agreement with the store to tell a group of students what the store usually do with the discarded food.

2) The class can arrange an event for their parents, where the students serve the prepared food and give their speeches/display their speeches to their parents.

Debriefing

Do a brainstorm on:

- What has the students learned? – new knowledge
- How will they act differently in the future and how will they act when they get a housekeeping themselves?

Follow-up/Inspiration for the future

Next step could be:

1. Examination of food waste at the local school

Engage pupils and employees to minimize the daily waste of food.

2. What is a “dumpster-diver”? What is allowed and what is not allowed? Why do it? <https://www.youtube.com/watch?v=JVztsNjxa0s>

Annex

[Limit your families waste of food](#)

LEARNING TOOL 4

Recycling school

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

Sustainable consumption and production means promoting resource and energy efficiency, as well as ensuring access to basic services, decent and environmentally friendly work and a better quality of life for all. Its implementation contributes to the realization of overall development plans, the reduction of future economic, environmental, and social costs, the improvement of economic competitiveness and the reduction of poverty.

For a long time, nature was thought to be an inexhaustible source of resources, to the point of considering it as “the faithful companion of life”. But today the resources consumed by the world’s population are more than ecosystems can provide. For social and economic development to take place within a framework of sustainability, our society must radically change its way of producing and consuming goods.

Hence, there’s a urgent need to create the conditions to reduce the exploitation of natural resources through the recovery of existing resources (waste) to put back into the production cycle. The valorisation of existing resources passes through the recycling of waste as a suitable raw/second material to produce new objects. This is why the choice of the title “recycling school”.

Waste, if inadequately managed, ceases to be a resource and creates pollution causing the collapse of Mother Earth. It follows that:

- The first objective is to help children understand that waste should not be seen superficially as waste but very often it can turn out to be a resource;
- Second objective is to promote changes in daily life behaviour to contribute to the improvement of the environment around us;

- The third objective is to create a synergy between school, family and companies: the continuous interaction between all subjects contributes to better develop the sense of responsibility in young people still in training.

Among the teaching methods that most attract the curiosity of young people are certainly those that are carried out in workshops. Here students, guided by an adult educator, gather to work in team for one purpose: the creation of a new product.

Activity details

CREATIVE LABORATORY WITH RECYCLED MATERIAL

The activity makes you think about the possibility of experimenting with different materials, giving a second life to an object destined for waste, that is how a waste can become a resource and promote sustainable behaviour, favouring manual and artistic skills.

Material

In each class an interactive whiteboard will allow to offer to the students a video foreseen at the beginning of the lesson; small domestic packaging in plastic and cardboard, hot glue, vinyl glue, scissors, acrylic colour or markers. Other materials may be necessary depending on the activity chosen by the teacher/teacher.

Duration

90 minutes

Group number

Maximum number of students per group: 5

Instructions

The first phase of the lesson will serve as “ice breaking” and to introduce the students to the themes of sustainability of the dynamics of production and consumption of goods, with emphasis on the importance of the waste cycle in a circular economy framework. It consists of the projection of a short video (possibly no longer than 5 minutes) on the topic that each teacher can easily find on the web in the students’ mother tongue. The proposition of a video in English would be very useful from an interdisciplinary point of view, but it is not recommended due to the relative complexity of the topic, which could put young students in difficulty.

At the end of the video, the teacher/teacher will briefly introduce the topic in the more general context of sustainability, and then move on to illustrate the demonstration activity that the whole class will carry out in the remaining time. The aim is to show pupils how easy, useful, fun and creative it can be to retrieve seemingly insignificant objects that would otherwise be destined to become potentially polluting waste.

- The teacher/teacher will divide the class into groups of a maximum of 5 students, taking care to proceed with a balanced criterion and ensuring that there are no groups that are too weak in terms of creativity and manual skills.

- Each group will meet in order to have sufficient workspace available (example: two desks next to each other). The teacher/teacher will then assign each group a manual work to be done with recycled materials. The assignment will be done by random method, with each group choosing a closed and numbered envelope containing the respective instructions, which will have been previously prepared by the teacher/teacher.

The Internet offers a wide range of tutorials (in particular through the YouTube channel) from which the teacher/teacher will be able to draw in order to choose the most suitable jobs for the class to which the activity will be proposed. Here are some examples:

1) When in a supermarket, the shopping bag is easily filled with plastic trays containing fruit, vegetables, fresh gastronomy products, etc. Unfortunately, these trays are disposable and they generate a large amount of waste. With a little creativity, you can get practical and useful household items in just a few minutes. Below you can find some links where you can find ideas and instructions with the use of images only, which can then be used regardless of the mother tongue of the teacher/teacher, who can then briefly transcribe the instructions and place them in the envelopes for the groups to draw lots:

<https://www.youtube.com/watch?v=l25txAG3qk0>

https://www.youtube.com/watch?v=C_T9kz67JPc

https://www.youtube.com/watch?v=77XGvD7_MIQ

2) Again the plastic protagonist of another series of activities to be carried out with the caps of water bottles, soft drinks, milk, detergents, etc.. to create decorative mosaics, garlands, key rings, etc.. Also in this case there are many tutorials to refer to:

<https://www.youtube.com/watch?v=4m-UymTVAPY>

<https://www.youtube.com/watch?v=2GehkIPpCac>

<https://www.youtube.com/watch?v=zwQPTfftb90>

3) Paper and cardboard are also particularly abundant materials in the packaging and shopping products of each household. And they too can find new life in the home before they are even disposed of through separate collection. Here are some examples:

<https://www.youtube.com/watch?v=XotrKv7F9JE>

<https://www.youtube.com/watch?v=dyVAkw5Y-M4>

Tips for the teacher

1) To stimulate involvement, the teacher/teacher can ask the class to think about their everyday life and identify the household packaging that can be recovered and/or recycled, establishing what material it is made of.

2) Launch the activity by proposing a simple and satisfying work, which once performed at school with the group you are part of, can be repeated at home by individuals. The teacher/teacher will also be able to highlight all the possible variations that can lead to a final “personalized” result based on the use of the materials available, avoiding as much as possible the purchase of new materials or work tools (for example hot glue, which if not available can be replaced by other tube glues more easily available in all homes and maybe at school).

3) Very important: avoid projects that involve the use of dangerous tools such as cutters, flames, drills, etc.. Therefore, choose activities that require the use of only simple, non-hazardous materials that are easily available at school or at home.

Debriefing

At the end of the lesson the works carried out will be discussed with the teacher/teacher, highlighting the large quantity of useful and pleasant objects that can be made using what would have been waste for disposal. The teacher/teacher will invite their students to photograph and circulate as much as possible the images of what has been realized, in order to encourage other young people to reflect on the subject and to become familiar with what can become a creative and constructive game.

Since the basic objective of the whole activity is to help students understand the importance of a sustainable production and consumption cycle, that is compatible with the balance of the ecosystem in which we live, in conclusion the teacher/teacher will propose a video-flash or photographs that will counterbalance what has been realized in class and will highlight the dramatic consequences of unsustainable behaviours and lifestyles. These could be, for example, images showing the pollution of the seas caused by the abandonment of plastic waste:

<https://www.youtube.com/watch?v=ArYLGNe-jCA>

<https://www.youtube.com/watch?v=bkSv2Z6HhFc>

<https://www.youtube.com/watch?v=HQTUWK7CM-Y>

Follow-up/Inspiration for the future

In the following lessons, based on the response of the class to the stimuli offered through the activities carried out, the teacher will be able to return to the subject with new reflections and suggestions on the behaviour that each citizen, even the youngest, can adopt to improve the sustainability of production and consumption activities.

A possible trace of the reflections to be proposed starts from a short historical excursus, then comes today with concrete examples of sustainable lifestyles.

Since the 1970s, the progressive awareness of environmental issues has given rise to a broad debate on the future of the planet. This debate has involved international organizations, opinion movements, governments and scholars and has led to the concept of sustainable development, which is “able to meet the needs of current generations without compromising the possibility of future generations to meet their own needs”.

Our planet needs to be respected and safeguarded: with this in mind, by 2030 it is important to adopt sustainable policies based on product recycling, reduce waste and reduce emissions of toxic substances, especially from large multinational companies.

Since it is evident that obtaining concrete results by 2030 will not be an easy task, the teacher in the following lessons will try to convey to the pupils the importance of small daily gestures, especially if we will be many. He/she will refer to things like the following:

- Reduce water consumption by avoiding waste. Do not let water flow if not necessary, use washing machine and dishwasher always at full load etc.
- Prefer using low impact means of transport, especially in the city, where the car can often be replaced by the bicycle.
- Avoid wasting electricity, buying class A appliances, turning off the light every time you leave a room, etc.

- Differentiate waste by trying to recycle as much as possible, avoid unnecessary packaging, do not use plastic plates and cutlery etc.
 - Make smart shopping, using canvas shopping bags and paying attention to the environmental impact of what we buy. For example, use as much as possible on tap detergents and bulk products.
 - Use recycled paper whenever you can, do not print email or other documents if not necessary etc.

References/Further reading

<https://www.conip.org/scuola-di-riciclo/>

Annex

N/A

Stop climate breakdown: Conserve water!

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Define responsible consumption and production patterns
- Learn how to use and produce in sustainable ways
- Understand what constitutes sustainable management and use of natural resources
- Promote universal understanding of sustainable lifestyles
- Apply critical thinking to see connections and patterns that are relevant to SDG12
- Apply problem solving to suggest new ways to be a conscious consumer
- Employ own creativity and imagination to define alternatives for action against non-sustainable lifestyles
- Take the initiative and engage others to achieve SDG12
- Claim values that are in line with SDG12
- Respond positively towards achieving SDG12
- Get inspired by different examples of good practices regarding SDG12
- Share openly their opinions and beliefs in class
- Get empowered for future actions

Activity details

Material: Projector, whiteboard, markers, duster, digital technology (computers, laptops, tablets), notebooks, textbook, worksheets, Map of world or globe, 5-gallon water container, measuring cups, eye dropper, 5 gallons of water, a small and clear container

Duration: 5hr 45 min

Group number: 20 – 24 students (age: 10 – 11 years old)

Instructions

Activity 1 (90 min): Reading Comprehension “The water introduces itself”

Starter:

Teacher reads the passage “The water introduces itself” (appendix 1), and asks the students to find the paragraphs related to water and circle the relevant words.

Main lesson:

1. The teacher encourage the students to “unlock” its meanings using the Resilient Readers right hand (Appendix 2: “Who?, Which?, What?, How?, Why?”).

2. Teacher gives a map of the water cycle (appendix 3)

Class discussion:

- Point out the different water forms?
- How does the water travel in nature?
- What routes does it follow in its subsequent paths?
- Where does it end up?
- What shape does it create?

3. Students fill in the gaps in the map and come to the outcome that the water changes form in nature. They understand that it travels and is recycled.

4. The teacher asks the students to point out the benefits that the water underlined in its self-introduction speech.

Some of the answers should be that:

- The water is the essence of life
- The water turns into vapor
- The water droplets developed into hail
- The water is beneficial for human beings
- The water is blessed

5. Teacher helps the students to write their own story about the adventures of “Little blue droplet” and illustrate it.

Plenary:

The students run their presentation in PowerPoint and present it class acting out the story (appendix 4).

Activity 2 (90 min): A drop in the bucket

Starter:

The teacher shows students the globe or map of the world and asks them what the blue represents (water). Ask them what percentage is covered by water (75%). Ask the students if all the water is available for humans to use.

Main lesson:

1. The teacher shows the students the 5 gallons of water in the container. Explain that the 5 gallons represents all the water on the earth.

2. The teacher asks the students to think about the different places we find water. In what area do we find the majority of the water on earth (oceans). The teacher tells them that because the majority of the water is in the ocean, we will leave that water in the bucket. We will be taking out all the water that is from a source other than the ocean.

3. The teacher asks students to name sources of water. As they give you answers, remove the correct amount of water for the area (refer to chart in the background section), and place it into the clear container.

4. After the teacher has removed all the different water sources (other than oceans), asks the students if all the water he/she has removed is useable by humans.

6. The teacher and students discuss the sources, and then the teacher puts the water back into the bucket with the ocean water if it is not usable by humans (icecaps/glaciers, some of the groundwater, inland seas/salt lakes and the atmosphere). The teacher shows the students the small amount of water that is left for humans to use.

(Optional: The teacher hands out copies of the worksheet to have students fill in the percentage they think is in each location before going through it as a class. They can work in groups or individually. (appendix 5))

7. Students review the sources of freshwater on the earth, and how little water is available for human use.

Plenary:

Class discussion: Students discuss ways can conserve water in their homes, schools, and communities and fill in the relevant worksheet (appendix 6).

Activity 3 (45 mins): The water travels

Starter:

1. The teacher asks the students to think of the water’s journey from the source to our taps.

2. Students watch the video “Clean Water: A long journey from the source to our tap” (<https://www.youtube.com/watch?v=-bvZCdMecEo>)

Main Lesson:

1. Reading Comprehension: The teacher reads a passage about the travel of the water.

2. The teacher asks students to describe the water’s journey from the damp to the city looking at the map.

3. The teacher explains what a damp and its use is. Students familiarize themselves with the different dams of their country through the PowerPoint presentation.

4. Class discussion:

- Why dams are very important in your country?
- What is the need to have dams?
- How are the prolonged periods of drought in your country connected with climate change?
- How is your country currently tackling its water shortage problem in order to avoid severe restrictions measures?

Plenary:

Students are asked to reflect if the water from the dams and sea comes directly to our houses and if not what is the process of purification (i.e. Water Treatment Plants and Desalination Plants).

Activity 4 (2 hr): Trip to the Water Treatment Plant

Starter:

Students interview the people at the Water Treatment Plant and fill in their handout (appendix 7). Note this applies in the case of Cyprus. For your own country, make an interview with people working in your local Water Authority.

Main lesson:

1. The students have tour around the different facilities of the Water Treatment Plant and understand the process and the different steps of the water purification.
2. The students complete a chemical analysis of the safe and unsafe drinking water at the lab of the Water Treatment Plant helped by the employees of the Refinery.

Plenary:

1. Teacher asks the students if we can make more water. Discuss the water cycle
2. Talk about how pollutants or contaminants would affect our water supply.

Tips for the teacher

- 1) The activities are suggested to be integrated into STEAM education.
- 2) The trip is optional. It can be presented at school through a PowerPoint Presentation and chemical water analysis at the school lab may follow.

Debriefing

Students design posters for saving water and place them around the school as well publish them in the school website in order to raise awareness.

Follow-up/Inspiration for the future

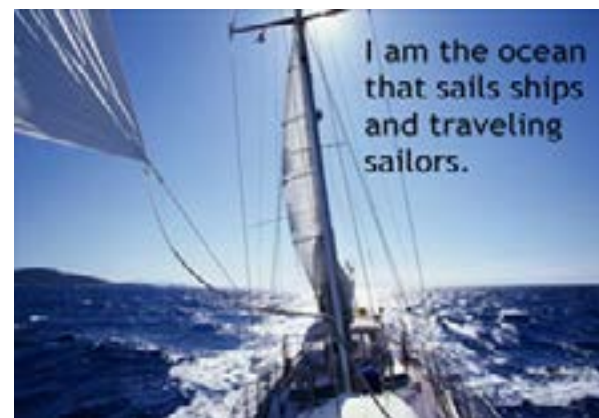
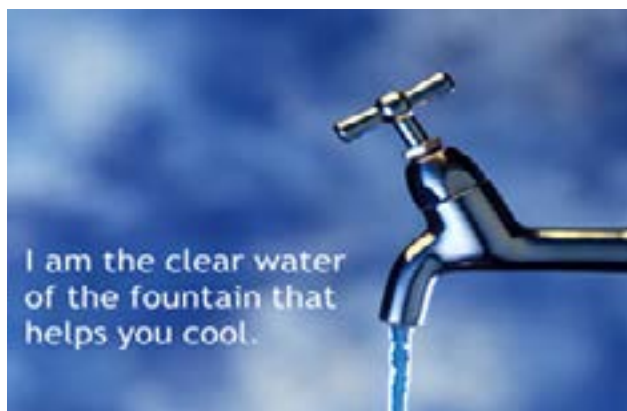
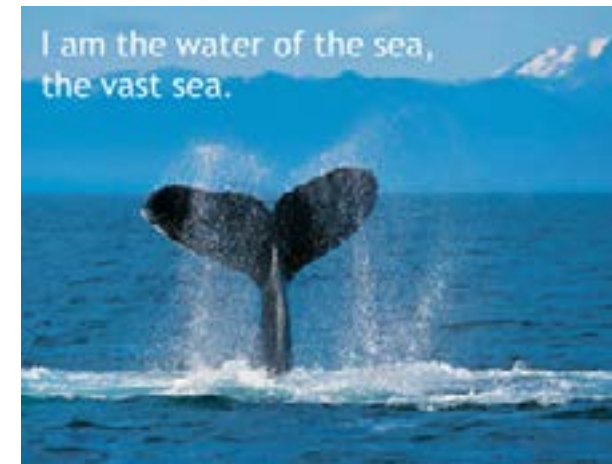
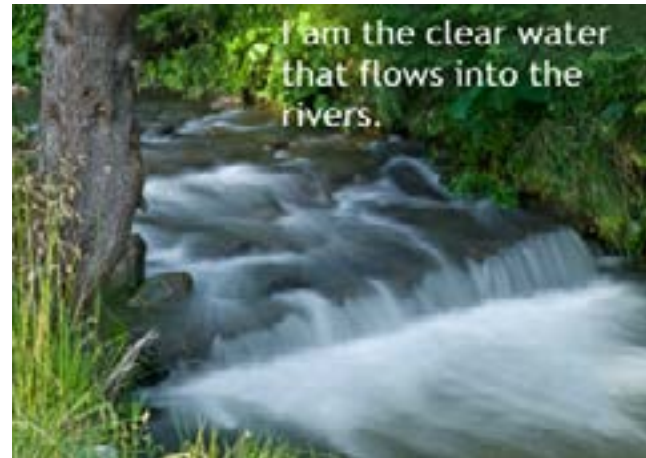
1. Information in social media, school's webpage.
2. The story of the "Little Blue Droplet" is published on the school website and school social media.

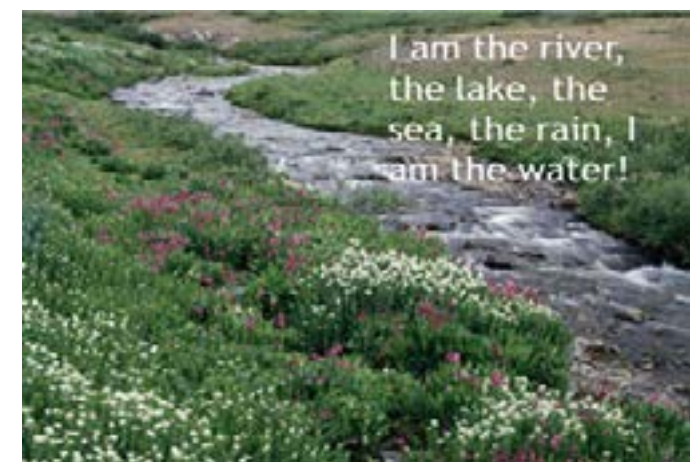
References/Further reading

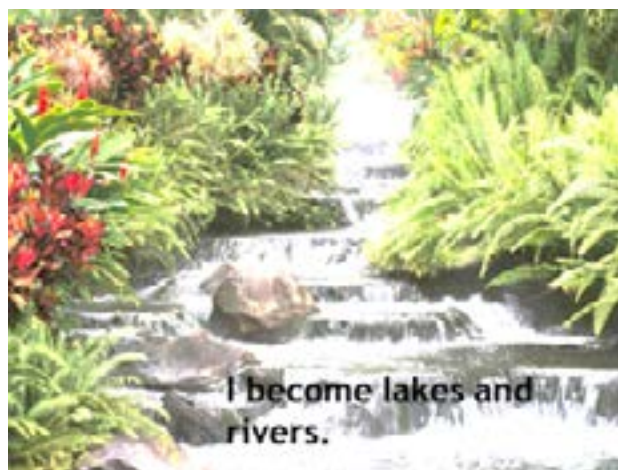
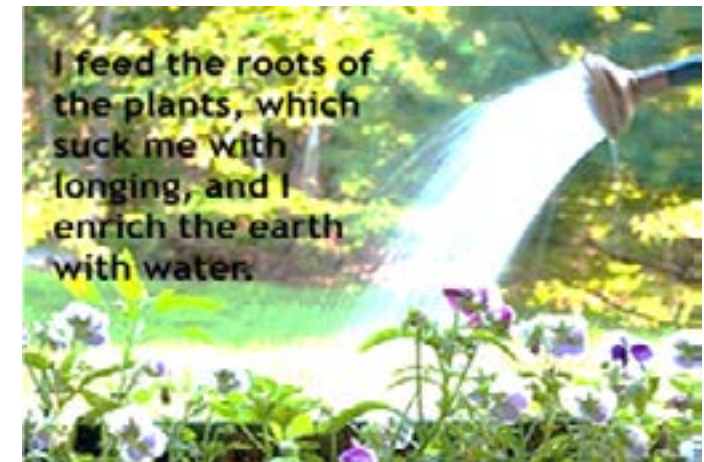
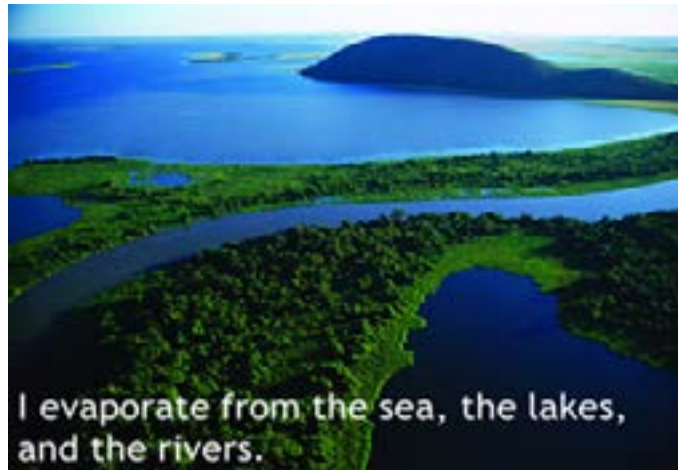
References:

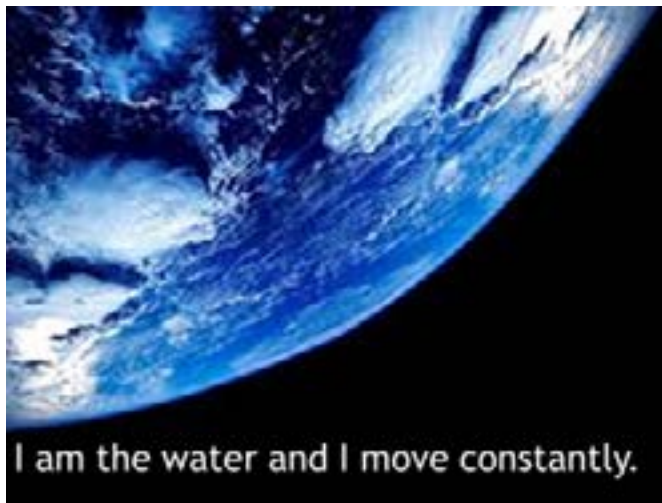
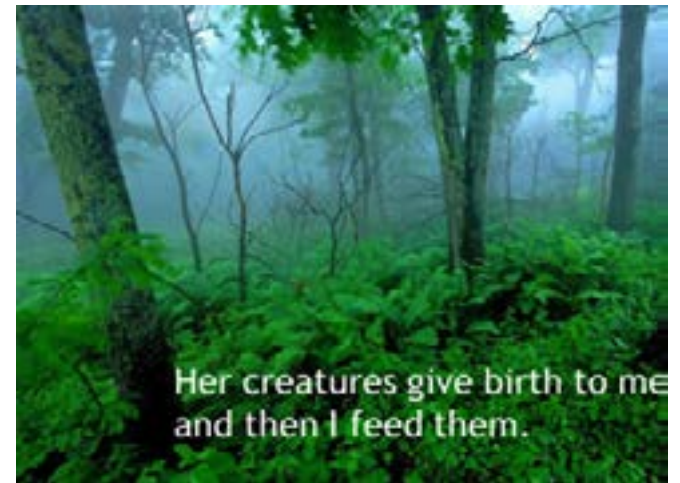
1. UNESCO's SDG Resources for Educators: <https://en.unesco.org/themes/education/sdgs/material/12>
2. Text extracts: Γλώσσα Δ Δημοτικού, Part A, Publications: Diofantos, pp. 32 – 33, 42
3. Water Quality: <https://extension.usu.edu/waterquality/educator-resources/lessonplans/wc/>
4. Clean Water: A long journey from the source to our tap <https://www.youtube.com/watch?v=-bvZCdMecEo>
5. Worksheet: Measures to save water <https://prwtokoudouni.weebly.com/delta-taualphaxieta.html>
6. Information about the dams: <https://cyprusfaa.com/%CF%84%CE%B1-%CF%86%CF%81%CE%AC%CE%B3%CE%BC%CE%B1%CF%84%CE%B1-%CF%84%CE%B7%CF%82-%CE%BA%CF%8D%CF%80%CF%81%CE%B-%CF%85/>
7. http://www.moa.gov.cy/moa/wdd/wdd.nsf/page18_gr/page18_gr?opendocument

2. 1 The water introduces itself

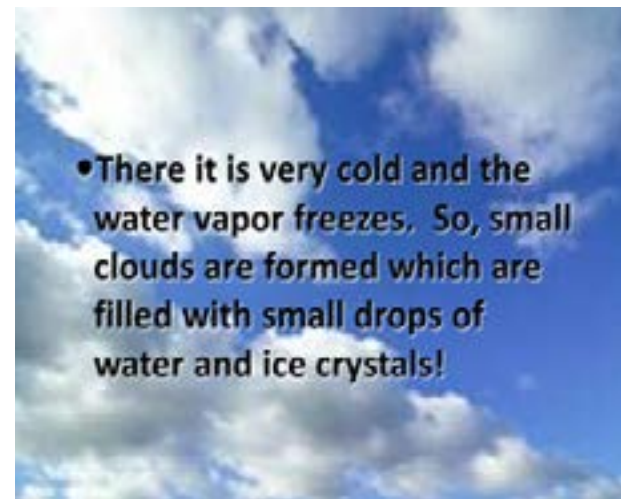
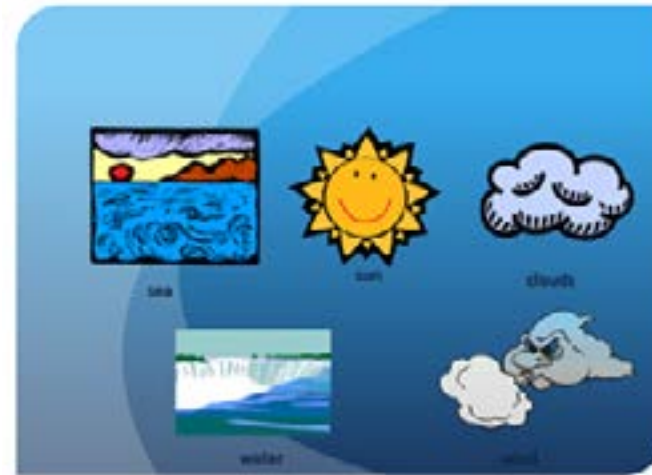


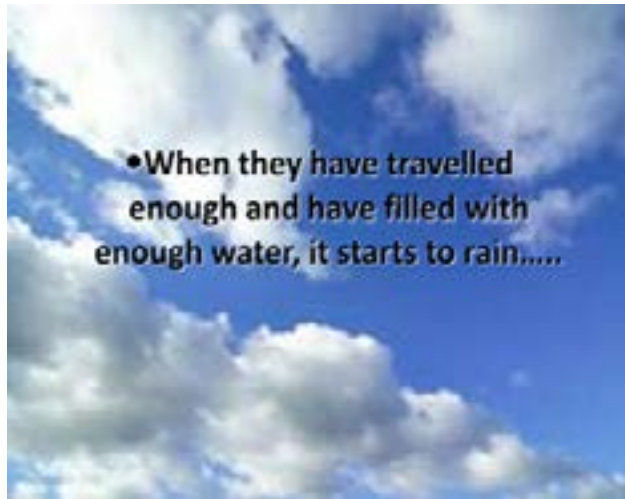




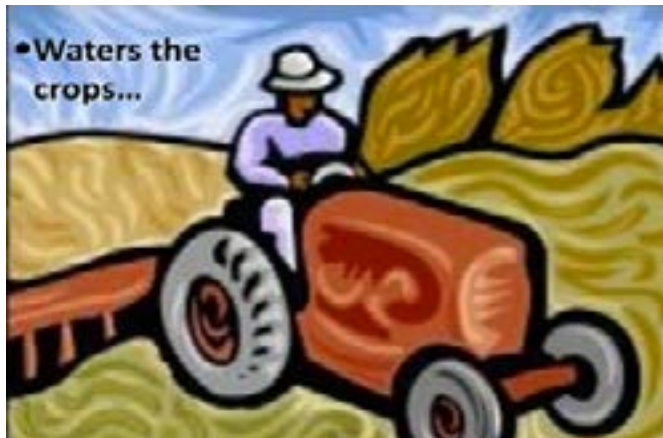


The water cycle



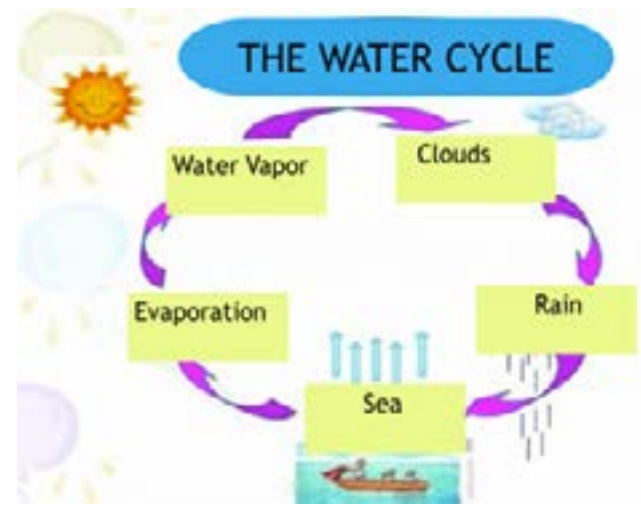
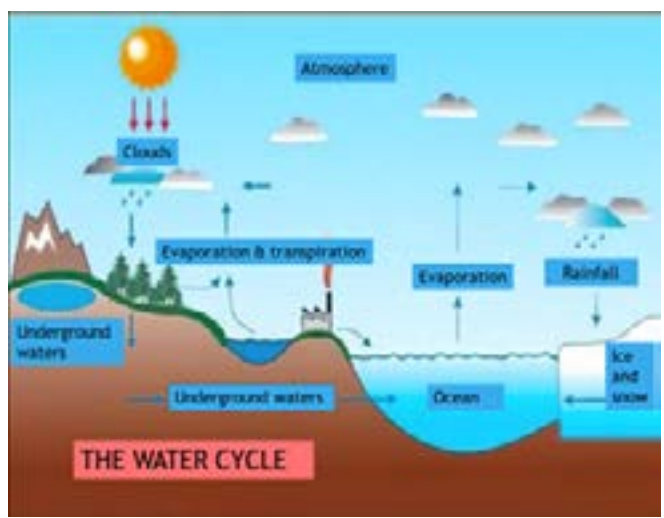


• Rainwater falls into the lakes and rivers...



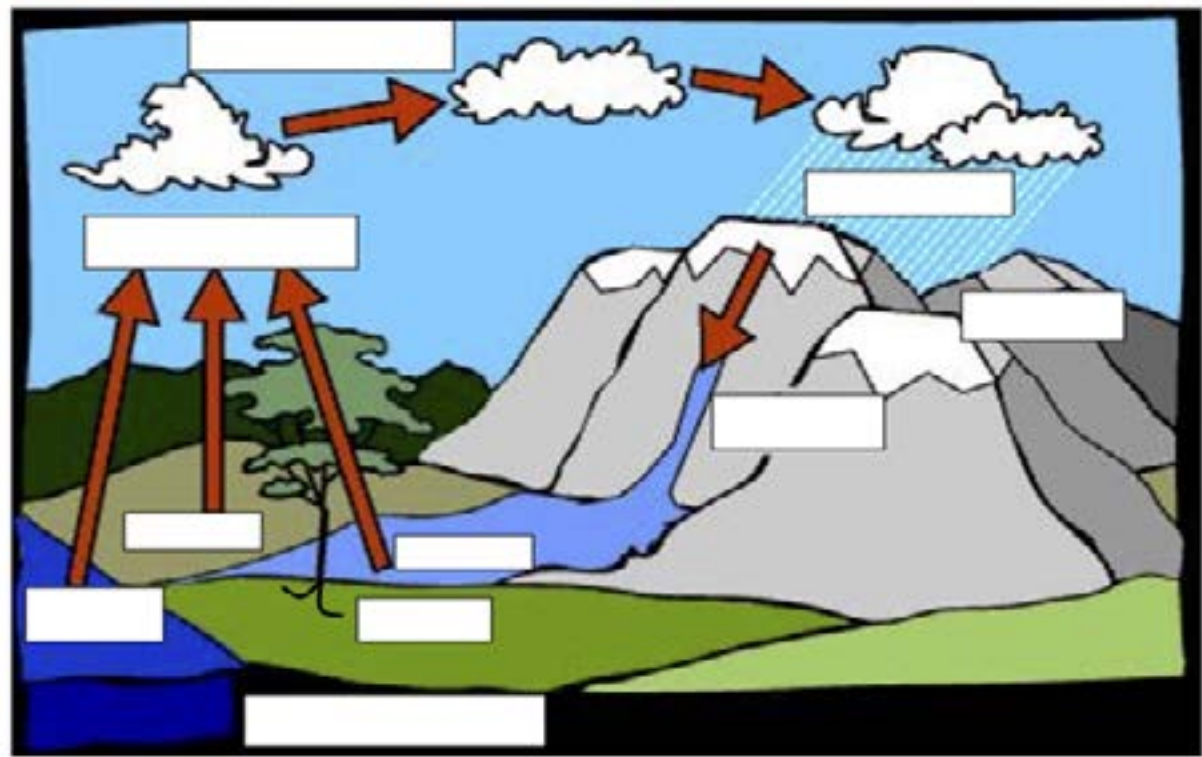
Forms waterfalls...

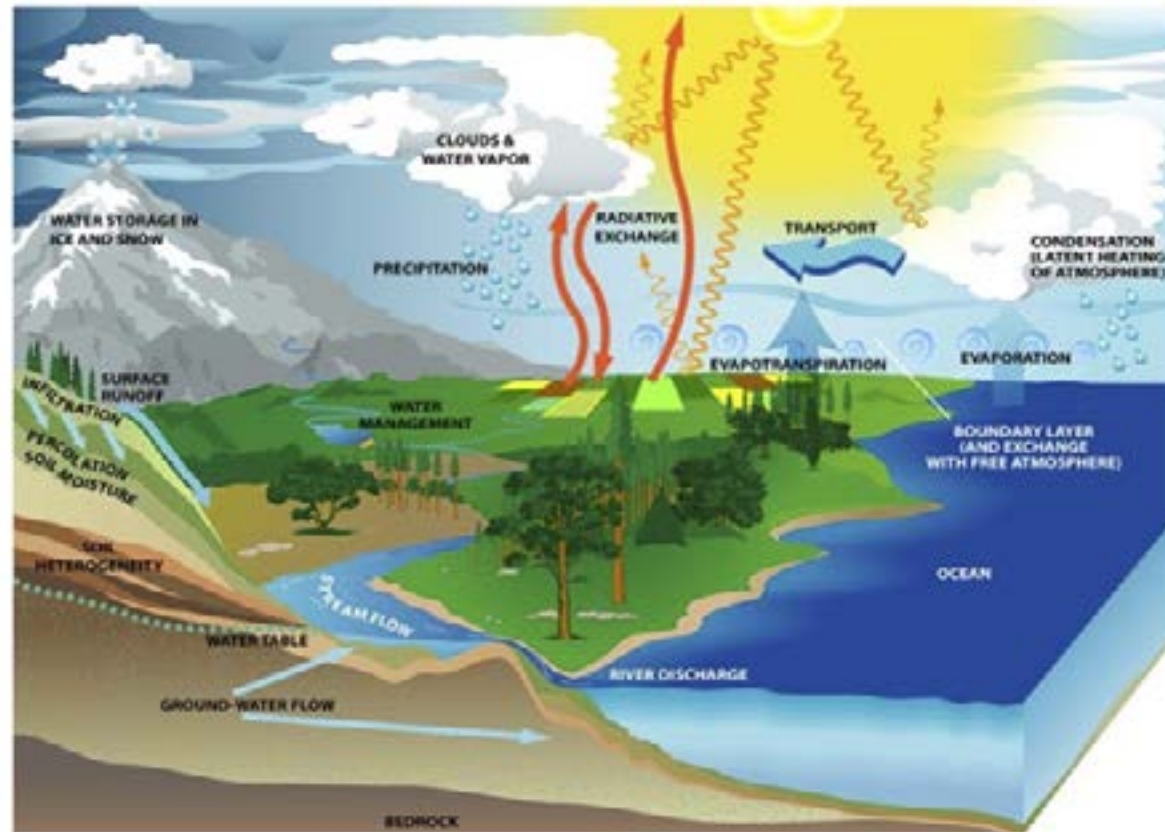






Annex 3:





THE ADVENTURES OF THE LITTLE BLUE DROP



One cloudy, spring day, Blue, a happy little drop, was swimming in the ocean.



Suddenly, the clouds started to move, and Mr. Sun revealed.



The water started heating up and reacting strangely.



It was evaporating!

Oh, no!



Suddenly, it started to cool down, and the Little Blue Drop started returning to its old self!



I am condensing!

They decided to stay together, getting into new adventures.



As the wind pushed it left and right, it had the opportunity to meet its old friends, Olga and Billy, but also to make new friends.



They travelled to the United States, the Atlantic Ocean, and Europe.



They held each others' hands and managed to create a cloud.



They made more friends who followed them to their journey. They had a good time and told each other all their adventures.



But, quickly, many drops gathered, so they started falling.



They fell...and they fell.



As they floated, they realized that they had to say goodbye for the time being, convinced through, that they would meet again for new adventures.



...into Pedieos river!



Water Distribution Worksheet

Name: _____

Estimate the percentage and measurement of water in each reservoir. (Remember that the total amount is 5 gallons).

Reservoir	Approximate % of the total amount	Measurement
Oceans		All water left in bucket
Icecaps/Glacier		
Groundwater		
Freshwater Lakes		
Inland Seas/Salt Lakes		
Atmosphere		
Rivers		

As your teacher demonstrates the true percentages and measurements found in each source, record the data below.

Reservoir	Approximate % of the total amount	Measurement
Oceans		All water left in bucket
Icecaps/Glacier		
Groundwater		
Freshwater Lakes		
Inland Seas/Salt Lakes		
Atmosphere		
Rivers		

			
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Εξοικονόμηση νερού στο σπίτι

			
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LIMASSOL REFINERY

1. What exactly is happening at a Refinery?

.....
.....
.....
.....
.....

2. Carefully observe and describe the water refining stages. What is happening in every stage?

.....
.....
.....
.....

3. How much quantity is refined every day? When is there a greater need in water?

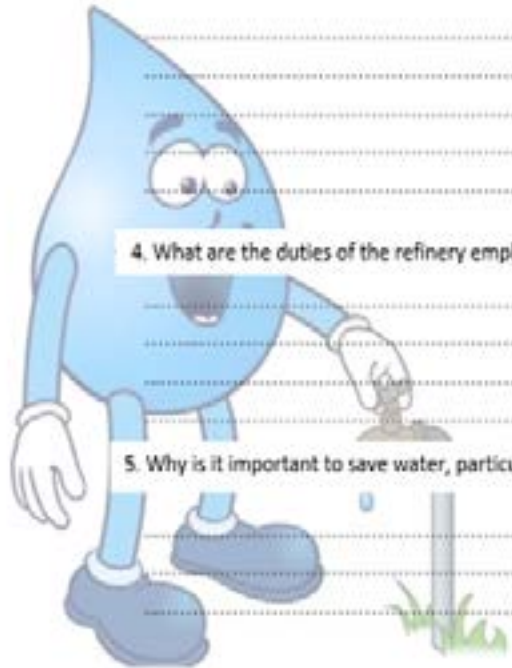
.....
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4. What are the duties of the refinery employees?

.....
.....
.....
.....

5. Why is it important to save water, particularly in Cyprus?

.....
.....
.....
.....



Sustainable consumption and production

21st century skills addressed

Character
Citizenship
Collaboration and Teamwork
Communication
Critical Thinking and Problem Solving
Creativity and Imagination

Objectives

With this tool, students are expected to:

- Acknowledge strategies and production practises and sustainable consumption
- Understand the concessions/dilemmas related to sustainable consumption and production and the necessary systemic changes to achieve them
- Encourage others to get involved in sustainable practices of consumption and production
- Differentiate between needs and desires and reflect on their own behaviour as an individual consumer concerning the world's natural needs, of other people, cultures and countries, and of future generations
- Plan, implement and assess activities related to consumption based on existing sustainability criteria
- Promote sustainable consumption models

Activity details

Material: Powerpoint presentations; fabrics for the making of reusable snack bags; paper; painting materials
Duration: 3 lessons x 50 minutes each
Group number: 25-35 students

Instructions

- Lesson 1
Introduction to the theme using a PowerPoint presentation sensitizing student to environmental pertinent issues nowadays. They will be asked to create a logo on the theme “Snack & Go” (sustainable snack), where all the necessary material for the activity will be given.

- Lesson 2
The best logo will be chosen through voting, so it can be printed on the future snack bag:
The students begin to construct the snack bag with the fabrics given.
The students are given the picnic guide and instructions on what types of products they can bring.
- Lesson 3
Outdoor picnic with the students using the recyclable snack bags.
The consumed goods only can generate organic garbage.

Tips for the teacher

- 1) The activity is suggested to be integrated in the “Ver para querer” program.

Debriefing

The annexes include examples of presentations that can be adapted to fit students' abilities, age, and experience, and the achievement of the objectives set by the teacher (duration and number of classes).
The tasks are to develop instructions and measures to reduce consumption of in-organic resources. (plastics, wraps, processed sugars...)

Follow-up/Inspiration for the future

How are results presented?

1. Students assess their work (Creating a logo and a reusable “Snack & Go” bag).
2. Presentations of drawings and models at school.
3. Information in social media, school's webpage.

References/Further reading

- <https://www.ods.pt/objectivos/12-producao-e-consumo-sustentaveis/>
- https://ec.europa.eu/environment/basics/green-economy/sustainable-development/index_pt.html
- <https://www.akatu.org.br/>

SUSTAINABLE CONSUMPTION AND PRODUCTION

12 principles for a conscious consumption

“Devemos ser a mudança que queremos ver no mundo”



Mahatma Gandhi

"We must be the change we want to see in the world"

1

Plan your shopping

Don't be impulsive when shopping. Impulsivity is the enemy of conscious consumption. Plan ahead and buy less and better!

2

Evaluate the impact of your consumption

Take the environment and society into account in your consumption choices.

3

Consume only what is necessary

Reflect on your real needs and try to live on less.

4

Reuse products and packaging

Don't buy again what you can repair, transform and reuse.

5

Separate your garbage

It recycles and contributes to the economy of natural resources, the reduction of environmental degradation, and the creation of jobs.

6

Use credit consciously

Think carefully if what you are going to buy on credit cannot wait and you are sure that you can pay the instalments.

7

Don't buy pirated or smuggled products

You should always buy in legalized commerce, contributing to the creation of stable jobs and fighting against organized crime and violence.

8

Know and value companies' social responsibility practices

In your consumption choices, don't just look at price and quality, you should also value companies based on their responsibility to employees, society and the environment.

9

Contribute for products and services improvement

Take an active stance!
Send companies suggestions and constructive criticism about their products and services.

10

Disclose conscious consumption

Be a member of a cause:

- Aware other consumers and share information, values and practices of conscious consumption;
- Create groups to mobilize your family, friends and closest people.

11

Politicians' accountability

Demand from political parties, candidates, and government officials' proposals and actions that enable and foster the practice of conscious consumption.

12

Reflect about your values

Constantly evaluate the principles that guide your choices and consumption habits.

How to leave?

One person, throughout life, produces enough garbage to fill a 50 square meter apartment up to the ceiling (equivalent to a one-bedroom apartment).

#rethink

- If food is left in good condition, it can be used in a pie, sweet or jam.
- Organic waste (fruit peels, food scraps, dirty napkins, etc.) goes to the organic waste container, and then, after processing, can be made into compost for the trees in a park or a source of electricity in a landfill.
- Dry residues must be separated in the selective collection containers and go for recycling.
- If you are in a place that does not have an ecopoint, you have to put the waste back in the basket, bag or backpack, and take it to recycle at home. Never forget to wash everything thoroughly before disposing of it.

What's left?

In the end, what do we keep from a SUSTAINABLE PICNIC? At least that nice feeling of a good time shared with loved ones. The PICNIC is a great opportunity to put into practice what we already know about making our lives more sustainable and harmonious. Emotions, ideas and experiences nourish a life of satisfaction! Enjoy them!



Annex

Why to do this?

The PICNIC is, above all, a fun and simple way to enjoy your city with family and friends; however SUSTAINABLE PICNIC can also be a great opportunity to review our consumption habits. After all, when organizing a PICNIC we have to choose the right place, the means of transport, what to buy and take, how to take and discard. In all these stages, it is possible to make more sustainable choices. This is the purpose of this guide: to help you consume better and differently, contributing to a more sustainable world today and in the future.

And now, how to do it?

Of course, in a PICNIC it could be necessary to introduce last-minute changes: a sudden rain that changes the location or the friends who confirm at the last minute and you need to do more shops. Notwithstanding, planning the location, transportation and shopping in advance will help you to make the most of this day and to avoid waste.

Where to do it?

Any nice and safe place is a good place for a PICNIC. It can be in the park, in the square, on the beach, in the condominium, at work, at school, or even at your home.

#rethink

- If you choose a nearby location, perhaps you can go by walking or by bicycle.
- You can also consider public transport alternatives.
- If you go by car, try to bring more people, it is more fun and it will avoid to have more cars on the streets.

What to bring?

From the purchase of food to the choice of the PICNIC basket, everything can be more sustainable. Use your "Snack & Go" bag.

#rethink

- Whenever possible, opt for organic foods that, in addition to being a great option for health, are less aggressive to the environment.
- Prioritize products from companies with socio-environmental responsibility and explore from where your favourite products come from. It is worth keeping an eye on the labels, searching for information on the internet.
- Give priority to local and seasonal products, which tend to be cooler and cheaper, and have traveled less to you.
- If you choose a park with drinking fountains, for example, you can take recyclable mugs, glasses or jers. So you don't have to buy water bottles.

How to bring?

If you have some charming PICNIC basket, cool! You also have your "Snack & Go" bag, if not...

#rethink

- That reusable bag that you received and don't use, could be a good option. Or the good old trolley, the backpack...
- You can also use your creativity (and manual skills, of course!) And learn to build bags made with the PICNIC's towel.

Hands-on learning activities and experiments

Description (max. 5 lines)

The SDG12 (Responsible Consumption and Production) good practice “hands-on learning” is an educational method that directly involves the learners, by actively encouraging them to do something in order to learn about it. In short, it is ‘learning by doing’. The learning process is much improved when students are challenged to seek answers and are driven by a curiosity to learn. Well-designed, hands-on activities and experiments in the classroom foster connections to real-world situations and increase learner engagement. There are many different activities that can be used or adapted for different age groups and also incorporate computer work in the classroom.

For example:

- Students can create a mind map with different ideas on reusing old materials.
- Students working in groups create different products from different materials.
- Students draw a conclusion and present their findings in a form of PowerPoint presentations, or use the platform “Canva” to create photos for tutorials on how those products were made.

Students in higher grades can do a “Light bulb Comparison” experiment. Students will explore their daily energy use and ways to reduce their energy consumption. They will do a hands-on experiment to compare the amount of energy that different fluorescent light bulbs use and can use Microsoft Excel to create observational charts for the experiment.

Link to website

- <http://info.thinkfun.com/stem-education/the-importance-of-hands-on-learning>
- <https://blog.friendscentral.org/benefits-of-hands-on-learning>
- <https://blog.socialstudies.com/brain-based-research-supports-need-for-hands-on-learning>
- <https://blog.socialstudies.com/what-is-hands-on-learning>

Country and location

Primary School “Malina Popivanova” Kochani, North Macedonia

Actors/partners

Teachers, students, educational community

Objectives

To analyse and apply educational strategies that contribute to social cohesion in the context of a knowledge-based European society, providing key elements and action lines to improve education and social policies.

Results

- Improves retention of information
- Improves attentiveness
- Improves fine motor skills
- Improves critical thinking
- Improves problem-solving skills
- Students learn better when they can relate to a subject

Why is it considered a good practice? (max. 8 lines)

- engages students of all ages in multiple modes of learning: kinesthetic, problem solving, and trial and error.
- students get to show what they’ve learned
- allows students to directly observe and understand what is happening.
- encourages young pupils to do things for themselves, which will help them with learning independently later on in life.

Elements of replicability in other contexts (max. 5 lines)

- Encourages Interaction with Nature
- Allow Exploration of all Five Senses
- Fosters real problem solving
- Develops skills and a lifelong love of learning

CLIMATE ACTION (SDG13) AND THE ACQUISITION OF 21ST CENTURY SKILLS

INTRODUCTION

Overall Aim of Sustainable Development Goal 13

Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities, and countries dearly today and even more tomorrow. Weather patterns are changing, sea levels are rising, weather events are becoming more extreme and greenhouse gas emissions are now at their highest levels in history. Without action, the world's average surface temperature is likely to surpass 3 degrees centigrade this century. The poorest and most vulnerable people are being affected the most.

Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening as more people are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts.

Climate change is a global challenge that requires solutions needed to be coordinated at the international level to help developing countries move toward a low-carbon economy.

To strengthen the global response to the threat of climate change, countries adopted the Paris Agreement at the COP21 in Paris, which went into force in November of 2016. In the agreement, all countries agreed to work to limit global temperature rise to well below 2 degrees centigrade. On February 2, 2017 Saeima (Parliament) of the Republic of Latvia ratified the Paris Agreement of the United Nations Framework Convention on Climate Change. It means that since then Latvia has undertaken to implement series of internationally prescribed commitments to mitigate global climate change.

As of April 2018, 175 parties had ratified the Paris Agreement and 10 developing countries had submitted their first iteration of their national adaptation plans for responding to climate change.

Why is it important for educational community?

The Module developed by our team

- Will provide a deeper understanding of SDG13 and how it interrelates with sustainable lifestyles;

- Will explain how 21st century skills are relevant to SDGs in general, and in particular to SDG13;
- Will help acquire increased knowledge on how to use SDG13 to promote 21st century skills among youth;
- Will build teachers' capacity further in order to facilitate successful sessions to increase students' skills and competencies using the framework of the UN SDG13;

As a result of the Module activities, educational community:

- Will respond positively towards achieving SDG13;
- Will share good practices and get inspired by them to take actions;
- Will initiate, facilitate, and participate in discussions in class openly sharing their opinions and beliefs in a safe space for all opinions;
- Will get empowered for future actions;

Key dimensions of Sustainable Development Goal 13

- Define what climate change is;
- Understand the urgency of taking action to combat climate change and its impacts;
- Strengthen resilience and adaptive capacity to climate related disasters;
- Understand the need for the implementation of the UN Framework Convention on climate change;

The interplay between Sustainable Development Goal 13 and the acquisition of 21st century skills

- Explore, reflect upon and follow up ideas in real life that stress out the urgency of taking immediate action against climate change;
- Raise innovative ideas and non-traditional solutions regarding SDG13;
- Cooperate and share tasks with other students to strengthen resilience to climate change;
- Show resistance and endurance towards the struggle for climate justice;
- Apply critical thinking and make meaningful knowledge around SDG13;
- Learn to see connections and patterns;
- Define alternatives for action and set priorities;
- Learn to make smart and informed decisions;
- Learn to cooperate in teams;
- Learn to communicate with digital tools;

The Second Life of Waste

21st century skills addressed

Character
Citizenship
Communication
Critical thinking

Objectives

With this tool, students are expected to:

- Become aware of the negative effects of waste on the environment and climate change
- Understand the need for reduction of the amount of waste by forming the habit of acting responsibly for the environment preservation
- Become aware of the variety of ways for recycling
- Work in groups to make a useful thing from recycled materials

Activity details

Materials:

- PowerPoint presentation (annex No.1)
- video film about the effect of waste on environment and climate change
- A4 size mind map (annex No.2) and writing tools
- pictures for dividing into groups (annex No.3)
- description of the interactive workshop (annex No.4)
- worksheets for interactive workshop (annex No.5)
- tools and materials for workshop (see description of the workshop)
- feedback forms “My achievements during the class” (annex No.6)

Length: 2 hours

Target group: 4 – 5 grade students (10-11 years old)

Introduction

Encouragement: issue “Our daily life is impossible without waste...”

1. Students get an understanding of why it is important to learn about the subject of the lesson:
 - What is climate change?
 - What causes climate change?
2. Students participate in setting the outcomes to be achieved during the class.

Acquisition:

1. Students participate in the discussion:
 - What is waste and what are the types of waste?
 - What is in our waste containers?
 - Where does our waste go and what happens to it?
 2. Students watch a video about the effect of waste on the environment and climate change.
 3. Students participate in the discussion:
 - In what way do our waste affect the environment?
 - In what way do our waste affect climate change?
 4. Students make a mind map “What can we do with our waste in order to decrease its negative effect on the environment and climate change?” Students show their mind maps and offer their solutions to the problem.
 5. Students work in groups “Waste becomes valuable when...”
 - Workshop 1 “Making Paper from Waste Paper”
 - Workshop 2 “Making Soap”
 - Workshop 3 “Making Candles”
 - Workshop 4 “Organizers made from Toilet Paper Rollers”
 - Workshop 5 “A Bag for Sports Shoes Made from a T-shirt”
- * Each group fills in a work sheet.
6. Students present the work they have done in their groups, show the outcomes.

Reflection:

Students perform the assessment of the class “My achievements during the class” using the method of unfinished sentences:

- During the class I have acquired, learned...
- Today my most important discovery was...
- The material/information I acquired during the class will help me/will be useful...
- I would also like to learn, acquire...

Tips for the teacher

Encouragement: “Our daily life is impossible without waste”

1. The teacher cooperates with students to get an understanding of how the topic will be studied, why it is important to learn the topic and what measurable result is expected from the students at the end of the class. The teacher identifies the aims of the class.

2. The teacher encourages students to reflect on the problems they encounter in surrounding society, draws their attention to global problems connected with the waste we produce in our everyday life.

The teacher offers questions for discussion:

- What is climate change?
- What causes climate change?

Acquisition:

1. Waste is one of the most serious and dangerous ways of the environment pollution. Environment pollution causes climate change. The teacher invites students to take part in the discussion:

- What is waste and what types can it be?
- What is in our waste containers?
- Where does our waste go and what happens to it?

2. The teacher invites students to watch a video about the effect of waste on the environment and climate change.

3. After the video, the teacher invites students to take part in the discussion:

- In what way do our waste affect the environment?
- In what way do our waste affect climate change?

4. The teacher encourages students to make a mind map on the A4 format paper “What can we do with our waste in order to decrease its negative effect on the environment and climate change?” Students show their mind maps and offer their solutions to the problem.

1. The teacher summarizes the students’ answers and shows PowerPoint presentation with several examples of what we can do with our waste in order it does not pollute the environment, but serves as a basic material for making useful things.

2. The teacher divides the students into groups for their work in interactive workshops. Working in groups, students make a useful thing from recycled materials.

The teacher invites students to present their work and demonstrate the results.

Reflection:

To get feedback from students about the course of the class, the teacher offers to perform the evaluation of the class “My achievements during the class” using the method of unfinished sentences:

- During the class I have acquired, learned...
- Today my most important discovery was...
- The material/information/skills I acquired during the class will help me/will be useful...
- I would also like to learn, acquire...

The teacher finishes the class with the following words:

“Would you tell me, please, which way I ought to go from here?”

“That depends a good deal on where you want to get to.”

L. Carroll “Alice in Wonderland”

Debriefing

In the classroom, there are specially prepared chairs for the beginning of the class and tables for 5 different groups. Tools and materials required for the work to be performed, description of the interactive workshop (annex No. 4), worksheets for interactive workshops (annex No. 5) have been prepared in advance.

4-5 students participate in one workshop.

Students can be divided into groups using Annex No. 3: cut out circles with pictures according to the number of students, put the circles on the table pictures down, offer pupils to choose one of the circles (but do not let them see the picture). Looking at the picture, students will understand which workshop they will work and so they go and sit at the appropriate table.

The teacher can change the number of workshops depending on the number of students. The content of the workshop can be changed depending on the urgent topics, available materials and interests.

Depending on the time available to the teacher, students may be divided so that they perform only one activity and present their outcomes to the other groups, or each group can perform all activities by changing places after the specified time.

Follow-up/Inspiration for the future

1. Students make presentations about their work to other students.
2. After the class, students' works are put for display at the school's hall, so all students could see them.
3. An article about the class and photos are posted at the school's webpage.

References/Further reading

1. Climate change: https://lv-pdf.panda.org/klimats_dzivesveids/klimata_parmainas/
2. Causes for climate change: https://ec.europa.eu/clima/change/causes_lv
3. Consequences for climate change: https://ec.europa.eu/clima/change/consequences_lv
4. Air pollution: the EU residents' health is not yet protected enough (video): https://www.youtube.com/watch?time_continue=6&v=R0deLckNv9g
5. A way of a plastic bag (video): <http://www.zalajosta.lv/lv/tapusi-jauna-vides-isfilma-par-plastmasas-maisinu-parmeriga-paterina-ietekmi-uz-vidi-plastmasas>
6. Environment pollution (video): <https://www.youtube.com/watch?v=uWJoMNeFxQw>
7. Environment education materials: <http://www.zalajosta.lv/lv/vides-izglitibas-materiali>
8. A natural thing to do: introduction into GreenInfraNet project (video): https://www.youtube.com/watch?v=-mr5lF2tzD4&feature=emb_logo

The image displays a grid of 15 educational slides, numbered 1 through 15, arranged in three rows and five columns. Each slide is presented in a white frame with a grey border and a small orange circle in the bottom right corner. The slides cover the following topics:

- Slide 1:** "THE SECOND LIFE OF WASTE" - A 4th grade lesson for 10-11 year olds about recycling. It features an illustration of a recycling bin with a red recycling symbol and a hand putting a green bottle into it.
- Slide 2:** "What is climate change?" - Shows a 3D rendering of the Earth.
- Slide 3:** "WHAT CAUSES CLIMATE CHANGE?" - A diagram with a central globe and arrows pointing to various causes: Deforestation, Air Pollution, Greenhouse Gases, Global Warming, and Acid Rain. It also includes small images of a factory, a car, and a power plant.
- Slide 7:** "WHERE DOES OUR WASTE GO AND WHAT HAPPENS TO IT?" - Shows a yellow excavator working on a large pile of garbage in a landfill.
- Slide 8:** "REALITY" - Features a large play button icon on a computer monitor screen.
- Slide 9:** "GREENHOUSE EFFECT" - Illustrates the greenhouse effect with a sun, a globe, and arrows showing heat being trapped by the atmosphere. Text explains that greenhouse gases trap heat, making the Earth warmer.
- Slide 13:** "WASTE BECOMES VALUABLE WHEN..." - Shows various recycled items: a green wooden chair, a purple dress, a small house, a colorful box, and a colorful house.
- Slide 14:** "WASTE BECOMES VALUABLE WHEN..." - Shows recycled items: a green basket, a colorful bag, a colorful bowl, and a colorful bag.
- Slide 15:** "WASTE BECOMES VALUABLE WHEN..." - Shows recycled items: a colorful box, a colorful bag, a colorful bowl, and a colorful bag.

LEARNING OUTCOMES

- To increase awareness of the negative effects of waste on the environment and climate change
- To understand the need for reduction of the amount of waste, build the habit of responsible actions in the field of protection of the environment
- To increase awareness of the variety of ways for recycling
- Working in groups, students make a useful thing from recycled materials

WASTE

WHAT IS WASTE AND WHY ARE THE FORMS OF WASTE?

What is our waste containers?

MIND MAP

COMPARISON ONLY FOR RECYCLING WASTE

Waste Type	Recycling Rate (%)	Notes
Paper	70	Recycled paper is used for newspapers, magazines, and office paper.
Plastic	10	Most plastic ends up in landfills or incinerated.
Metal	90	Recycled metal is used for new metal products.
Glass	50	Recycled glass is used for new glass bottles and containers.
Other Wastes	5	Includes food waste, textiles, and other materials.

WASTE BECOMES VALUABLE THING...

PRACTICAL WORK BY GROUPS

Waste becomes valuable thing...

PRESENTATIONS BY WORK GROUPS

MY ACHIEVEMENTS DURING THE CLASS...

- During the class I have acquired, learned...
- Today my most important discovery was...
- The material/information I acquired during the class will help me/will be useful...
- I would also like to learn, acquire...

"WORLD YOU TELL ME, PLEASE, WHICH WAY I GOING TO GO FROM HERE?"
"THAT DEPENDS A GOOD DEAL ON WHICH WAY YOU WANT TO GET TO."
L. CARROLL
"KING OF HOCKEYLAND"

BE RESPONSIBLE, DO THE RIGHT THING

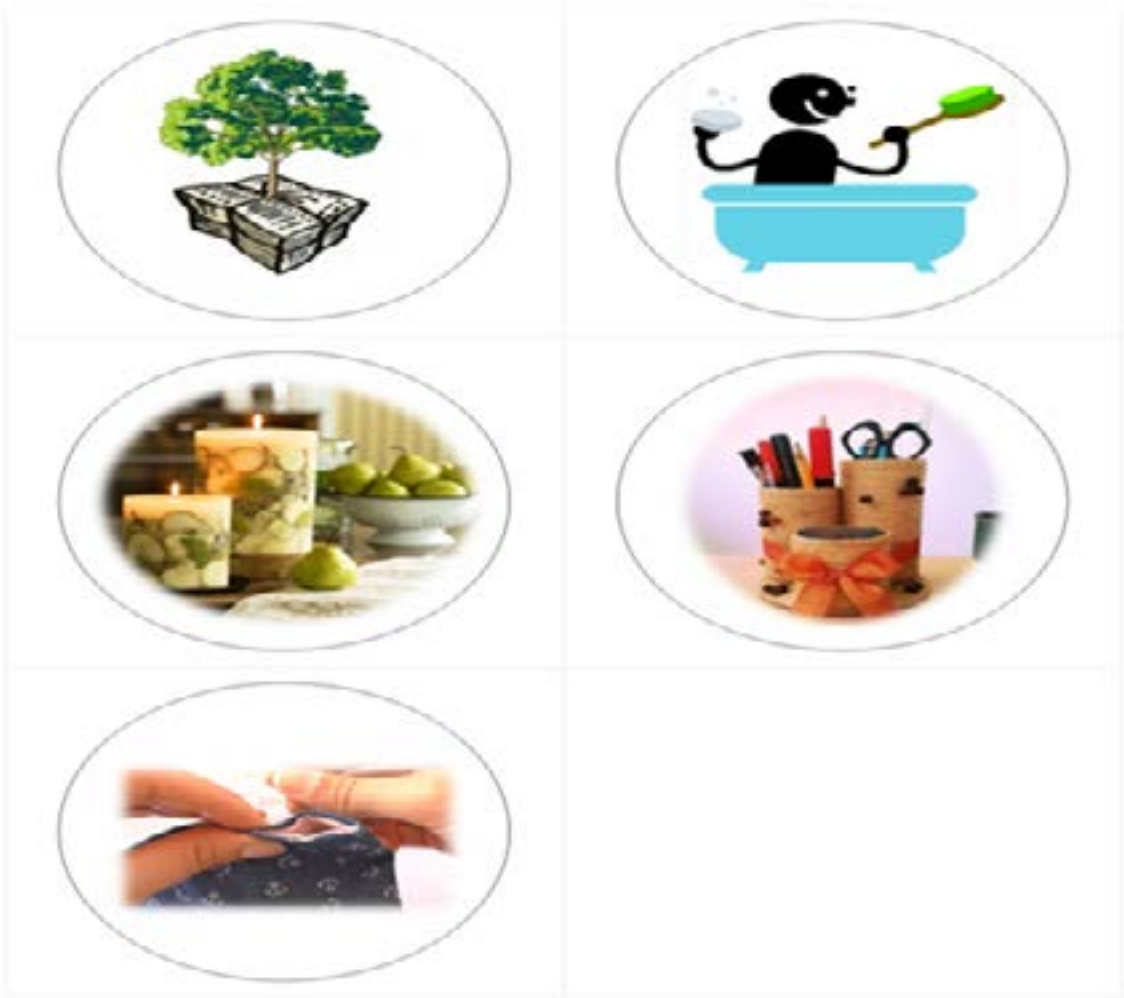
Let's not pollute the environment! Let's save resources. Let's use the earth's resources wisely. Because we depend on nature and nature depends on us. Instead of just taking, we can choose to take care and not pollute the world we live in. Be a responsible citizen and be proud of your contribution. Let's save nature, protection and let that show to our personal input to the world in Creativity and Innovation.

THANK YOU!

Annex
Annex 1 PowerPoint Presentation



Annex 3



Workshop 1 “Making Paper from Wastepaper”

Colourful and handmade paper? It is fantastic, original, and you can do it!

Necessary:

- old newspapers or carton egg boxes;
- scissors;
- wooded frame (the size of the paper);
- mosquito net and some white cloth of the size bigger than the wooden frame;
- clothes pegs;
- some string;
- a large container for soaking the frame.

Process:

1. Make the frame. You can make it from old wooden frame and mosquito net. The size of the wooden frame should be the same as the paper you are going to make. Use an electric screwdriver to fix the mosquito net on the frame, cut off the excessive net with scissors.
2. Put old newspapers or carton egg boxes in water. Tear the old paper into small pieces so it gets soft and soaked more quickly. Leave the mixture in a bucket overnight, or if you do not want to wait that long, use a blender to mix it.
3. If you want your paper to have colour, add some paint to the water. In order to get colour dots, put confetti into the paper mixture – small round pieces of different colours – and pieces of colour paper. But before that soak them into water for some time.
4. Put the paper mixture on the mosquito net. Particles of paper dissolved in water are caught in the net. Make sure, the paper mixture covers the net evenly. Let the water drain into the dish, and after that press the rest of water from the paper.
5. Put one smooth plane on the table, cover it with a piece of white cloth, and then carefully put the paper mixture on it. Cover it with another piece of white cloth and then put a second smooth plane on it. Press the planes with a heavy object, and in a few minutes, take out the ready paper. Hang it on the string with clothes pegs and let it dry.

Workshop 2 “Making Soap”

You can make new soap from the remains of used soap.

Necessary:

- remains of soap;
- silicon forms for forming soap;
- a container for melting remains of soap. A metal pot or a cup is the best, but you should remember that you cannot use this pot any longer after that.

Making soap step-by-step:

1. Cut or crash soap remains (the smaller the pieces are, the faster and more evenly they melt). Put everything into a heat-proof container, add some hot water. Mix everything and put in a double boiler. You should not overheat the soap. The best temperature is 60-65 ° C. Make sure, the mixture is not boiling and there are no bubbles on the surface. Overheated soap quickly dries up and loses the ability to froth.
2. Repeat the procedure until the mixture is viscous and smooth. After that, you can add essences, oil, glycerine, etc. The soap is ready!
3. The soap mixture can be poured into forms which were covered with oil beforehand.

Workshop 3 “Making Candles”

A new candle, or even several, can be made from the remains of the burned candles, which when burning will add some cosiness to any room.

Necessary:

- remains of burned candles without candlewicks;
- a jar– form for a candle. Jars from burned candles, or any other containers of the right size, or special forms for making candles are suitable;
- a candlewick – special thread which is located in the middle of a candle. A cotton thread can be taken and a weight attached to it at one end, or a candlewick can be bought;
- a container for melting candle material. A metal dish or a cup is the best, but you should remember that you cannot use this dish any longer after that.

Making a candle step-by-step:

1. Take remains of candles and break them into pieces. It is better to take the same type of materials, but do not mix, for example, paraffin and wax. It is also not recommended to mix colours or scents.
2. The candle material melts in a container in a double boiler, but not on an open flame, as the material can ignite. The container with melting candle material should be looked after: you should not put the container on fire and do some other things.
3. If you want your candle to have a scent, add a few drops of aroma oil. Pour the melted wax into a jar.
4. When the melted candle material gets hazy, a candlewick with a metal base at one end is put in the centre of the jar and secured with metal rods, pencils, or matches.

Workshop 4 “Organizers from Toilet Paper Rollers”

People, especially ones who have large families buy a lot of toilet paper. Every time, when we finish a roll of the toilet paper, we take a new one and throw away a toilet paper roller.

Necessary:

- a toilet paper roller;
- scissors;
- glue;
- colour paper and carton.

Process:

1. Cut a circle from colour carton. The size of the circle should be bigger than that of the toilet paper roller.
2. Glue the roller over with colour paper.
3. Glue the toilet paper roller in the centre of the carton circle.
4. You can use it to hold your pencils.

Workshop 5 “A Bag for Sports Shoes from a T-shirt”

Necessary:

- a T-shirt;
- scissors.

Process:

Workshop 3 “Making Candles”

A new candle, or even several, can be made from the remains of the burned candles, which when burning will add some cosiness to any room.

Necessary:

- remains of burned candles without candlewicks;
- a jar– form for a candle. Jars from burned candles, or any other containers of the right size, or special forms for making candles are suitable;
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- a container for melting candle material. A metal dish or a cup is the best, but you should remember that you cannot use this dish any longer after that.

Making a candle step-by-step:

1. Take remains of candles and break them into pieces. It is better to take the same type of materials, but do not mix, for example, paraffin and wax. It is also not recommended to mix colours or scents.
2. The candle material melts in a container in a double boiler, but not on an open flame, as the material can ignite. The container with melting candle material should be looked after: you should not put the container on fire and do some other things.
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Workshop 4 “Organizers from Toilet Paper Rollers”

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Necessary:

- a toilet paper roller;
- scissors;
- glue;
- colour paper and carton.

Process:

1. Cut a circle from colour carton. The size of the circle should be bigger than that of the toilet paper roller.
2. Glue the roller over with colour paper.
3. Glue the toilet paper roller in the centre of the carton circle.
4. You can use it to hold your pencils.

Workshop 5 “A Bag for Sports Shoes from a T-shirt”

Necessary:

- a T-shirt;
- scissors.

Process:

1. Cut off the bottom of the T-shirt.
2. At the bottom of the shirt cut the fringe 7 cm long and 1.5 cm wide.
3. Tie up the fringe at the front and back sides of the t-shirt. Do it, until you tie up both sides.
4. Cut off the sleeves and cut out a larger neckline. Shoulder part serve as handles. The bag is ready!

Each group fills in their work sheets.

Work sheet

The Second Life of Waste.

The title of the workshop: _____

Names of the students: 1. _____
 2. _____
 3. _____
 4. _____
 5. _____

Annex
 Annex 6

Recycled materials	
Procedure	1. 2. 3. 4. 5. ...
Results	Waste became valuable when...
Advantage	Benefits of the second life of <u>waste</u> 1. 2. 3.

Lesson evaluation “My achievements during the class....”

Student's name, surname: _____

During the class I have acquired, learned...	
Today my most important discovery was...	
The information and skills I acquired during the class will help me...	
I would also like to learn, acquire...	

Thank you!

LEARNING TOOL 2

The effects of burning fossil fuels and what we can do to reduce pollution from vehicles and engines.

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Gain knowledge regarding the effect of air pollution on climate change
- Understand the effects of burning fossil fuel
- Be able to recommend solutions for reducing use of fossil fuels
- Learn to cooperate in teams
- Gain ability to evaluate information and arguments and to do something with their ideas
- Think as global citizens
- Define alternatives for action and set priorities, and make smart and informed decisions
- Respond positively towards achieving SDG13
- Raise innovative ideas and non-traditional solutions regarding SDG13

Activity details

Material see the annex

Duration 2h 30 min

Group number 15-20 students (7th grade age 12-13)

Instructions

Lesson one (1 hour)

1. Students answer questions like:
 - What does the term climate change mean?
 - What does the term air pollutant mean?
 - What are fossil fuels, and what happens when they burn?
 - How burning fossil fuels leads to climate change?

Lesson one (1 hour)

1. Students answer questions like:
 - What does the term climate change mean?
 - What does the term air pollutant mean?
 - What are fossil fuels, and what happens when they burn?
 - How burning fossil fuels leads to climate change?
2. Students watch a presentation on the effects of burning fossil fuels.(see annex)
3. Class discussion about the presentation:
 - What is the primary greenhouse gas emitted in North Macedonia through human activities?
 - What are the major sources of CO₂ emitted in the country, by economic sector?
 - What are the major byproducts of the burning of coal?
 - Which fossil fuel has the highest CO₂ emissions?
 - Which fossil fuel has the lowest CO₂ emissions?
 - Which fossil fuel is the largest contributor to CO₂ emissions?
 - What could we do to reduce CO₂ emissions?

Lesson two (1 h 30 min)

4. Students fill in worksheet questioners of what they learned (see annex)
5. Students create a chart with their everyday activities and their daily means of transport.(see annex)
6. Students make a list of different means of transport and their effects to the environment.
7. Students in groups do an online research on What You Can Do to Reduce Pollution from Vehicles and Engines.
8. Students present their findings in a form of an essay. (see annex)

Tips for the teacher

1. The teacher asks questions to review terms like fossil fuel, climate change, air pollution, etc.
2. Teacher encourages discussion about the presentation.
3. Teacher hands out worksheets.
4. Teacher encourages students to talk about their everyday activities and what type of transportation they use.
5. The teacher gets students involved in a discussion on the following matter:
 - What sort of transport do they use?
 - How do cars affect the environment and climate change?
 - How we can reduce the usage of cars?
5. Teacher invites students to present their findings.
6. Teacher invites students to inform their parents of what they learned.

Debriefing

Students design posters to raise awareness of the effects of burning fuels and how we can reduce it. The posters are placed around the school and published on social media. Students present their findings in a form of an essay or they can do a PowerPoint presentation. Students can also conduct a survey on how aware are people about the effect on burning fossil fuels.

Follow-up/Inspiration for the future

1. Information in social media and schools web site
2. Essay published on social media.

References/Further reading

<http://www.climateaction.org/>

<https://www.vedantu.com/chemistry/effects-of-burning-fossil-fuels>

<https://www.nrdc.org/stories/air-pollution-everything-you-need-know>

<https://www.nrdc.org/stories/fossil-fuels-dirty-facts>

<https://www.youtube.com/watch?v=K9kga9c0u2I>

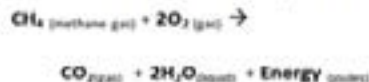
1. Presentation “The effects of burning fossil fuel”



Carbon Dioxide Production from Burning Fossil Fuels

What happens when fossil fuels (like natural gas) burn?

Carbon dioxide is produced

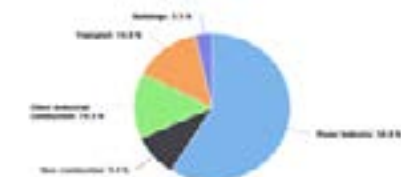


Burning fossil fuels is one of the largest sources of CO₂, a greenhouse gas associated with global warming and climate change.

North Macedonia CO₂ Emissions (2016)



Fossil CO₂ Emissions (by Sector)



Greenhouse gases are associated with global warming and climate change.

- Fossil CO₂ emissions in the Republic of North Macedonia were **8,896,732 tons** in 2016.
- CO₂ emissions increased by **1.62%** over the previous year, representing an increase by **142,050 tons** over 2015, when CO₂ emissions were **8,754,722 tons**.
- CO₂ emissions per capita in the Republic of North Macedonia are equivalent to **4.28 tons** per person (based on a population of **2,080,743** in 2016), an increase by **0.07** over the figure of **4.21 CO₂ tons** per person registered in 2015; this represents a change of **1.6%** in CO₂ emissions per capita.

Sources of Carbon Dioxide

- The major sources of CO₂ emissions are electricity generation and transportation.
- Worldwide about 50,000 power plants produce CO₂.
- Burning coal and hydrocarbons are the largest sources of CO₂ emissions.

Byproducts of Coal Burning

Carbon and other elements combine with oxygen and are moved from the geosphere to the atmosphere.

- Carbon dioxide** (a greenhouse gas, causes global warming).
- Sulfur dioxide** (causes acid rain).
- Nitrogen oxide** (causes smog).
- Carbon monoxide** (poisonous gas, contributes to global warming).
- Small particles of toxic heavy metals.**

Which fossil fuels have the highest CO₂ emissions?

Fossil fuel	Weight of CO ₂ (pounds) emitted per million BTU of energy
Lignite	215.4 lb
Sub-bituminous coal	214.3 lb
Bituminous coal	205.7 lb
Anthracite coal	228.6 lb
Diesel fuel and heating oil	161.3
Gasoline	157.2
Propane	139.0
Natural gas (methane)	117.0

Which fossil fuels have the lowest CO₂ emissions?

Fossil fuel	Weight of CO ₂ (pounds) emitted per million BTU of energy
Lignite	215.4 lb
Sub-bituminous coal	214.3 lb
Bituminous coal	205.7 lb
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Diesel fuel and heating oil	161.3
Gasoline	157.2
Propane	139.0
Natural gas (methane)	117.0

Energy Use and Carbon Dioxide Emissions in the United States

Fossil fuel	Energy used (%)	Carbon dioxide emissions (%)
Petroleum	35%	42%
Natural Gas	28%	27%
Coal	18%	32%

- Which fossil fuel produces the highest percentage of CO₂ emissions?
- Which fossil fuel produces the lowest percentage of CO₂ emissions?

Climate Change Mitigation Targets and Plans

Macedonia's INDC communicates its target to reduce carbon dioxide emissions from fossil fuel combustion by 30% by 2030, compared to the business as usual scenario, through mitigation measures in energy supply, buildings, and transport.

Energy supply mitigation measures include reduction of distribution losses, establishment of renewable energy power plants (hydro, solar, wind, biogas, and biomass cogeneration), shifting to central heating in Bitola, installation of solar thermal collectors, and increasing the share of biofuels to 5% of the energy mix.

Review Questions

- What is the primary greenhouse gas emitted in North Macedonia through human activities?
- What are the major sources of CO₂ emitted in the country, by economic sector?
- What are the major byproducts of the burning of coal?
- Which fossil fuel has the highest CO₂ emissions?

Review Questions

- Which fossil fuel has the lowest CO₂ emissions?
- Which fossil fuel is the largest contributor to CO₂ emissions?
- What could we do to reduce CO₂ emissions?

BURNING FOSSIL FUELS CAUSING CLIMATE CHANGE

1. Things I learned about burning fossil fuels.

2. Questions I Have about burning fossil fuels.

3. What I think about the effect of burning fossil fuels on climate change.

Name _____

Annex

2.Worksheet

Name _____



Think of your everyday activities and what kind of transport you use to get from one place to another (for example: go to school, go to football lessons, go to guitar lessons, etc). Then fill in the chart.

My activities	Means of transportation

Annex

3. Chart "Everyday activities and means of transport"



Annex

4. Essay presentation

What You Can Do to Reduce Pollution from Vehicles and Engines

Worldwide, the most widely used modes for passenger transport are the cars. There are many forms of the car that is used around the world for personal transport. Cars provide flexibility and freedom that people really value and want.

But how do cars effect the environment around us?

Car pollutants cause immediate and long-term effects on the environment. Car exhausts emit a wide range of gases and solid matter, causing global warming, acid rain, and harming the environment and human health. Engine noise and fuel spills also cause pollution.



What do most cars today run on and how do those fuels effect the environment?

Gasoline

Gasoline or petrol is the most common fuel used in cars today. The hydrocarbons contained in gasoline and its production of carbon dioxide when burned contributes to pollution, smog and global warming.

Diesel

Diesel fuel is widely used in transport vehicles such as tractor-trailer trucks, buses, boats and trains. This fossil fuel is also non-renewable, like gasoline. Although it contributes less carbon dioxide to the environment, diesel creates more organic compounds and nitrous oxide that cause smog.

Bio-diesel

Bio-diesel is a diesel substitute made from sugar beet, rapeseed or palm oil. Bio-diesel burns much cleaner than standard gas or diesel and produces far less carbon dioxide emissions when used. However, continued production of this substance may result in excessive deforestation.

Annex

Is car pollution a cause of Global Warming?

Car pollution is one of the major causes of global warming. Cars and trucks emit carbon dioxide and other greenhouse gases, which contribute one-fifth of the United States' total global warming pollution. Greenhouse gases trap heat in the atmosphere, which causes worldwide temperatures to rise. Without greenhouse gases, the Earth would be covered in ice, but burning excessive amounts of fossil fuels, such as gasoline and diesel, has caused an increase of 0.6 degrees Celsius, or 1 degree F, in global temperatures since pre-industrial times, and this will continue to rise over the coming decades. Warmer global temperatures affect farming, wildlife, sea levels and natural landscapes.

What can we do to reduce Car Pollution?

Here are some eco-friendly transportation ideas that have a positive impact on the environment:



1. Bikes, Scooters and Hoover Boards

Bicycles are an age-old method of getting to the places you need to go. These modes of transportation are so beneficial to the environment that you never have to worry about them negatively impacting the environment with loud noises or harmful carbon monoxide emissions into the atmosphere.

Nowadays fans of low impact transportation, such as bicycles, have great selections. You may also want to consider riding a scooter or moped to your destination. And if you're feeling futuristic, options like hoverboards and electric bikes may suit you well. All of these options have shown to be environmentally friendly transportation.

4. Essay presentation

What You Can Do to Reduce Pollution from Vehicles and Engines

2. Electric/Hybrid Vehicles



The uprising of cars that don't require gas to operate has been rapidly evolved over the past years. Drivers have switched out pulling up to gas stations for plugging their hybrid vehicles into electric power supplies. These cars charge fairly easy -using domestic 13amp, or 110-volt, outlets at home or on-the-go.

One of the most popular car brands to hit the environmentally safe community is Tesla.

3. Car Pooling

Carpooling is not a new concept but it is a useful and relevant one. Essentially, you and others ride together if you're going to the same location. This greatly cuts down on the number of cars on the road-which decreases harmful emissions and traffic. Some states, such as Arizona, have integrated this practice into their rules and regulations. Your ride may be cheaper if you choose to share a vehicle with someone. These incentives are helpful for encouraging people to be more environmentally conscious.

Annex

4. Essay presentation

What You Can Do to Reduce Pollution from Vehicles and Engines

4. Public Transportation



Although some buses and other public transportation have raised concerns in the past, using these modes of transportation still may help out the environment. Public transportation typically follows the same model as carpooling. It could be beneficial to leave your car home sometimes and take the bus. There have also been more recent developments to public transit that would qualify them as green transportation, such as electric trolley cars and trains. Depending on where you live, your city or state may already be implementing some healthier solutions to transform transportation systems.

5. Walking



This may be the simplest solution there is. Just walk! Save yourself money by walking to your local destinations. Walking is also great exercise; it helps you clear your mind and doesn't require a schedule to do. Buy stable walking shoes and shoe inserts if you need extra support. Help the environment by getting those legs moving with family, friends or even a solo stroll.

Do not Just Stop at Eco-Friendly Transportation

We should all be pitching in to help preserve the planet. Eco-friendly transportation isn't the only thing you can do. Making small adjustments to your daily living could go a long way.

WHAT DO YOU PLAN TO DO TO HELP THE ENVIROMENT?

Annex

4. Essay presentation

What You Can Do to Reduce Pollution from Vehicles and Engines

LEARNING TOOL 3

I will do my part!

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

Informing, playing and reflecting about the consequences of climate change on the survival of the Planet and the life of each of us. The teacher/teacher should lead the activity by helping the young students, who have neither direct memory nor sufficient knowledge to recognize the tangible signs of climate change at all latitudes. It will obviously be a matter of addressing the topic with practical arguments and distinguishing climate change that is cyclical and produced by physiological natural transformations (which students have already faced since primary school) from those that are produced by human activity. Obviously, it is necessary to insist on the latter to induce young people to reflect on everything that can be done at individual and group level to reverse the course and preserve the Planet and all forms of life that inhabit it.

Activity details

Material: Classroom with computer for teacher/teacher and interactive whiteboard; Students with devices connected to the internet network (at least one for every two students)

Duration: 60/90 minutes, depending on how many questions in the game, and related topics, the teacher/teacher intends to propose to his students

Size of the group: Maximum recommended number of people per group: 4. The choice depends on the number of students with smartphones or tablets connected to the Internet. The aim is not to proceed individually, but to have groups of limited numbers. The optimal solution would be pairs with a connected device

Instructions

The beginning of the lesson sees the teacher/teacher busy telling the children an ancient African fairy tale. It is the story of the burning forest:

“A terrible fire was destroying the whole forest and spreading like wildfire. All the animals rushed to the river in search of salvation. Running away from the flames, the lion saw a small bird flying in the opposite direction and asked him: where are you going, can't you see the flames? Then the little bird showed the lion a drop of water on its beak and said: “I'll do my part!”

- In your opinion - asks the teacher/teacher at this point - why did I tell you this story and what does it mean?

Once recorded the comments and understood the degree of interest and participation of the class, he/she continues clarifying his/her intentions and stressing that the story told is of course a metaphor of our daily life: sometimes, without realizing it, we behave like the lion who runs away just trying to save himself, while to fight against climate change it is necessary to act with the same generosity and the same sense of responsibility as the little bird.

- The teacher/teacher at this point turns on the computer and interactive whiteboard and writes “CLIMATE CHANGES” in large letters and asks the students: When you hear about climate change, what do you think about it and what do you think is causing it?

The teacher/teacher will leave 5-10 minutes for the class to respond, reporting on the interactive whiteboard the most significant thoughts and inputs that have been consolidated during the short debate. He will then ask:

How can we behave not like the lion but like the bird? In our own small way, what do you think we can do?

Once the fundamental question has been introduced, the teacher/teacher will decide, based on the time he or she has decided to dedicate to the activity, whether to go directly to the game or to show a short video that in 2 minutes highlights the gravity of climate change and the possibility for man to act with adaptation and mitigation actions. Examples of videos can be found in large quantities on the net, drawing on resources that can either be expressed with images only or comment in different European languages. Examples of videos are:

<https://www.youtube.com/watch?v=PEhrV0NoRUw>

<https://www.youtube.com/watch?v=2RAEdQ8KtE>

<https://www.youtube.com/watch?v=eHMLszamZ9w>

https://www.youtube.com/watch?v=G4H1N_yXBIA

- Now it is necessary to involve the class by stimulating everyone's direct participation. The game is based on the use of a digital tool able to manage true/false questions or multiple answers, to which students will have to answer using their own devices connected to the network. In this way a competitive dynamic is aroused, inducing students and pupils to think about the various topics proposed trying to guess the right answer. The teacher/teacher will have to keep the attention of the class always high, avoiding demotivation in case of wrong answers and succeeding in making students understand the meaning of the questions and the reason of the correct answers with concepts appropriate to their age.

The teacher/teacher will possibly use a tool that students are already familiar with and that is easy to use even for those who have no previous experience. Examples are Kahoot! Socrative, Classtime but there are many others of equal use. However, please note that not all tools are available in all languages, most of them in English only. If the teacher/teacher intends to use the proposed activity also for interdisciplinary purposes, perhaps with the involvement of the English teacher, this could of course be an added value rather than a limitation.

- Students are divided into pairs or into larger groups (max 4) depending on the number of devices connected to the Internet present in the classroom at the time of the activity. The teacher/teacher will take care to arrange the creation of the pairs or groups maintaining a balance and thus avoiding the formation of pairs potentially "stronger" than the others.

- The attached document provides some questions and answers (to be developed during the activity) that the teacher/teacher will be able to take over, replace or integrate with others in the preparation of the game on the digital platform he/she will have chosen to use.

Tips for the teacher

When using the digital tool you will have chosen, it is suggested not to stimulate too much competition between groups of pupils and students, but to emphasise the explanations that accompany the answers. The aim of the teacher/teacher is in fact not to designate a winner but to increase the overall sensitivity to the issues of combating climate change.

Debriefing

In the debriefing phase the teacher/teacher will use the properties of the digital tool used to chart the knowledge and skills acquired with the class. This phase will also be used to assess how much the activity has been able to stimulate students to reflect on the importance of every small daily gesture alongside the great choices made by governments and supranational bodies.

Follow-up/Inspiration for the future

According to the report resulting from the debriefing phase, the teacher will be able to decide how to orient future activities on the same topics.

Annex

ANNEX 1: List of suggested questions for the preparation of the activity with the help of a digital tool.

Should the teacher/teacher not have an interactive whiteboard and/or a computer, and should it be difficult even for students to obtain some devices connected to the Internet, the game can be conducted using the traditional method, writing the questions on the blackboard or on waste paper tickets, which can be easily found in the school.

1) Is it as friends of the Planet to consume more fresh food or more frozen food?

Answer: fresh food, which requires much less energy for its production, packaging and transport, is always better than frozen food. Don't forget: + energy used, + CO₂ in the air, + pollution, + overheating.

2) Eating meat, is it for a friend of the planet?

Answer: no, it is not. Children may need it in their developmental age, so a diet that includes meat in the necessary amount is not to be condemned. But we must know and remember that the meat supply chain (intensive farming, slaughtering, transport, sale) is among the most resource-wasting and polluting because of the enormous use of water and the large production of greenhouse gases and methane. Moreover, even when livestock farming is not intensive, it requires new and larger spaces for grazing, and therefore in certain areas of the Planet it causes deforestation, one of the main causes of climate change. It has been estimated that for each imported hamburger almost 6 square meters of forest are felled and transformed into pasture.

3) Is using lids for cooking friendly to the environment?

Answer: Yes, it is a great way to save energy, as they retain heat and thus allow food to cook in less time. Shorter cooking = less gas or electricity consumed and therefore less pollution!

4) When dinner is ready everyone rushes to the table to find out what's good on the plate... Will the friend of the environment leave the light in his room on, in order to find it already lit when he comes back after eating, or will he turn off the light every time?

Answer: Of course, he will turn off the light! It's good to remember this every time, and it's also important to know that there are energy-efficient light bulbs and home lighting systems.

5) Talking about the internet, does a friend of the environment use a black or white search engine?

Answer: the friend of the environment knows that black requires less energy. Not only that: the dark screen is less tiring for the eyes and therefore less bad for your health!

6) Which of the two options is environmentally friendly: elevator or stairs?

Answer: Clearly, environmental and climate protection suggests that we use stairs whenever possible, because they do not involve the use of energy, which always results in pollution. It is equally obvious that, where there are health problems or the need to carry heavy packages, one should not feel guilty when using the lift.

7) When you have to replace a computer or an old mobile phone that no longer works, will the environmental friend throw it in the dustbin or dispose of it as a special waste?

Answer: Certain appliances are not to be thrown in the dustbin, of course, or left on the street waiting for someone to pick them up and take them away. You should refer to the specific collection points in your municipality. Attention: remember that every mobile phone contains a battery, and this is the most dangerous part for the environment if it is not properly disposed of!

8) Is it right to have double glazing in the house, or is it not worth it?

Answer: It's very fair, even if a bit expensive... Double glazed windows and doors save a lot of energy and money. Because even if installing them is quite expensive, many Governments in Europe contribute with fiscal saving, and after a few years the savings are also felt in your wallet because you save money for each monthly bill. In winter, double glazing protects you from the cold and in summer it protects you from the heat, sometimes making it less necessary to use air conditioners, which are another source of energy consumption. Never forget the magic formula: + energy used, + CO₂ in the air, + pollution, + global warming.

9) In the kitchen the refrigerator must be placed where it is most comfortable and where it looks best. True or not?

Answer: False! The refrigerator should never be near the stove, radiator or other heat source. If it has to cool down, it is important that it is placed where it will consume the least energy to bring the internal temperature down to the desired level. But it is not enough: you must also remember to always close the door carefully!

10) Always talking about refrigerators, should they be used to cool ready-made dishes?

Answer: No, wrong! The explanation is the same as the previous question: the refrigerator should not be used to cool food that is still hot, but only to keep products and dishes that would otherwise go bad. If you put hot food in the fridge, it will use more energy to do its job, it will last less and it will pollute more.

11) Is it right to use the microwave oven to defrost food?

Answer: In general, the answer is no. Although the molecular agitation principle of microwaves allows you to defrost food quickly, if you want to be environmentally and climate-friendly it is always best to remember to take the food out of the freezer the night before!

12) Travelling with the carrier on the top of the car, does it affect fuel consumption?

Answer: Yes, it does! You consume much more petrol. In addition, the car strains more and risks lasting less. And the demolition of a car produces a lot of waste, which is not always disposed of properly. So, if you don't really need to add a roof rack, you should always put all your luggage in the trunk and in the passenger compartment.

13) Does the cooking water from the pasta, added to the detergent, dirty the dishes?

Answer: false! The water in which we have cooked the pasta is an excellent natural degreaser, provided of course that we have not added seasonings during cooking... If we use it to wash the pot, especially before it cools, we can reduce the consumption of hot water and detergent.

14) Some people say that it is better to take a bath instead of a shower. True or false?

Answer: false! A 5-minute shower consumes an average of 80 litres of drinking water, while it takes 150 litres to fill the bathtub. Almost twice as much!

15) The average distance travelled by an inhabitant of some parts of Africa to get drinking water is 3 km, with a supply of 4 litres of water.

Answer: false! The average distance is 6 km. And since there are so many, and water is not always available, you can't think of going all that way for just 4 litres of water. The inhabitants of those areas are therefore forced to carry a greater weight, around 20 kg, very often without any means of transport. Water is the most precious good we have, and it is indispensable for our life, more than food: we must remember it every time a tap is opened, to avoid wasting it. The reduction in available water is one of the most dramatic consequences of climate change.

16) Is it right to wash fruit and vegetables in flowing water for a long time?

Answer: No. Just leave fruit and vegetables to soak in a bowl adding a pinch of bicarbonate: this removes any germs and saves water.

17) The trees in the boulevards and parks serve to make a city more beautiful but also have other more important functions.

Answer: How true! All plants play a fundamental role in protecting the environment and combating climate change. They are natural regulators of the environment, they produce oxygen, they absorb carbon dioxide (CO₂) which is harmful and their branches provide shade and shelter from the summer heat. On average, a plant absorbs 50 kg of CO₂ in a year! We must not forget that the plants, with their branches, offer hospitality at no cost to a huge amount of birds, which are not only a good company with their singing, but also help to maintain the balance of the ecosystem.

18) Increasing the temperature in the house of only one degree (from 20° to 21° C for example), causes no consequences for the environment.

Answer: false. One degree more produces 300 kg more CO₂ per house in just one year. To increase the temperature by even just one degree, you have to consume much more energy, causing additional pollution and contributing to climate change. It is therefore necessary to keep a temperature in the house adapted to the needs of those who live there, avoiding to stay in winter only with a T-shirt. Our health also depends on it, because it is easier to get sick if there is too much difference between the external and internal temperature. Moreover, if you need more heat, before increasing the heating, you need to think about putting into practice a whole series of small and large interventions such as replacing the doors and windows, protecting the external walls with a thermal coat, reducing draughts, etc..

19) Every time I charge my mobile-phone I disconnect the charger from the socket.

Answer: Good idea! Even though it does not absorb much energy, the charger left in the socket after removing the mobile phone continues to consume unnecessarily. The same goes for the TV and all other household appliances that are switched off but left on stand-by: putting them all together at the end of a day can make all the difference! Whenever possible, you should therefore try to switch off or unplug electrical appliances completely.

20) Buying local products or, better, producing what you can by yourself, is a great help to the environment.

Answer: true. We often don't even realize it, but a lot of the food we consume travels a long way to get to our tables, causing an increase in energy consumption and pollution that we could avoid with a little care. Eating only seasonal food, produced in our area of residence, or producing certain types of vegetables by ourselves, allows us to reduce food travel and the need for highly polluting plastic packaging. Not to mention the personal satisfaction you can get from it!

21) Coffee also makes plants nervous and can ruin them.

Answer: false. Coffee grounds are an excellent fertilizer for plants, rich in salts and at no cost. You can mix them with the soil, but if you keep them for a while it is better to let them dry before removing them to prevent them from mildew.

22) The cooking water of the vegetables should be thrown away.

Answer: false. It contains vitamins and is excellent for plants. But it must not be salty!

23) Egg shells contain substances that are harmful to plants.

Answer: false. Crumbled and mixed with potting soil, they are a biodegradable and valuable - as well as cheap - source of calcium.

24) Orange peels are good for the soil.

Answer: true. The peels, chopped up to accelerate decomposition, provide essential nutrients for flowers and plants. A curiosity: in 1998, in Costa Rica, an orange juice company dumped tons of orange peels in a former pasture, an area made up of compact, rocky, substance-poor soils. In 2014, it was discovered that beautiful plants had grown instead of the deserted area! The waste from the oranges had turned dry, arid soils into a thriving green area.

LEARNING TOOL 4

Safe and Eco-friendly Environment at School and School Grounds

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Understand the importance of following safety precautions at school and school grounds
- Raise awareness of simple conditions for developing and maintaining safe and eco-friendly environment
- Study the safety at school premises and grounds
- Develop creative, computer, and critical thinking skills
- Develop cooperation, presentation, and evaluation skills
- Revise safety precautions at school – actions in the event of a fire, exploring an evacuation plan
- Organize a clean-up event in the city

Activity details

Materials: see annex

Length: 4 hours

Target audience: 8th grade students (20-30 students)

Instructions

What can we do to resolve the problem/situation?

1. Students discuss the topics “The sense of security”, “How to regain the sense of security?”. One of the students observes the group discussion and writes key words on the board. At the end of the discussion students compile a list “The sense of security”, “How to regain the sense of security?”.

2. Students look at and assess the safety and eco-friendly environment at the school premises and grounds. They take notes of their opinions in a free form. After that, students return to the classroom and discuss their observations in groups. They compile a list of their opinions.
3. Individual work: students complete a table (see annex No.1) about their contribution to the development of safe environment.
 - 3.1. Work in pairs: students compare and discuss the information in the completed tables; they can add some more information, if necessary.
 - 3.2. Work in small groups: students discuss the information in their group, draw a group table and present it to other groups.
4. Work on creating ideas: ideas for developing a safe environment at school and school grounds (see annex No.2):
 - 4.1. Students start with self-assessment (Part 1).
 - 4.2. Students are divided into pairs to get acquainted with each other’s opinions. They mark the points they have agreed about during the discussion (Part 2).
 - 4.3. Students are divided into groups of four students each (Part 3).
 - 4.4. Students in their groups discuss all proposed ideas and collect examples that are relevant for providing sustainable living. Students make a poster with their ideas and show it to other groups. (Part 4).
 - 4.5. Students make the drawings on which they show the most important conditions for the development of a safe and eco-friendly environment at school and school grounds.
5. 12 best drawing are selected. Students make a calendar “Safe and Eco-friendly Environment at School and School Grounds”.
6. The e-calendar is made (by taking photos or using computer programme). The e-calendar is published at the school homepage.
7. Students organize a clean-up event in the city.

Tips for the teacher

What is the problem/situation? What do we know about the problem/situation? What should we know? How can we know about it? How can we organize our research?

1. The teacher invites students to express their opinions on the topics “The sense of security”, “How to regain the sense of security?”.
2. The teacher encourages students to look at the school premises and grounds, guiding students’ responses to the ideas about a safe and eco-friendly environment. The teacher guides students towards a common opinion.
3. The teacher invites students to think about themselves as part of the world and their actions when living in society. Students work independently and complete the table (annex No.1). The teacher invites students to work in pairs, then in groups and asks students to develop a common table.
4. The teacher encourages students to answer a question “What are the most important conditions we have to meet in order to have a safe and eco-friendly environment?” individually. The teacher asks students to divide into pairs and make a list of conditions they both agree with.
5. The teacher divides students in groups of four, and asks them to make a list of conditions they all agree about.
6. The teacher divides students into groups of four again, and asks them to make a list of examples of eco-system services they agree about and which are important for the development of safe, eco-friendly, and sustainable living. The teacher regularly asks students to change the groups so they have an opportunity to get acquainted with as many opinions as possible.
7. The teacher asks students to work in groups and make drawings.
8. The teacher invites students to evaluate the drawings and choose the 12 best ones.
9. The teacher suggest that the students make a calendar, e-calendar.
10. The teacher encourages students to acquaint the society with their work and to post the e-calendar on the school homepage.
11. The teacher asks students to decide which territory in the city requires to be cleaned and invites students to take part in a clean-up even tin the city.

Debriefing

The annexes contain the samples of working sheets, tables that can be adapted to students’ abilities, age, and experience, as well as the objectives set by the teacher (length and number of classes). Students can do some tasks, for example, making drawings or e-calendar at home. When preparing the class, the teacher should make a copy of the evacuation plan. If the teacher wants to expand the list of safety issues, it is also possible to discuss electrical safety issues, or watch training videos about electric injuries.

Follow-up / Inspiration for the future

How the outcomes will be presented?

1. Students evaluate their own work as well as the work of other groups (drawings, a calendar).
2. The exhibition of students’ works at school, posting them on the school homepage or social network, and conducting the safety classes.

References / Further reading

<https://www.youtube.com/watch?v=WYd3GaXtt9I> President of Latvia Egils Levits invites everyone to participate in the World Clean-Up Event on September 21

<https://www.youtube.com/watch?v=vnmLlul1418> What to do in the event of a fire?

No.	At class	As school	In Daugavpils	In Latvia	For yourself, for your family
What do I do?					
What can I do?					

Annex

Annex 1

“My Contribution to the Development of a Safe and Eco-Friendly Environment”

What do I do and what can I do?

Development of a Safe and Eco-Friendly Environment at School and School Grounds

<p>Part 1 Personal opinions “What are the most important conditions we have to meet in order to have a safe and eco-friendly environment?” Write down these conditions, but do not discuss with others.</p>	<p>Part 2 Pair discussion Make pairs following the teacher’s instructions. - Tell each other about your conditions for a safe and eco-friendly <u>environment</u>; - Discuss <u>them</u>, and complete your list with the conditions you both agree about. After the discussion, we both agree that:</p>
<p>Part 3 Discussion and work in groups of four: Divide into groups of four following the teacher’s instructions. - Tell each other about your conditions for a safe and eco-friendly <u>environment</u>; - Discuss <u>them</u>, and complete your list with the conditions you both agree about. After the discussion, we both agree that:</p>	<p>Part 4 Discussion and work in groups of four - Make a list of examples of eco-system services which are important for providing safe, eco-friendly, and sustainable living. - Summarise the outcomes of the discussions and conclusions in a written report and present your conclusions in the format of drawings.</p>

Annex 2

LEARNING TOOL 5

Climate Change

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Define what climate change is
- Understand the urgency of taking action to combat climate change and its impacts
- Strengthen resilience and adaptive capacity to climate related disasters
- Understand the need for the implementation of the UN Framework Convention on climate change
- Explore, reflect upon and follow up ideas in real life that stress out the urgency of taking immediate action against climate change
- Raise innovative ideas and non-traditional solutions regarding SDG13
- Cooperate and share tasks with other students to strengthen resilience to climate change
- Show resistance and endurance towards the struggle for climate justice
- Respond positively towards achieving SDG13
- Get inspired by different examples of good practices regarding SDG13
- Share openly their opinions and beliefs in class
- Get empowered for future actions

Activity details

Material: Projector, whiteboard, markers, digital technology (computers, laptops, tablets, mobile phones), notebooks, worksheets

Duration: 4 hours

Group number: 20 - 24 students (age: 13 – 15 years old)

Instructions

Activity 1 (90 min):

Starter:

Warm-Up: Ask students to engage in a free write for five minutes in response to the term “climate change”. Teacher encourages them to activate prior knowledge and to explore questions that they have in a nonthreatening, non-evaluative way. They can write:

- what they know,
- what they think they know,
- what they’ve heard,
- what they’re confused or unsure about, or
- what they want to know.

Main lesson:

1. Students share their writing with their partner. After they have heard each other’s writings, they work together to write a collaborative summary in which they combine their ideas.
2. Class discussion: Students discuss:
 - What did they know?
 - What did they learn from their peers?
 - What was it like to engage in this process?
 - What questions do they have?
 - Were there disagreements?
3. Students watch the Patrimonito’s World Heritage Adventures in Australia at the Great Barrier Reef (<https://www.youtube.com/watch?v=ITpHgTh66tY>). Patrimonito and the young Australians witness that climate change and pollution are threatening the ecosystem. Together, they take action to raise awareness among their peers and decrease pollution.
4. Teacher gives every student a copy of appendix 1 and invites students to move around the classroom and join up with someone who can respond in a positive way to one of the items in the handout.
5. Teacher asks them to write the name of the person into the space on the sheet and ask questions of their partner so as to encourage sharing of detail of their experiences and/or feelings.

6. Teacher lets the group know that they can only have one positive response from any one person. They must move on to other people to fill in other lines on the handout.

7. Teacher encourages them to complete as much of the handout as possible in the time available but without rushing so they benefit from listening to each other's stories.

8. Teacher leads the group in discussion and reflection on stories they have encountered and writes the group's questions about climate change on the flip chart or board.

Discussion questions:

- Did you learn anything from anybody that really surprised you?
- Did you find you had experiences in common with others?
- What were those experiences?
- What feelings were commonly expressed?
- Did you argue? About what?
- What has the activity shown that we know about climate change?
- What has it shown that we don't know or are uncertain about?
- What questions have it raised in your mind?

Plenary:

Students quickly summarize their collective feelings about climate change.

Activity 2: (45 min)

Starter:

Students watch the video "The turning point" by Steve Cutts (<https://www.youtube.com/watch?v=p7LDk4D3Q3U>). Teacher ask them to point out the urgency of taking action to combat climate change and its impacts that the producer wishes to project.

Main lesson:

Working in pairs, students examine different articles and report back to the class, through class presentations. To prepare, they take notes on and discuss the following questions:

- How has global climate change affected the local climate and geography of the region discussed in your article?
- How have these changes affected the people?
- How have the people tried to adapt to climate change's effects?

Plenary:

After students have presented what they learned from their article, teacher encourages them to make connections between the various articles by posing the 1. following prompts, either in writing or verbally:

What do you know now about climate change that you didn't know before?

Activity 3: (135 min) [Computer Lab – Interdisciplinary lesson – Geography]

Starter:

1. Teacher shows a map made by the Italian artist Laura Canali (appendix 2) illustrating current and future climate threats to livelihoods, ecosystems, and human well-being and asks students to interpret it and share their thoughts.

(Laura Canali's principal inspiration for the maps, entitled Visualising A Warming World, were the World Bank's Turn Down The Heat reports. Documented and published in November 2012 and in June 2013 the reports detail the potential destructive effects of unmitigated global warming. It illustrates current impacts from climate change, including heat waves, droughts, flooding and desertification around the globe. It also shows floods in Pakistan, India, China, Philippines, Thailand, Indonesia, Tanzania, and Nigeria, as well as heat waves in the United States, Europe and Australia. Canali's map also notes future droughts appearing in Brazil and the United States, and deserts expanding from their current dimensions into peripheral areas.)

2. Teacher shows a second Canali-designed global map (appendix 3) and ask the student to draw outcomes by highlighting:

- How warming is likely to have impacts in the Mediterranean region?
- Which are the key threats?

Main lesson:

1. Class research: Students study the impact of climate change in the Mediterranean region.

Students research the effects of climate change in Cyprus collecting data through maps, graphs and reading the following articles:

[http://www.ec.gov.cy/environment/environment.nsf/All/1F2ED-18A1C2E7651C225802B001B84FD/\\$file/%CE%9F%CE%B9%20%CE%BA%CE%B-B%CE%B9%CE%BC%CE%B1%CF%84%CE%B9%CE%BA%CE%AD%CF%82%20%CE%B1%CE%BB%CE%BB%CE%B1%CE%B3%CE%AD%CF%82%20%CF%83%CF%84%CE%B7%CE%BD%20%CE%9A%CF%8D%CF%80%CF%81%CE%BF.pdf](http://www.ec.gov.cy/environment/environment.nsf/All/1F2ED-18A1C2E7651C225802B001B84FD/$file/%CE%9F%CE%B9%20%CE%BA%CE%B-B%CE%B9%CE%BC%CE%B1%CF%84%CE%B9%CE%BA%CE%AD%CF%82%20%CE%B1%CE%BB%CE%BB%CE%B1%CE%B3%CE%AD%CF%82%20%CF%83%CF%84%CE%B7%CE%BD%20%CE%9A%CF%8D%CF%80%CF%81%CE%BF.pdf)

<http://hikersbay.com/climate-conditions/republiccyprus/northcyprus/climate-conditions-in-northern-cyprus.html?lang=en>

2. Students present the results of their research in class by answering the following questions:

- What are the impacts of climate change in Cyprus and generally the Mediterranean region?
- How urgent is it to take action to combat climate change and its impacts?
- How will we strengthen resilience and adaptive capacity to climate related disasters?
- How important is it to implement the UN Framework Convention on climate change?
- Which solutions do you suggest in order to eliminate or prevent the effects?

<https://www.greenamerica.org/climate-change-100-reasons-hope/top-10-solutions-reverse-climate-change>

<https://cgspace.cgiar.org/bitstream/handle/10568/27781/CCAFS%20CCSL%20booklet%20final.pdf?sequence=6>

<https://www.climatechangenews.com/2019/12/09/nature-based-solutions-matter/>

<https://www.consilium.europa.eu/en/policies/climate-change/>

<https://www.greenfacts.org/en/desertification/1-2/6-prevention-desertification.html>

Plenary:

Class discussion: Students discuss the importance of implementation of the UN Framework Convention on climate change in the local community.

Tips for the teacher

One of the possible solutions that the students could suggest to combat climate change and eliminate emissions, would be the utilization of solar energy as Cyprus as Cyprus has an average of 2700 to 3500 hours sunlight per year.

Students suggest possible ways to utilize solar energy such as solar farms, rooftop solar and electric cars.

The school owns an electrical car which can be used for this purpose. Students can examine the school electric car (or any other possible sustainable machine that the schools can be provided) learning the way its functions and comparing its advantages and disadvantages.

Students can suggest possible solutions to eliminate the disadvantages and then present the results of their research at school, school's social media and local community.

Debriefing

Students publish the results of their research and their possible solutions on Eco club's school website

Follow-up/Inspiration for the future

How are results presented?

1. Students present the results of their research at school.
2. Information in social media, school's web page.

Further actions:

1. Students cooperate with the "Youth for Climate Cyprus". They share the results of their research, promote the campaign of the organization for informing the local society and participate in their tree planting initiative.
2. The school organises movie screenings of the documentary "Samsara" (2011) and the film "Noah" by Darren Aronovsky to raise awareness of climate change.

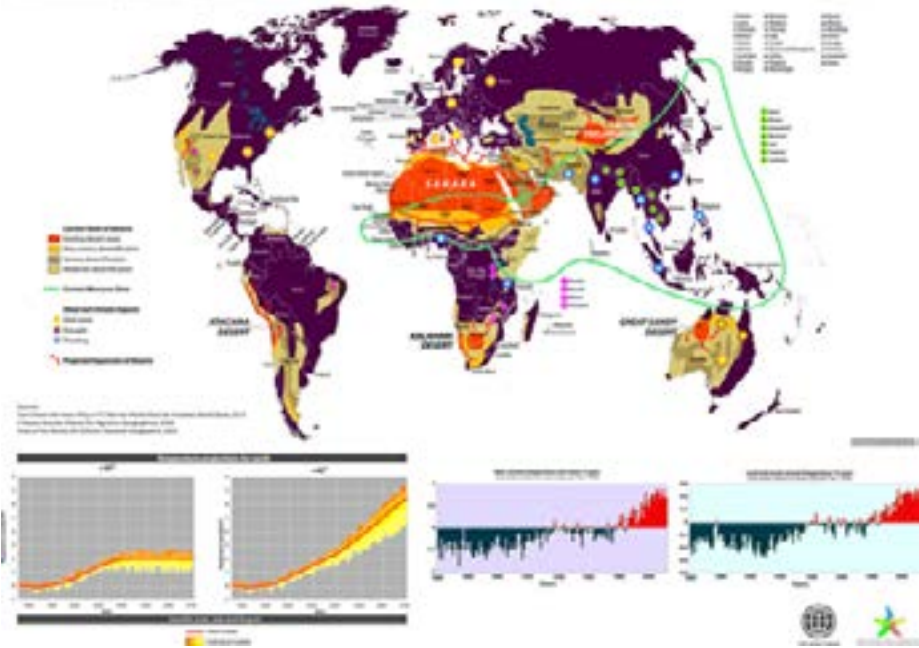
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2. Patrimonto's World Heritage Adventures: <https://www.youtube.com/watch?v=ITpHgTh66tY>
3. New York's Times: Climate Change and the People Already Harmed by It <https://www.nytimes.com/2017/03/22/learning/lesson-plans/a-lesson-plan-about-climate-change-and-the-people-already-harmed-by-it.html>
4. Visualising Warming World: <https://www.connect4climate.org/infographics/visualising-warming-world>
5. Steve's Cutts: The turning point <https://www.youtube.com/watch?v=p7LD-k4D3Q3U>
6. Climate Change in Cyprus: [http://www.ec.gov.cy/environment/environment.nsf/All/1F2ED18A1C2E7651C225802B001B84F-D/\\$file/%CE%9F%CE%B9%20%CE%BA%CE%BB%CE%B9%CE%B-%CE%B1%CF%84%CE%B9%CE%BA%CE%AD%CF%82%20%CE%B1%CE%BB%CE%BB%CE%B1%CE%B3%CE%AD%CF%82%20%CF%83%CF%84%CE%B7%CE%BD%20%CE%9A%CF%8D%CF%80%CF%81%CE%BF.pdf](http://www.ec.gov.cy/environment/environment.nsf/All/1F2ED18A1C2E7651C225802B001B84F-D/$file/%CE%9F%CE%B9%20%CE%BA%CE%BB%CE%B9%CE%B-%CE%B1%CF%84%CE%B9%CE%BA%CE%AD%CF%82%20%CE%B1%CE%BB%CE%BB%CE%B1%CE%B3%CE%AD%CF%82%20%CF%83%CF%84%CE%B7%CE%BD%20%CE%9A%CF%8D%CF%80%CF%81%CE%BF.pdf)
7. Cyprus' Temperatures through the years: <http://hikersbay.com/climate-conditions/republiccyprus/northcyprus/climate-conditions-in-northern-cyprus.html?lang=en>
8. Climate change – Suggested solutions: <https://www.greenamerica.org/climate-change-100-reasons-hope/top-10-solutions-reverse-climate-change>
<https://cgspace.cgiar.org/bitstream/handle/10568/27781/CCAFS%20CCSL%20booklet%20final.pdf?sequence=6>
<https://www.climatechangenews.com/2019/12/09/nature-based-solutions-matter/>
<https://www.consilium.europa.eu/en/policies/climate-change/>
<https://www.greenfacts.org/en/desertification/1-2/6-prevention-desertification.html>

Climate Change People Search

Find someone who:		Name	Notes from your discussion
1	Has joined in climate change community action		
2	Is worried about what the future might bring		
3	Has heard that a warming climate will bring new diseases		
4	Is not sure what the difference is between climate and weather		
5	Feels the normal rhythm of the seasons is changing		
6	Knows of people who have had to move because of the effects of climate change		
7	Can think of changes being made to stop climate change getting worse		
8	Blames wealthy nations for climate change		
9	Can share a recent climate change story		
10	Is trying to be 'green' by cutting down on energy use		
11	Believes that climate change is not that serious		
12	Knows of a farmer who is worried about climate change		
13	Feels that their lifestyle and culture are under threat from climate change		
14	Thinks that girls and women will suffer most as the climate heats up		
15	Has seen the effects of climate change where they live		
16	Can think of changes being made to adapt to climate change		
17	Feels very emotional about climate change		
18	Has heard or read of awful climate change predictions		
19	Has learned of species going extinct because of climate change		
20	Thinks that their children will not be able to live as they have		

VISUALISING A WARMING WORLD
DESERTIFICATION, HEAT WAVES, DROUGHTS AND FLOODING



Annex 3:

VISUALISING A WARMING WORLD
WARMING IS LIKELY TO HAVE MORE SEVERE IMPACTS ON THE TROPICS



LEARNING TOOL 6

Mitigating climate changes

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Work goal-directed
- Define what climate change is
- Understand the urgency of taking action to combat climate change and its impacts
- Raise innovative ideas and non-traditional solutions regarding SDG13
- Cooperate and share tasks with other students to strengthen resilience to climate change
- Show resistance and endurance towards the struggle for climate justice.
- Respond positively towards achieving SDG13
- Think as global citizens
- Show genuine interests and abilities to solve complex real-world problems which affect sustainability
- Be able to define alternatives for action and set priorities
- Be able to make smart and informed decisions
- Cooperate in teams
- Learn from others and contribute to other people's learning
- Be able to solve problems
- Be able to explore, reflect upon and follow up ideas in real life

Activity details

Material – see annex

Duration - 2 hours 40 min

Group number --4 groups, 5 students each (6TH grade, age 12-13)

Instructions

Lesson one (40 min)

1. Students watch a video on the topic “What is climate change and why does it occur?”(link in references)
2. Teacher invites students to answer questions about climate change. Questions like :
 - What is climate change?
 - What is global warming?
 - What is the Greenhouse effect?
 - Does climate change affect our lives?
 - How can we mitigate climate change?
3. Students do a mind map “Solutions to climate change” (see annex)
-some of the answers are: use less fossil fuel, recycle, save energy, plant trees...

Lesson two (60 min)

4. Students work in groups. Each group is given 1 way to mitigate climate change, to prepare a debate, explain the solution and why that solution is the best. Each group prepares a poster for the debate.
5. Students debate their solutions, listen to each group and complete the table charts provided (see annex)
6. Students collect the table charts and findings .

Lesson three (60 min)

7. Students divided into two groups use these solutions in real life.
 - Collect and recycle paper and other materials from the nearby area.
 - Plant trees in the nearby area.
8. Students make a presentation “How to mitigate climate change”

Tips for the teacher

- 1) Teacher plays video and starts a discussion about climate change.
- 2) Teacher invites students to present the answers from the mind map.
- 3) Teacher encourages students to debate their solutions on how to mitigate climate change.
- 4) Teacher assigns students to use these solutions in real life.
 - Collect and recycle paper and other materials from the nearby area
 - Plant trees in the nearby area
- 5) Teacher invites students to present what they have learned.

Debriefing

Students design posters for climate change mitigation and place them around the school, also show presentation on social media in order to raise awareness. Students can document their activities with free photo apps (ex. Canva) and use them in the posters. Students can also write an essay on “Mitigating climate change”

Follow-up/Inspiration for the future

1. Information in social media, school's webpage.

References/Further reading

<https://klimatskipromeni.mk/article/31#/index/main>

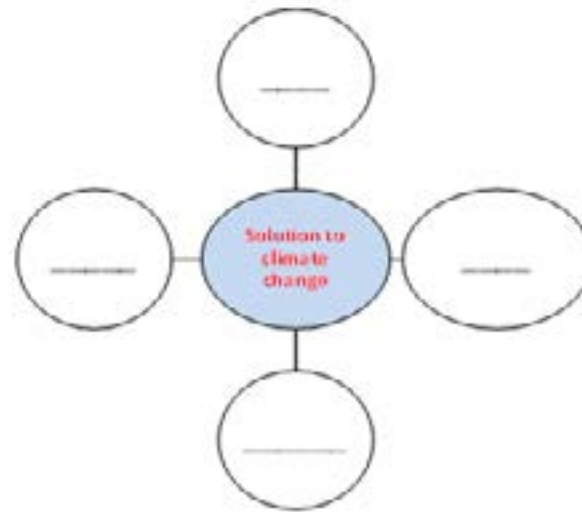
http://www.springalive.net/mk-mk/springalive/climate_change

https://calp2016.sites.olt.ubc.ca/files/2019/05/Introduction-to-Climate-Change_CALP-UBC.pdf

<https://www.youtube.com/watch?v=w7f0nLJdc8I>

1. Mind map "Solutions to climate change"

How can we mitigate climate change?



Mitigating Climate Changes

	Use less fossil fuels	Recycle	Save energy	Plant trees
Description of the solution.				
How does it mitigate climate change?				
Advantages of the solution.				
Disadvantages of the solution.				
How it helps people?				
How it helps the environment?				

Annex:
2. Table chart

Name _____

3. PowerPoint presentation “How to mitigate climate change”

How to mitigate climate change?



We are already seeing the effects of climate change: temperatures rise, glaciers melt, and sea levels rise. The changes include frequent extreme weather events such as droughts, cyclones and floods, which put the population at risk, destroying agriculture and human populations and threatening the extinction of many plant and animal species. Climate change can cause many unexpected changes and disruptions to this delicate balance.

Climate is extremely important for the life and well-being of the planet

From being able to enjoy a pleasant time and stay outside to being dependent on crops and food, we all rely on the climate of the planet in a different way. But our climate is changing, mainly because of us. Although the Earth's climate has changed naturally over a very long period of time, people are still causing climate change through the intensive use of polluting energy resources, deforestation and other interventions.

Can we do something about it?

The good news is that much can be done in the fight against climate changes. From changing daily habits to expanding consciousness, each one of us has the power to make a difference.

3. PowerPoint presentation “How to mitigate climate change”

What can we do?

1. Use less fossil fuel

Road traffic is a major factor in air pollution and climate change. Traffic exhaust is the number one health hazard in Europe and in the world.

2. RECYCLE

Recycling is the processing of materials used to obtain new products. This process prevents the loss of materials, reduces the consumption of new raw materials, reduces energy use, reduces air and water pollution.

Instead of that....

1. Ride a bike
2. Walk
3. Use electric cars

SAVE ENERGY

When you consume less energy, you reduce the amount of toxic gases released by power plants, conserve the earth's natural resources and protect ecosystems from destruction.

By taking steps to reduce your energy intake, you will contribute to a healthier and happier world.

3. PowerPoint presentation “How to mitigate climate change”

TIPS

Use solar energy

Change regular light bulbs with LED light bulbs

Install insulation on ceiling and walls

WE HAVE LEARNED HOW
TO MITIGATE CLIMATE
CHANGE

NOW IT'S TIME TO ACT...

4. PLANT TREES

Trees “clean” the climate by absorbing carbon dioxide from the environment and releasing oxygen. Trees cool the environment through their leaves absorbing the sun's heat. Thus, there is cooling in the atmosphere.



GOOD PRACTICE

The Second Life of Waste

Description (max. 5 lines)

The Module developed by our team provide a deeper understanding of SDG13 and the urgency of taking action to combat climate change and its impacts, we explain how it interrelates with sustainable lifestyles, how 21st century skills are relevant to SDG13, , build teachers' capacity further in order to facilitate successful sessions to increase students' skills and competencies using the framework of the UN SDG13.

Link to website

1. Air pollution: the EU residents' health is not yet protected enough (video): https://www.youtube.com/watch?time_continue=6&v=R0deLckNv9g
2. A way of a plastic bag (video): <http://www.zalajosta.lv/lv/tapusi-jau-na-vides-isfilma-par-plastmasas-maisinu-parmeriga-paterina-ietekmi-uz-vidi-plast-masas>
3. Environment pollution (video): <https://www.youtube.com/watch?v=uW-JoMNeFxQw>
4. A natural thing to do: introduction into GreenInfraNet project (video): https://www.youtube.com/watch?v=-mr5lF2tzD4&feature=emb_logo

Country and location: Latvia

Actors/partners

Daugavpils City Education Department in cooperation with Department of Education (Science and English teachers), Daugavpils Saskanas Basic school, The State Environmental Service of the Republic of Latvia, Daugavpils University, Latgales Zoo.

Objectives

- To become aware of the negative effects of waste on the environment and climate change.
- To understand the need for reduction of the amount of waste by forming the habit of acting responsibly for the environment preservation
- To become aware of the variety of ways for recycling.
- Working in groups, to make a useful thing from recycled materials.

Results

As a result of the Module activities, educational community:

- Will respond positively towards achieving SDG13;
- Will share good practices and get inspired by them to take actions;
- Will initiate, facilitate, and participate in discussions in class openly sharing their opinions and beliefs in a safe space for all opinions;
- Will get empowered for future actions;

Why is it considered a good practice? (max. 8 lines)

It helps to explore, reflect upon and follow up ideas in real life that stress out the urgency of taking immediate action against climate change;

It motivates new generation to raise innovative ideas and non-traditional solutions regarding SDG13 and to cooperate and share tasks with other students to strengthen resilience to climate change.

Elements of replicability in other contexts (max. 5 lines)

- Apply critical thinking and make meaningful knowledge around SDG13
- Learn to see connections and patterns
- Define alternatives for action and set priorities
- Learn to make smart and informed decisions
- Learn to cooperate in teams
- Learn to communicate with digital tools

MODULE 6

LIFE BELOW WATER (SDG14) AND THE ACQUISITION OF 21ST CENTURY SKILLS

INTRODUCTION

Overall Aim of Sustainable Development Goal 13

Two thirds of the surface of the earth is covered with water. Water is a main condition of life. Humans evolved from the very first bacteria found in the sea 4.000.000.000 years ago. Our lives are deeply dependent on water.

The world's oceans – their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humankind. How we manage this vital resource is essential for humanity as a whole²¹.

SDG 14, Life below water, aims to conserve oceans by ensuring they are used sustainably. This includes safeguarding marine and coastal ecosystems, as well as preventing and reducing marine pollution and the impacts of ocean acidification.

Marine pollution, an overwhelming majority of which comes from land-based sources, is reaching alarming levels, with an average of 13,000 pieces of plastic litter to be found on every square kilometre of the ocean²².

SDG 14, Life below water, is divided into 10 targets²³:



6.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution



6.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.



6.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

21 <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-14-life-below-water.html>

22 <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-14-life-below-water.html>

23 the illustrations for det targets are found here http://matematikkensdag.dk/wp-content/uploads/2019/09/E-bog-MatDag2019-aktiv_indholdsfortegnelse-NET.pdf



6.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics



14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation

14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

14.A Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries

14.B Provide access for small-scale artisanal fishers to marine resources and markets

14.C Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want

Why is it important for educational community?

A change of habits is necessary for future generations. We need to change climate fear into climate actions. In a UNICEF survey 41,2% of youth fear climate change²⁴. We need to improve their understanding of the water cycle as well as recycling. We need to educate children as citizens of the world to be conscious of life in the oceans and of how dependant human life is on the ocean. Most importantly, how fragile it is in regard to human actions on land and in the sea. It is important to teach children that our present actions will affect biodiversity and future generations.

24 <https://www.unicef.dk/wp-content/uploads/2018/11/Euro-Kids-Want-unders%C3%B8gelse.pdf>

Key dimensions of Sustainable Development Goal 14

To understand the marine pollution, it is necessary to understand water cycle. The students have to understand, that they themselves take part in the water cycle.

We borrow the water we use from the nature and we have to send the water back to nature as clean and unpolluted as we got it. The students also have to understand that water run from the surface of the land to the sea. It is difficult to understand the global cycle, if you do not understand the local cycle of water.

All participating students will learn the answers to the following questions:

- Where does tap water come from?
- What happens to the water when you flush the toilet?
- Where does rainwater end up?
- What does rainwater accumulate on its way towards the sea?
- Which compounds originates from humans and what can we do about it?

The students must have a basic scientific knowledge, but it is also essential, that they appreciate the nature and have positive experiences with the sea and the living animals and plants. This we must incorporate in the activities.

We have chosen to focus on the following three sustainable development goals:



14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

The key themes of 14.1:

- Plastic pollution of the sea, because it is a visible world wide problem, illustrates, why we are dependant of each other
- Pollution with nutrients in coastal waters that comes from fish production, cities and the agriculture



By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

The key themes of SDG 14.2:

- We will work with biodiversity with a focus on protection of species, because the species that will be extinct, never can return
- Focus on restoration of marine and ecosystem local and global eg. concrete actions to restore the local inlet. (Vejle Fjord)²⁵



14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics

²⁵ <https://www.youtube.com/watch?v=G5t7TKjgfbg&feature=youtu.be>

The key themes of SDG 14.4:

- To become aware of the power of being a sustainable consumer
- To become aware of how dependent nations are of transnational targets and laws, that regulates the fishing fleet
- To become aware of how fishing methods influence the ecosystem

Our reasons for choosing and pinpointing these 3 targets are, that they are affecting human life and will be relevant also for school children to work with. If we want them to change their habits and attitude, it must make sense for the students in their everyday life and give them opportunities to act. It is important for us that the activities we choose are close to the students' everyday life. Furthermore, it is important that they are able to understand the effect of the actions, which they can do themselves.

They need to have positive experiences connected to the sea and life below water. We will obtain that in the following ways:

- 1) The students need to see and feel that sea pollution and other human actions towards the sea is a real problem (e.g. plastic in mussels or plastic on the beach)
- 2) The students need to develop an understanding of the natural systems (e.g. water cycle, pollution chemistry and biodiversity) in the sea
- 3) The students will be able to see a solution that can be integrated into everyday life

It is also important that the activities are practice-oriented and gives a basic knowledge of water systems.

The interplay between Sustainable Development Goal 13 and the acquisition of 21st century skills

Humans are both responsible of sea pollution as well as deeply dependent on the oceans to provide us with food for a growing population. Therefore we have to educate the coming generations in a way that gives them both an understanding of the problem, willingness to make choices concerning both personal actions and political actions higher in the system. The students must have the abilities to solve problems created of the way humankind is affecting our environment and they must have power to take action. Our education must reflect those skills, described as 21st century skills.

We will in our activities focus on making learning situations where the students:

- have to collaborate in teams to make well researched choices
- can relate to the problems and feels personally involved
- have to use their engineering skills to create physicals models which illustrate solutions to specific problems
- Be able to see both sides of arguments. The student need to be able to put themselves in other peoples places, play different roles and see different perspectives from their own
- with a purpose of the students to be engaged at the personal level and later in the process will work towards a more communal level e.g. municipal, national and international levels

LEARNING TOOL 1

What hides our sand on the beach?

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Understand the threats to ocean systems, such as pollution and recognize and know how to explain the fragility of many ocean ecosystems (cognitive dimension of SDG14)
- Show people the impact of humanity on the oceans and to know microplastics, their origin and the consequences of their presence in the marine environment (socio-emotional dimension of SDG14)
- Campaign for the protection of marine areas, based on science, raising awareness of the need to reduce plastic production and consumption (behavioural dimension of SDG14)

Activity details

Pupils do a visit to the local beach in order to participate in a beach cleaning action. In this field visit, in addition to garbage collection and analysis, they carry out a sand sample collection from the high tide zone according to the experimental protocol (annexed) that they will then follow in the school science/laboratory room for the looking for microplastics on the beach sand.

Material

Attached news about ocean pollution World Economic Forum.
CIIMAR's Sea Change - Our Ocean Our Health experimental protocol attached (material covered by the Creative Commons license).
Beach sand at high tide collected during a field visit.
Laboratory material
Computer or mobile phone
Padlet

Duration

Three sessions:

1st session: one day for the beach cleaning operation.

2nd session: 2x50 'application of the experimental protocol' "What does the sand hide?"

3rd session: Conducting an awareness campaign based on the results obtained in the previous sessions from a padlet.

Instructions

Procedure

FIRST MOMENT

Analyse with pupils information from studies of the World Economic Forum that suggest that, in 2050, the weight of plastics in rivers and oceans will be greater than the weight of fish, if we do not change the way we consume and produce plastics. Consult news from the attached links to the World Economic Forum.

SECOND MOMENT

Participate with the support of local government, a NGO or a movement (another partner entity (e.g., Museu de Ciência Viva [Living Science Museum])) in an collective action to clean up beaches.

Upon arrival at the beach, collect the sand sample in the area of the high tide line according to the experimental protocol attached and photograph the area to be cleaned.

Then, organise the beach cleaning, dividing pupils into groups of 3 people with protective material (gloves and masks) and utensils suitable for collection in order to cover the desired/authorised extent of cleaning.

Photograph the beach at the exit in the area after the cleaning action, as well as the garbage collected.

THIRD MOMENT

The sand collected will be analysed in the Natural Sciences class, proceeding with the application proposed in the experimental protocol.

FOURTH MOMENT

Disseminate the conclusions resulting from this action at the macro and micro level in a padlet to the educational community.

Tips for the teacher

- 1) Print the experimental protocols, there must be at least one per group;
- 2) Ask local government partners and other entities to provide the necessary material for the beach cleaning action.

Debriefing

Inform and share with the partners all the steps taken by giving the link to the padlet created for that purpose.

Follow-up/Inspiration for the future

- Compare the results obtained with other similar initiatives, for example the UNEP Life below water - Marine litter
- Associate this action with existing movements, for example #CleanSeas

References/Further reading

<https://www.unenvironment.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-14>
<http://cdn.worldslargestlesson.globalgoals.org/2017/05/WED-Lewis-Pugh-Marine-Litter-Lesson-Plan-Final.pdf>

Annex

Experimental protocols and reflection guidelines appropriate to the activities of the groups, whenever relevant.

World economic forum news on the plastic weight by 2050 in: https://www.weforum.org/agenda/2016/01/how-can-we-create-a-world-where-plastic-never-becomes-waste?utm_content=bufferc04ab&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer

Official reports http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf

Experimental protocol “What hides our sand on the beach?” - CIIMAR nas Escolas [CIIMAR in Schools] (The access to this material requires a license from Creative Commons)

LEARNING TOOL 2

We are for clean water

21st century skills addressed

Character
Citizenship
Collaboration
Communication
Critical thinking
Creativity

Objectives

With this tool, students are expected to:

- Develop opinions on how chemistry affects life in water
- Understand that conservation of natural resources and life in water are essential for our future
- Raise awareness of simple measures to be taken to reduce water pollution
- Examine household plastic packaging and chemicals found in detergents
- Develop cooperative, presentation, and assessment skills

Activity details

Materials: see annex

Length: 2 hours

Target audience: 8th grade students (20-30 students)

Instructions

What can we do to solve the problem/situation?

1. Group work: students make mind maps with key words “Life Below Water” (for example, sea pollution, coastal ecosystem, oceans, fishing, small islands, etc.). They compare mind maps and evaluate them, after that, students develop one common mind map.
2. Students watch a few films about water life, and water pollution.
3. Students make a table that will be completed at home, conducting research on the plastic used at home and chemical detergents.

4. At home, students complete the table mentioned in stage 3 above, and take photos of labels of various detergents used at home.
5. Students work in groups with the table they have completed at home: compare components of detergents, mark blue the components which other students also have, and mark green the components which other students do not have. Students make 2 lists: 1. the list of often and rarely used components; 2. the list of less harmful and more harmful (dangerous) detergents.
6. Work with photos taken at home: the study of danger symbols and eco labels; making presentations about danger symbols and eco labels.
7. Students discuss the following issues:
 - Pros and cons of washing detergents.
 - Which type of products will be preferable in the future? Why?
 - How can we reduce the use of plastic at home or at school?
 - What measures should be taken to gradually abandon plastics and chemicals, replacing them with other materials and substances?
 - What will I teach my parents about detergents and plastic packages?
8. Students make e-posters and e-newspaper on the topics “Sort waste!”, “How to abandon using plastic?”, “What detergents are environment-friendly?”, “Danger symbols and eco labels”

Tips for the teacher

What do we know about the problem / situation? What should we know? How can we know about it? How can we organize our research?

1. The teacher encourages students to talk about the most important things without which it is impossible to imagine our life, guiding students’ responses to water pollution which negatively affects life in water.
2. The teacher shows a few films about the life in water and water pollution (see annex).
3. The teacher gives homework, presents the information given in the table, and explains how to complete the table (see annex)
4. The teacher organizes work in groups, inviting students to compare information in the tables completed at home. The teacher coordinates the development of 2 lists, encourages comparisons and supports designing of schemes.
5. The teacher suggests saving the photos on the same computer, grouping them and creating a presentation. It is important for the teacher to get prepared for the lesson in advance – to study the danger symbols and eco labels!

6. The teacher involves students in the discussion on the following topics:
- Pros and cons of washing detergents.
 - Which type of products will be preferable in the future? Why?
 - How can we reduce the use of plastic at home or at school?
 - What measures should be taken to gradually abandon plastics and chemicals, replacing them with other materials and substances?
 - What will I teach my parents about detergents and plastic packages?
7. The teacher encourages students to make e-posters and e-newspaper on the topics “Sort waste!”, “How to abandon using plastic?”, “What detergents are environment-friendly?”, “Danger symbols and eco labels”.
8. The teacher encourages students to get their family and friends acquainted with the opportunities to keep water clean in the city, district, country, Europe, in the world.

Debriefing

There is a table in the annex. Students have to complete it as a home task.

Follow-up/Inspiration for the future

How the results will be presented?

1. Students assess their own group work as well as the group work of their peers (e-posters and e-newspapers).
2. Exhibition of works at school, at the school’s webpage, the school’s social network.

References / Further reading

<https://www.youtube.com/watch?v=6zrn4-FfbXw>

<https://www.youtube.com/watch?v=HQTUWK7CM-Y>

<https://www.youtube.com/watch?v=bh8WHH-tBXI>

<https://www.youtube.com/watch?v=1P9syq3f6hQ>

Annex

No.	Product name	Ingredient name	Why added? Aim	Effect on humans	Effect on environment and/or living creatures/ effect on life in water
1.					
2.					
3.					

LEARNING TOOL 3

Life below water - the plastic fantastic idea

21st century skills addressed

Creativity

Objectives

With this tool, students are expected to:

- Identify and explore problems
- Find ideas and solutions
- Learn about generating ideas and making models for reducing and avoiding plastic in and around the water
- Learn about entrepreneurship and working in groups

Activity details

Material:

- Movie-clip in relevant language, e.g. plastic-change with english subtitles
- Photos from the internet
- Paper/pencil for drawing models
- Materials for making a model: straws, yarn, ice sticks, recyclable materials

Duration: Part 1: The picture brainstorm - 90 minutes

Part 2: Solutions - 90 minutes

Part 3: Making the model and presentation - 180 minutes

1 class, divided in groups of 2-4 students

Target group: 5th grade-10th grade

Instructions

Part 1 - The picture brainstorm, 90 minutes

For introduction, screen the movie, “Plastic Change” (english subtitles)

Afterwards the teacher facilitates a picture-brainstorm with the theme “Where do we find plastic in- and around the ocean?” The students should find photos on the internet that illustrate and identify the problem. They need to choose and print one picture, and describe the problem (Annex 1).

The Teacher makes a summary of the activity by using the activity “Double Circles” (double-circles instruction movieclip) wherein the students present their chosen photograph.

They start by asking his/her classmate the question: “What do you see on my photo?” before presenting their picture and their thoughts. Afterwards, they switch. The teacher facilitates the activity. He/She stops the conversation after 2-3 minutes and let the outer circle rotate. Make 3 rotations in the circle to help students make their presentation more accurate and nuanced by repeating the words. Turn the activity into “Quiz and Trade” (movie clip introducing quiz and trade) for sharing the plastic-pictures with each other and sharing their knowledge and pictures.

The activity ends with a class conversation on places where there are plastic pollution.

Put the pictures together on the floor. The teacher asks the students: “Can we sort the pictures in groups/areas?” The students talk in pairs, and before putting the picture on a wall, the class agrees on which groups they choose.

The areas/groups could be on the beach, the seabed, out on the open sea, plastic island, in the city and streams.

Part 2 “My plastic-fantastic-idea” (90 min.)

- The class is divided into groups of 2-4 students.
- Each group chooses an area/habitat that they want to work on. The students would then create and invent a solution for reducing pollution and the discharge of plastic in their chosen area.
- The students start by brainstorming together. They must make a common mind map of what their invention should be able to do. (30 minutes)
- Each member draws and writes a suggestion on their own paper. (10 minutes.)
- Members present their suggestion for the group. The group then decides which idea they will use. Perhaps they can combine their ideas and make an even better new group idea. (30 minutes.)

Part 3 The Modelling: Drawing and creating “My plastic fantastic idea” and presentation

Each group now have to draw and build their “Plastic fantastic idea” for collecting or avoiding plastic in the water.

They can use ice sticks, straws, recyclable materials, cardboard, glue gun, rubber band, etc. Their model does not have to be able to work with a motor, but they must be able to explain how it works, and the idea behind it. They must be able to argue that solves the problem. At the end of the project, they must make a presentation that includes:

- A description of the problem;
- A drawing of their invention;
- A description of their invention and explanation of how it works; and
- A physical model of their invention.

Tips for the teacher

1. As an introduction to the course, it is recommended that the students to go for a walk to a beach and collect plastic (see Portugal course), and take pictures for the picture wall.

In the course, the students’ knowledge of plastic pollution must be brought into play. They must ask questions and use their curiosity.

2. Depending on the teacher, the course can be made into an “inventor competition,” wherein a winner of the Best Invention is chosen. This increases motivation and commitment.

3. If there are disagreements within the group about the model, it should be encouraged to hold a group meeting somewhere away from their model. Here, they can review their brainstorm paper and argue for what decision they have to make. They must only return to work once they have agreed on which solution to use.

Debriefing

The presentation of the finished products and solutions can either be made in front of the whole class so that everyone hears all solutions, or using the model “double circles” wherein the groups practice presenting several times with a few listeners.

Follow-up/Inspiration for the future

Subsequently, students can develop ideas for recycling the collected plastic, e.g., plastics collected from the sea can be used for benches: https://www.youtube.com/watch?v=d-ilG_f1bVg&feature=emb_title

References/Further reading

-<https://plasticchange.org/tips-against-plastic-waste/>

-The Danish Plastic Clean Project <https://www.reseaproject.com/>

-4 Danish Projects: https://www.youtube.com/watch?v=d-ilG_f1bVg&feature=emb_title

My plastic-fantastic-idea Annex 1

what do I see ?

What is the problem?



Explanation:
The class is divided into two groups of equal amounts. Each group becomes a circle, one inside the other, facing each other. The teacher then guides discussion of the students by providing discussion topics. In some cases, these topics can be provided ahead of time, so students can prepare their responses to share with multiple people. In others, students are required to think on the spot. Students are told to move in their circle formations, so they are paired up with different people to discuss.

Example:
After writing down a text together, to get an informational background on a current issue -- such as human trafficking -- students create an inside/outside circle. The teacher stands in the center of the circle, providing guide questions, such as “Who is the most common victim human traffickers?,” “What are the main reasons that these people can take advantage of them?,” “What are some of the most disturbing aspects of human trafficking?,” “What is a way human trafficking can be ameliorated?,” etc.
double-circles instruction movieclip introduction

Annex
Annex 3
Inspiration - for picture brainstorm
Photo: Plastic Change



photo: Ingeniøren.

movieclip introducing quiz and trade

LEARNING TOOL 4

Seaweed: A New Food for the Sustainable Consumer

21st century skills addressed

Communication

Citizenship

Creativity

Objectives

In Denmark, there is no tradition for eating seaweed, even though Denmark is surrounded by water. However, there is a fast-growing movement towards eating more vegetarian food. Is it possible to transfer that movement to the production of food from the sea and change the production from meat to algae? How can students contribute to that change?

The production of fish via fishponds has had a bad influence on the environment and will affect biodiversity, whether it is the fishing methods that destroy the seabed or pollution from aquaculture. However, we need the sea to feed the people of the world, so how can it be done sustainably?

This activity has these phases:

A. Students should have a positive experience of using seaweed as food, and practical experience in harvesting seaweed and turning it into an edible product.

B. Students need to become wiser about the uses of seaweed.

C. Students should make small commercials or other commercials that make others change their eating habits.

D. Students evaluate their work by doing interviews with adults

Activity details

Ages: 12 - 15

Duration.

A. One day to visit a place where it's possible to harvest the seaweed and afterwards returning to the school and make seaweed chips. You can skip this activity and serve some prepared seaweed chips and eventually make a blind test with ordinary chips and seaweed chips.

B. 1 x 45 minutes to investigate the possibilities to use seaweed

C. 3 x 45 minutes to make a handbook and the commercials

D. 1x45 minutes to choose three of the completed commercials and prepare questions for an interview.

Homework: Show the commercials to an adult and conduct the interview

1 X 45 minutes to evaluate the interviews.

Instructions

A. In Denmark, it is possible to eat all kinds of seaweed as long as it was not found in a polluted watercourse or if it grows in a bay with stagnant water. It is most tasteful in springtime, where you harvest the new shoot. Recipe: See annex

B. Students must find different uses for seaweed.

30 minutes: The team is divided into groups of 3, who work together to find as many places as you can use seaweed and algae and write it down. They can explain how to get hold of the seaweed, how it is processed, what products it is used for and whether and how it is environmentally friendly. The list may be printed out so it can be brought to:

15 min: 2 double circles (See Annex). The students talk about the uses of the seaweed that the other party does not have. The other parties ask questions for its use. The circle is moved 3 times. The materials are gathered after the exercise.

C. 3 x 45 minutes: The students continue to work in groups. They now only have to work with the new products, where as a society, we have to change our eating habits. They should discuss in groups what would make them change their habits. Students choose a product and must now come up with good ideas that can change people's habits so that they will eat the new products. Then an advertisement is made which advertises their product.

Advertisements can be made in different ways. Students can do:

- A short commercial
- An information film
- An animated film
- A poster
- A screencast

The teacher decides whether to choose among the possibilities, or everybody should use the same category.

D. Students must individually prepare questions for a focus person. It could be their parents or other people they show the commercials. Some of the questions need to be asked both before and after the films are shown so that they can be evaluated.

The questions are gathered on a platform, e.g., "Paddle" (www.paddle.com). The class discusses which questions are good for evaluating the commercials, so that they become wiser about whether they work. There must also be questions, in relation to what it generally takes for people to be ready to change habits. Questions are selected so that they are the same questions that all students ask. These questions may be made in a tool such as Google Analytics.

Students now individually select 3 commercials. As homework, they need to find a focus person who watches the movies and who asks the prepared questions.

Tips for the teacher

- 1) Depending on the age of the students and the skills of making source criticism, the teacher can find some links in their languages or in English
- 2) E.g.: <https://www.greatbritishchefs.com/how-to-cook/how-to-cook-with-seaweed>

- 3) You can bring some seaweed chips if the students have not produced some themselves. They can use them for the commercials
- 4) It would be perfect to find a business that is in the process of establishing itself with seaweed as a sales product and entering into a collaboration with them.
- 5) It would be a good idea if you also work with a course on advertising before or after this exercise.

Debriefing

The students talk about their interview and summarize what can make both their focus persons and themselves change habits.

You can also discuss other ways to change people's habits. E.g. laws, interest groups, influencers, events, etc.

Follow-up/Inspiration for the future

- Students must make a prototype of what a seaweed field can look like - as a drawing or as a physical model.
- You can elaborate on the topic with a course on advertising and the power of advertising.

References/Further reading

-http://www.seaweed.ie/irish_seaweed_contacts/doc/FactSheets.pdf

-http://www.seaweed.ie/descriptions/chondrus_crispus.php

In Danish:

Introduction:

<https://www.teknologisk.dk/projekter/tang-skal-dyrkes-i-stor-skala-og-bruges-til-foedevarer-og-hudcremer/36817>

https://www.guldborgsund.dk/~media/Erhverv/Biokonference/Spor_2/Anette%20Bruhn%20Produktion%20af%20tang%20til%20f%C3%B8devarer%20og%20foder_Annette%20Bruhn-AU.ashx

Good recipes and teaching:

A Taste of Life:

<https://smagforlivet.dk/undervisning/fag/tang>

Heads in the Sea:

<https://projekter.au.dk/havet/forloeb/>

Species and use:

https://issuu.com/smagpaaarhus/docs/spis_tang_-_guide_til_b_redygtig_h

Production of seaweeds in Denmark: <https://tangnu.dk/>

Annex

Harvesting seaweed:

<https://www.superfoodevolution.com/harvesting-seaweed.html>

Inside/outside Circle:

<https://docs.google.com/document/d/1mB63vDIxpChAQUtPlqwtu4tTPAXdt4Du9TYsdx7M2sk/edit#>

Platform, Padlet:

<https://padlet.com/>

LEARNING TOOL 5

Sustainable fishing - Are there fish left for coming generations?

21st century skills addressed

Critical thinking

Thinking as global citizens

Objectives

This activity is about sustainable fishing and Marine Stewardship Council (MSC) marking of fish products.

MSC is an international non-profit organisation that promotes and disseminates sustainable fisheries.

The objectives of the activity are for students to:

- learn to investigate how consumers can influence production in a sustainable direction; and
- gain insight into what is meant by sustainable fishing.

Activity details

- Online computers
- Duration
- Group number

Instructions

Introduction:

1) Start with a class discussion where students say what they think of when they hear the word “sustainable”. What does this mean for them? In what context have they heard it before? What can be sustainable when thinking about the sea? Do they think it matters in their own lives; the lives of their children and grandchildren; People in other parts of the world? Can they themselves change something so that the use of the sea becomes more sustainable? Discuss first in groups of 2, and then in plenary.

Watch the movie, My Dad the Fisherman (MSC)

<https://www.msc.org/for-teachers/teach-learn-about-ocean-sustainability>

This site is translated to several languages

The label MSC:

2) Introductory film: <https://www.youtube.com/watch?v=MVD8INZwaU0>

The students investigate the label MSC in groups: They can find information at: <https://www.msc.org/what-we-are-doing/our-approach/what-is-sustainable-fishing>:

This site is translated to several languages

Fishing

3) Play Go fish! (MSC.org)

<https://www.msc.org/for-teachers/teach-learn-about-ocean-sustainability/games-and-activities>

Way to fish

4) The students investigate the different ways of fishing and how these methods affects the environment.

In groups, students draw a fishing method (print x number of sheets of the 6 different worksheets with fishing methods). They search for information on the web, where they describe the and advantages and disadvantages:

Worksheet Annex 1: https://docs.google.com/presentation/d/1P_m37VOKgMi-VD2OmdV9NqqRjmNZd_hdpgLlL-ZjhMkI/edit#slide=id.p

The students visit each other in groups and present the result to each other.

Investigate the local store/supermarket

5) The students go to the local supermarkets in groups to investigate the fish sold with MSC markings. They must choose a product group in advance, so that most product groups with fish are covered, e.g., preserves, herring, fresh fish, etc. They need to count the selection of the item group, as well as count the number of items that are MSC-labeled. Students must use the data collected to calculate the percentage of products that are MSC-labeled. Students show their results in percentage charts in Sheets. (Can possibly be gathered on a common platform, e. g., in “Paddle”.)

Discussion

6) Students discuss why one should choose labeled products and whether they think consumers will choose labeled items.

Tips for the teacher

- Work together with a Math teacher concerning working with the collected data.
- It would be interesting to begin the process with the investigation at the food stores/supermarkets, and then build the further teaching at the questions from the students.
- Combine this learning tool with the learning tool “Seaweed” for making a commercial to make people aware of the problems with our fishing and the possibility to act.

Debriefing

Compare the different stores in relation to the percentage of MSC-labelled products.

Follow-up/Inspiration for the future

1. The students can work with this material to explore why we need the sea, how it is changing, and what we all can do about it. https://dad-fishes-for-the-future.msc.org/?_ga=2.35119713.1768420692.1593600219-2138792376.1593600219
2. Compare the fishing quotas of the various countries in relation to the EU's set targets for sustainable fishing.
3. The students can investigate the other labels for more sustainable fishing and make their own label.

References/Further reading

- https://www.dn.dk/media/67178/natur-milj%C3%B8_juni_2020.pdf
- Teaching lessons from MSC: <https://www.msc.org/for-teachers/teach-learn-about-ocean-sustainability/learning-resources-10-15>
- Fishing Map: <https://globalfishingwatch.org/map/>

Annex

- Worksheet on fishing methods:
https://docs.google.com/presentation/d/1P_m37VOKgMiVD2OmdV9NqqRjmNZd_hdpgLlL-ZjhMkI/edit#slide=id.p

LEARNING TOOL 6

Vejle Fjord – How about the future?

A panel debate between various interest groups on overfertilization, bathing water quality and biodiversity

21st century skills addressed

Citizenship
Communication
Critical thinking

Objectives

As in so many other aquatic environments, Vejle Fjord has seen an increasing amount of nutrients in recent years. This has led to the growth of algae, which has changed the fjord's water quality and made the seabed a golden and desolate place where bottom animals and fish fry cannot live. Vejle Fjord does not have a natural sandy bottom that promotes biodiversity. Instead, its bottom is full of mud and without plant and animal life, with the exception of a large number of crabs. This problem is being addressed with a number of measures to improve the condition of the fjord.

1. The Problem: Students need to understand the background for the increased nutrient discharge and its consequences. Where does the nutrient supply come from? How does it end up in the fjord? What are the consequences of the discharge?

2. In groups, students should try to understand and see the arguments of one of the interest groups on the discharge of nutrients and their consequences. They should prepare their arguments so they can participate in a panel debate. Here they must argue for the attitudes and opinions of the interest group they are defending. The actors may, for example, be farmers, aquaculture owners, anglers, and bathers.

Activity details

There should be access to the internet, so students can search information online. There should be the opportunity to set up a panel table for the debate in class. Depending on the age group, refer to a selection of websites (see below).

3-7 lessons of 45 min, depending the activities

Age: 12 years and older

Instructions

1. Vejle Fjord - Where does the nutrient supply come from, and what are its consequences?

The problem with the condition of Vejle Fjord is introduced through films on the subject and a newspaper article. The introduction is adapted to local conditions.

Eelgrass: <https://www.dreambroker.com/channel/kwl58wgm/an95bs7f>

Artificial mussel bank trials: <https://www.youtube.com/watch?v=G5t7TKjgfbg>

Crabs: <https://dreambroker.com/channel/3lkvmi5h/9e42koxl>

Newspaper Articles:

<https://vafo.dk/artikel/flere-muslinger-og-mere-%C3%A5legr%C3%A6s-finder-vej-til-fjorden>

<https://vafo.dk/artikel/600-ton-mulsinger-om-%C3%A5ret-stort-muslingeand%C3%A6g-planter-i-vejle-fjord>

Activity: Dilemmas 30 min.

The students in groups, finds all the dilemmas they can, based on the information they have been given about the life of the fjord.

The students should not answer the dilemmas but identify them. For example, it could be:

Why do farmers produce so much nutrients (from fertilizers), some of which end up in the fjord?"

Why are marine fish farms not made in closed containers?

Why do people not plant much more eelgrass?

Should there be fish in the fjord?

The dilemmas are gathered so everyone can see them. They can be hanged on the board, or in digital boards such as "Padlet" (www.padlet.com)

A dilemma is a problem without one correct solution. One cannot answer yes and no to the question. Whatever solution one chooses has some negative consequences. There are no right and wrong solutions, but only solutions with one or more disadvantages. The interesting thing about dilemmas is not only the solution chosen, but to a much greater extent, the range of arguments and reasoning that is at stake.

This is more evident in the work on the panel debate.

- How do the nutrients from fertilizers end up in the fjord?

It is assumed that the students have worked with the water circuit by this time. This exercise can be reviewed/repeated on this website: <https://vandetsvej.dk/>

- Activity: Experiment with algae bloom
2 x 45 minutes

The problem of nutrients (from fertilisers) is difficult to understand. Practical work must be done with the task: Simultaneously or before the actual teaching of this module, a simple experiment with algae bloom should be made. Take a sample of lake water, which is distributed in 2 transparent aquariums/jam jars. In one, flower fertilizer is added. When the experimental set up has been about a few weeks, the students have to guess what is in the glasses.

Based on their ideas and the teacher's input, and depending on the academic level, the students can design their own experiments and investigate the algae's need for light, nutrients, CO₂. Obtain algae cultures to make the experiments more accurate. Eventually, the jars are left to stand for a long time and you can see how dead algae sink to the bottom.

2. Panel Debate: Who "uses" the fjord?

Brainstorm among the students in class in relation to which stakeholders use and/or influence use of and state of the fjord:

Examples: farmer, fish farm owner, marine culture owner, bathing visitor, angler, business fisherman, nature lover, biologist, technical management - wastewater treatment. The teacher briefly illustrates the use/influence of the fjord by the interest groups during the brainstorm on a drawing of the fjord. Together, the 5 most relevant interest groups are selected.

Activity: Preparation for the Panel Debate

45-60 minutes

Divide the class into 5 groups. Assign each group a specific interest group. The groups should gather information online about the specific interest group they are assigned, and write down the arguments to be used in a panel debate about the state of the fjord.

The groups should produce cards with arguments for discussion in the panel debate.

- Each interest group selects a representative to participate at the debate.

- Panel Debate

Arrange a Panel in class, putting name cards on the various interest groups. The teacher acts as teacher of the debate.

What	Who	How
Welcome	Teacher	Welcome participants to the panel debate. "We are gathered to take part in the debate on how to improve conditions in Vejle Fjord ..."
Presentation of panellists	Representative of the interest group	Max 1 minute per representative (Name, Position, Interest Group)
Topic for Discussion: "There are no more fish in the fjord, what can we do?"	Teacher	The teacher makes a short presentation of the problem. This can be supplemented by a short film on the topic.
"Debate"	All of the representatives Teacher	The representatives agree among themselves who should go first, second third, fourth and fifth. The teacher acts as the chairperson. If a representative runs out of arguments, he or she may ask for replacement in the group.
Conclusion 1	Teacher	The teacher summarizes the debate and clarifies the pros and cons of the arguments.
Conclusion 2	Interest Groups & Teacher	Each Interest Group makes a concluding speech on what they think one should do to take care of the fjord. The group can have 15 minutes to prepare a presentation together. The teacher summarizes the important points made by the group.
Conclusion 3	Interest Groups & Teacher	Each Interest Group makes various motions for resolutions that a Municipal Council must decide on. (15 min.) Then the roles change, and the students will act as Municipal Politicians and vote on the proposals according to their own beliefs.

Tips for the teacher

Depending on the age of the students, one of them or a group can facilitate the debate.

Select the end of the debate by the age of the students.

Debriefing

The dilemmas identified in the introduction part, are raised again. They can be used in relation to evaluation.

- Students can work in groups where they discuss and make a list of priorities in their opinion should be addressed first regarding the problem of the fjord. For example, it can be a list of the most important issues that should be solved first; a list of the easiest problems to solve be addressed first; or what matters most for the future be solved first.
- The students can sort dilemmas in groups. For example, in relation to what they themselves can act on and what they cannot do as individuals.

Follow-up/Inspiration for the future

Working with the dilemmas in the future should use innovative solutions, and perhaps using engineering: Students choose a dilemma that they are working to find a solution. It can be a designed solution, a prototype, an information video, etc.

References/Further reading

- The Marine Environment in Denmark: <https://vimeo.com/78240230>

Annex

See help for input into the debate on the document: Debate

Getting the Debate Going:

If the debate is a little stalled, the teacher can put the following information forward, after which he/she asks for comments from the various groups:

“The municipality wants to establish an area in the harbour for bathing. Studies are being done, but the water quality is too poor”.

“It has been a great summer. The citizens have been bathing in the outer fjord all June and July. Now in August, the quality of bathing water is so poor (for bathing) that there is a danger of getting sick in one bath in the fjord right now”.

“Due to climate change, there has been a lot of heavy rains this spring”.

- “The many aquaculture farms located along Vejle river have gone over their banks and a large amount of nutrients has been flushed into the fjord”.
- Agricultural discharges of fertilizers have increased tremendously, leaving the surface water to quickly flush into streams and on into the creeks.
- The wastewater treatment plant has operated beyond its capacity, resulting to untreated wastewater running into the sea.
“The seals come all the way up to the Vejle river and eat the fish stocks that the Fishermen’s Association has worked for many years to increase.” The seals simply cannot find the necessary fish in the fjord.”Vejle Fisk A/ S - has just applied for permission to establish a large open sea fish farm. The local council has just approved the project, as it will provide many jobs for the city.

GOOD PRACTICE

The Future Generations

Description

The pupils describe and produce their own grandchildren.

The description includes the topics that are in focus in the specific development goal.

Objectives

Students' Grandchildren

Students describe their future grandchildren.

This is done with inspiration from the storyline method:

It is important that students get some ideas about their own grandchildren in order to be able to understand the possibilities and limitations of future generations for their living conditions.

Introduction

10 minutes

Students' grandchildren and year.

Students are asked to imagine how many grandchildren they will have. Afterwards, on a piece of paper, they make a rough timeline where they put the year on the following:

Current year and their age;

The year when they believe they will have children;

The year for when their children will have their own children;

The year for when their grandchild will have the same age as they have today.

Summary: 5 min

The class talks about how many children each student will have and define a common average year, wherein their grandchildren will have the same age as they. (50 years – 2 generations).

The Chosen Grandchild

10 minutes

Now, the students will think of their own grandchild. They describe the child:

Age, sex, name, the child's own family, the number of siblings, which school they go, where they live. (This can be determined by the teacher. This will depend on the sustainable goal of the lesson. In many cases, it may make sense to have it as the same place where the students live now).

See attached template.

The grandchildren are given life

Ca. 30 minutes, depending on the format

The students "produce" their grandchildren. This can be done in different ways (the class does not have to work in the same way):

A: As Paper Dolls:

The students are given a basic model of cardboard and make fabric and yarn available.

B: As a cartoon character in a cartoon program – eg., they can create their grandchildren using the online website, "Pixton," a comic creation program, <https://www.pixton.com/>

C: Drawings on a piece of paper

D: Draw in a drawing program and insert on an online educational software/website, e.g. on "Padlet": <https://padlet.com/>

Who is my grandchild?

10 minutes

Continue the work in the template that describes the child.

Example:

- favourite food;
- leisure activities;
- wishes for his/her birthday;
- what he/she would like to do with his/her friends;
- how does he/she get to school;
- what he/she likes about going to school;
- where does he/she go for vacation with his/her family and how do they get there;
- what education would he/she like to take;
- what do you think are the things they would like to do that you also do right now;
- what are the things he/she does differently from you?

If you work with a specific UN sustainability goal, relate the questions to these:

Example:

What clothes do they wear, and what are they made of?

What do they eat that is similar to what we eat today and what can't they eat?

How are girls and boys together in their spare time?

10 minutes:

The students present their grandchild to a group in the class. Students write and edit their descriptions on the template.

Background

20 min - 30 min. (Can be omitted)

From these responses, a background is created which shows something about the grandchild. The student can work on "Padlet" (www.padlet.com). Make a new page on Padlet.

Class Timeline

5 min:

The teacher prepares a common timeline visible in the classroom. The students set up their "grandchildren" on a group on the number line that fits two generations. This can also be a print of the cartoon character. The children's group can also be assembled virtually (e.g. Padlet).

Conflicts of interest between this and future generations:

When the grandchildren are described, the teacher may use these to direct attention to conflicts of interest between this and future generations.

What are the consequences of students 'and their parents' choices and actions for grandchildren?

Opportunities and constraints for future generations

10 min.

Pair students and have them come up with dilemmas about things they think their grandchildren can and things they cannot. The dilemmas relate to the areas that fit the UN Sustainable Goal and the area being worked on.

What can your grandchild do, as you do today?

What can your grandchild do, that you cannot today?

What else can they do?

Pay attention to issues that cover both economic, social and ecological aspects. The teacher may also find some suitable dilemmas e.g. Life underwater:

- Can you swim in the fjord in the summer? (Pollution)
- Can you fish in the fjord and eat the fish? (Do they still exist or are they too polluted)
- Can you stay close to the fjord? (rising seawater level)
- Can you eat mussels grown in the fjord? (Who can use the fjord)
- Can you fish for crabs in the fjord?

Vote with your feet:

15 min

The students' dilemmas are on the board. The teacher chooses one dilemma at a time.

The students now vote with their feet:

- A corner of the class is yes, you can.
- A corner is no, they can't.

The dilemmas are read out and students go to the chosen corner. Subsequently, the teachers ask why students stand where they stand. The students argue for their position. After hearing each other's arguments, other students can move in and take a new position.

This can be a presentation of further work on the subject in relation to finding creative and innovative solutions that will enhance the opportunities of future generations or retain the valuable opportunities that exist today.

Results

Students become better at understanding that our actions have consequences for future generations.

Students become better at understanding that there are conflicts of interest between generations and between individuals. The choices we make now are crucial for future generations.

Why is it considered a good practice?

It is essential to understand that there is a contradiction between our use of natural resources, and the future generation's opportunities to satisfy one's needs. For many students, it is difficult to put themselves in the place of others. When working with sustainability, you need to be able to put yourself in the place of future generations. It requires empathy. This empathy can be worked on by the students imagining their own grandchildren and their opportunity to develop.

Elements of replicability in other contexts

It is fundamental to be able to imagine future generations' problems and limitations of life. It provides an understanding of why we work purposefully with sustainability development. Once the grandchildren are described, one will be able to refer to these while working with all the UN sustainable goals.

Mit barnebarn

My Grandchild

Navn/Name:



Alder / Age	
Køn /Sex	
Levested/Address	
Familie og antal søskende/Family and number of siblings	
Skole/School	

Hvad er din livret/What is your favorite food?	
Hvad laver du i din fritid?/What do you do in your spare time?	
Hvad er dit største ønske til din fødselsdag?/What is your biggest wish for your birthday?	
Hvad laver du med dine venner?/What do you do with your friends?	
Hvordan kommer du til skole?/How do you come to school?	
Hvad kan du bedst lide i skolen?/What do you best like about school	
Hvor tager du på ferie?/Where do	