YOUrALPS project

Educating Youth for the Alps

ALPINE SCHOOL MODEL

Report of the pilot activities in the school year 2017/18

Alpine school model – Report of the pilot activities in the school year 2017/18

Authors:
Biotechnical centre Naklo (Urška Kleč, Monika Kos, Katja Keržič)

Project pilot sites:

PS1: Gymnasium Berchtesgaden + Berchtesgaden National Park
PS2: Volksschule und Neue Mittelschule Rechnitz + Nature park Geschriebenstein
PS3: All nature park schools and kindergarten of Naturepark Rosalia- Kogelberg + Nature park Rosalia- Kogelberg
PS4: College Andre CORBET + Natural reserve Sixt-Passy
PS5: EFLEFPA Reinach school + Parc Naturel Regional du Massif des Bauges + Parc Naturel Régional de Chartreuse + Parc National de la Vanoise + Parc National des Ecrins
PS6: Istituto d' Istruzione Superiore Olivelli- Putelli + Parco dell' Adamello
PS7: Azienda Bergamasca Formazione/CFP Clusone + Parco delle Orobie bergamasche
PS8: Istituto technologico di Agraria, Agroalimentare e Agroindustria + Parco delle Orobie Veltellinesi
PS9: I.C.2 Damiani Morbegno (S0) + Parco delle Orobie Valtellinesi
PS10: Istituto di Istruzione Superiore Alberti + Stelvio National Park
PS11: Istituto Comprensivo "Martino Anzi" Bormio + Stelvio National Park
PS12: Liceo scientifico statale "Annibale calini" Brescia + Parco dell' Adamello
PS13: Liceo scientifico Enrico fermi Salo (BS) + Parks of Alto Garda Bresciano
PS14: Biotechnical centre Naklo + Triglav National Park

Scientific supervision:

YOUrALPS project consortium

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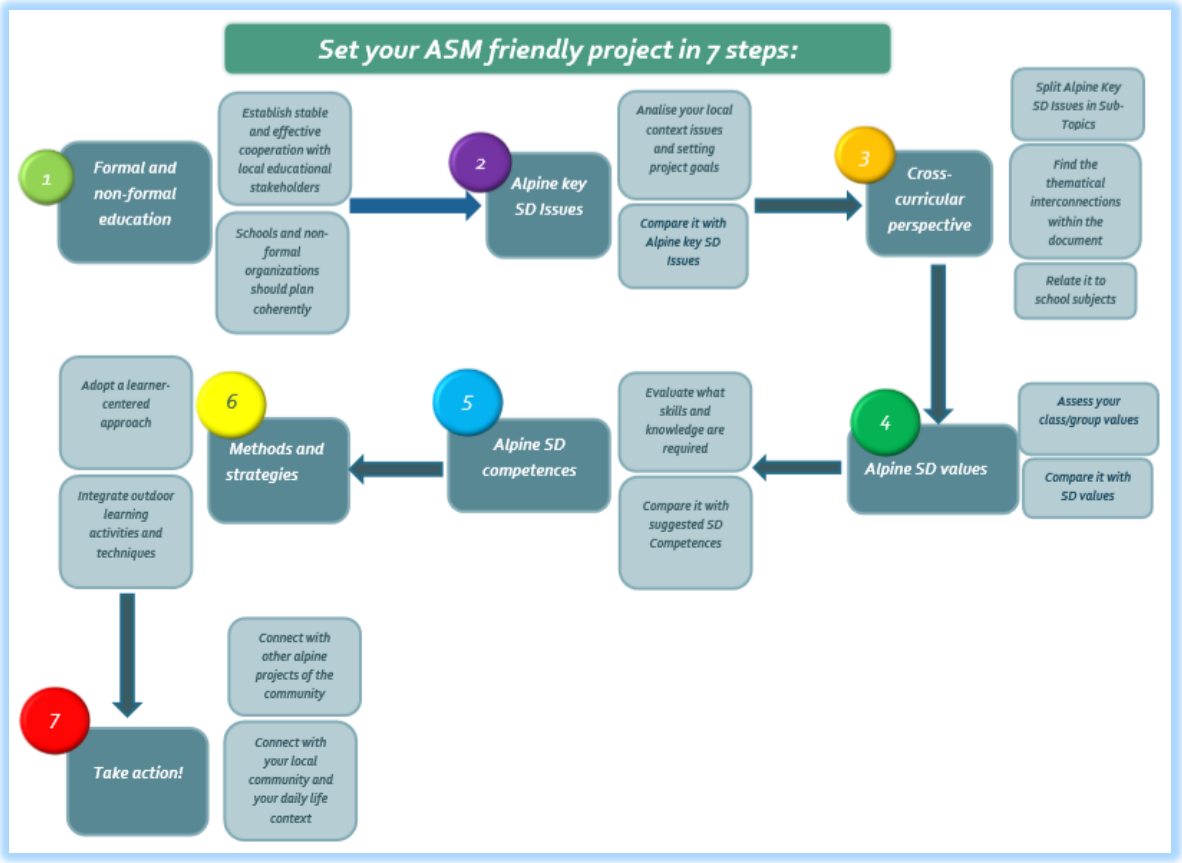
INTRODUCTION

Within the framework of the YOUrALPS project, there were 14 pilot sites that carried out various pilot actions in the school year 2017/18. Each of these pilot sites consisted of a formal and non-formal educator that jointly planned, implemented and evaluated pilot actions that were carried out according to the recommendations of the Alpine School Model (ASM) and the Practical manual with guidelines to support teachers with the organization of outdoor activities for pupils/students.

The first part of the Report of the pilot activities in the school year 2017/18 includes presentations of the pilot sites, the second part consists of summarized Sustainable development Key issues, which are adapted and deepened for the Alpine context, and the third part which is also the main part of this report consists of the presentations of 23 pilot actions that were successfully carried out.

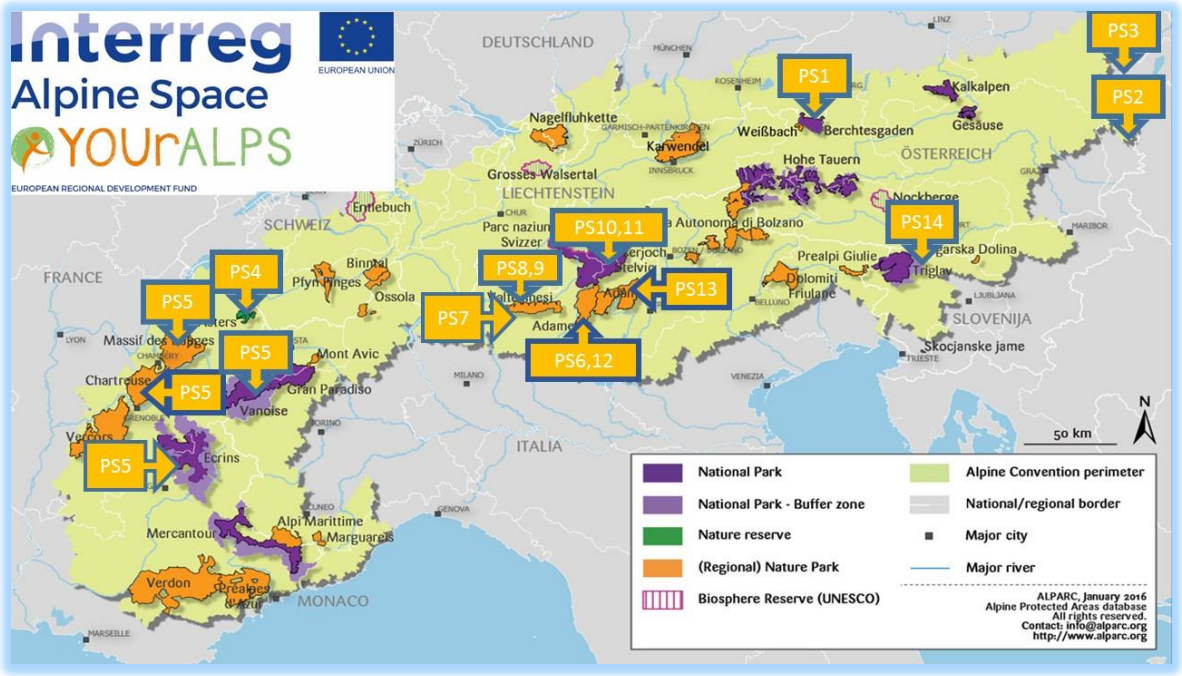


Reporting forms for the planned and implemented pilot actions completed by the pilot sites are attached to this document (Annex 1 and 2).

1. THE MAP AND PRESENTATIONS OF ALL PILOT SITES

Project YOUrALPS consists of 14 pilot sites:

- Italy – 8 pilot sites
- Austria – 2 pilot sites
- France – 2 pilot sites
- Germany – 1 pilot site
- Slovenia – 1 pilot site



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PS14: Biotechnical centre Naklo + Triglav National Park

PILOT SITE 1: Germany, Bavarian Alps

Gymnasium Berchtesgaden
Berchtesgaden National Park

Gymnasium Berchtesgaden

Age of students: 11 - 18 years

Website: www.gymbgd.de

Contact person:
Alexander Hornung
hornung@gymbgd.de

Berchtesgaden National Park

Website:
www.nationalpark-berchtesgaden.bayern.de

Contact person:
Andrea Heiß
andrea.heiss@npv-bgd.bayern.de
Johanna Wimmer
Johanna.Wimmer@npv-bgd.bayern.de

Close cooperation between school and the protected area developed from a desire to foster a strong ecological awareness in students.

PILOT SITE 2: Austria, Burgenland

Volksschule und Neue Mittelschule Rechnitz
Nature park Geschriebenstein

Volksschule und Neue Mittelschule Rechnitz

Age of students: 6 - 14 years

Website: www.vs-rechnitz.at
www.nms-rechnitz.at

Nature park Geschriebenstein

Website: www.naturpark-geschriebenstein.at

Contact person:
Thomas Böhm
mag. Andrea Sedlatschek
Andrea.Sedlatschek@rmb-sued.at
naturpark@rechnitz.at

They will place special emphasis on the development of interdisciplinary natural sciences activities...

PILOT SITE 3: Austria, Burgenland

All Nature Park schools and Nature Park kindergartens of Nature park Rosalia-Kogelberg
Nature park Rosalia-Kogelberg

All nature park schools and nature park kindergartens of Nature park Rosalia-Kogelberg

Age of students: 6 - 10 years

Website:
www.volksschule-drassburg.at
www.bildungsserver.com/schulen/vsschattendorf/
www.sieggraben.at/index.php?article_id=41
www.bildungsserver.com/schulfuehrer/schule/116/action/info/controller/School/

Nature park Rosalia-Kogelberg

Website: www.naturpark-geschriebenstein.at

Contact person:
Thomas Böhm
mag. Andrea Sedlatschek
Andrea.Sedlatschek@rmb-sued.at
naturpark@rechnitz.at

Good cooperation between the school board and protected area is very important for the establishment and maintenance of the Nature Park schools.

*Additional note: All schools and kindergartens are located within the nature park Rosalia-Kogelberg.

- Volkschulen, included into pilot action – elementary schoolsβ:
  - Draßburg, Loipersbach, Schattendorf, Sieggraben, Bad Sauerbrunn
- Kindergarten:
  - Draßburg
  - Sieggraben

PILOT SITE 4: France, Haute-Savoie

Collège André CORBET
Natural Reserve Sixt-Passy

Collège André CORBET

Age of students: 11 - 15

Website: www.ac-grenoble.fr/college/college-corbet-samoens/index.php

Contact person:
Jean-Pierre PESSAT
ce.0740040S@ac-grenoble.fr

Natural Reserve Sixt-Passy

Website: www.asters.asso.fr/

Contact person:
Anne Laurence Mazenq
al.mazenq@asters.asso.fr
Frank Miramand
frank.miramand@asters.asso.fr

2 or 3 hours per week in curricula are dedicated to the interdisciplinary approach. The main topic of environmental education is researching the winter fauna.

PILOT SITE 5: France, Haute-Savoie

EPLEFPA Reinach High School and Vocational School

Parc Naturel Régional du Massif des Bauges

EPLEFPA Reinach High School and Vocational School

Age of students: 15 - 22

Website: www.reinach.fr

Contact person:
Marielle Andre
marielle.andre@educagri.fr

Parc Naturel Régional du Massif des Bauges

Website: www.parcdesbauges.com

Contact person:
Julie Higel
j.higel@parcdesbauges.com

The school curricula are focused on developing opportunities for youth in the Alpine region (ski resorts, mountain guiding, farming, waste management) ...

*Reinach high school and vocational school was cooperated in the process of preparation and implementation of pilot actions with Parc Naturel Regional du Massif des Bauges, Parc Naturel Régional de Chartreuse, Parc National de la Vanoise and Parc National des Ecrins.

PILOT SITE 6: Italy, Brescia

Istituto d 'Istruzione Superiore "OLIVELLI-PUTELLI", SEZIONI ASSOCIATE: ITCG "T. OLIVELLI" - IPSSAR" R. PUTELLI" - Liceo Scientifico "DARFO"

Parco dell'Adamello

Promoting practical approach in all areas of expertise from culinary to topography.

Istituto d 'Istruzione Superiore "OLIVELLI-PUTELLI"

Age of students: from 14 to 19 years

Website: www.isolivelli.gov.it/

Contact person:
Prof. Umberto Monopoli, Director of the Department "Buildings Environment and Territory"
umberto@studiomonopoli.it

Parco Dell' Adamello

Website: www.parcoadamello.it

Contact person:
Anna Maria Bonettini
anna.bonettini@parcoadamello.it

PILOT SITE 7: Italy, Bergamo

Azienda Bergamasca Formazione/CFP CLUSONE
Parco delle Orobie Bergamasche




Azienda Bergamasca Formazione/CFP CLUSONE

Age of students: from 14 to 17 years

Website: www.abf.eu/sede/cfp-di-clusone/

Contact person:
Matteo Colosio
matteo.colosio@abf.eu

Parco delle Orobie Bergamasche

Website: www.parcorobie.it

Contact person:
Funzionario Tecnico - Roberta Cucchi
segreteria@parcorobie.it

Teaching the students various methods of food production with a particular emphasis on sustainability and Alpine heritage.

PILOT SITE 8: Italy, Sondrio

Istituto Tecnologico di Agraria, Agroalimentare e Agroindustria Sondrio
Parco delle Orobie Valtellinesi

Parco delle Orobie Valtellinesi

Istituto Tecnologico di Agraria, Agroalimentare e Agroindustria

Age of students: from 16 to 17 years

Website: www.cnpiazzisondrio.gov.it

Contact person:
Nicoletta Pansoni
sota01000x@istruzione.it

Parco delle Orobie Valtellinesi

Website: www.parcorobievalt.com

Contact person:
Claudio La Ragione
segreteria@parcorobievalt.com

Their students are very proud of their Alpine heritage and feel a deep connection with the local environment.

PILOT SITE 9: Italy, Sondrio

I.C. 2 Damiani Morbegno (SO)
Parco delle Orobie Valtellinesi

Due to participation in various projects teachers have an established practice of cooperation with experts with various expertise relating to the Alpine environment.

I.C. 2 Damiani Morbegno (SO)

Age of students: from 3 to 14 years

Website: www.ic2damianimorbegno.it

Contact person:
Maria Cristina Bertarelli
mcbertarelli@alice.it
mariacristina.bertarelli@ic2damianimorbegno.it

Parco delle Orobie Valtellinesi

Website: www.parcorobievalt.com

Contact person:
Claudio La Ragione
segreteria@parcorobievalt.com

PILOT SITE 10: Italy, Sondrio

Istituto di Istruzione Superiore Alberti, Bormio
Stelvio National Park

Even though the school aspires to become a part of the global community, they are aware of the importance of alpine heritage.

Istituto di Istruzione Superiore Alberti Bormio

Age of students: from 14 to 19 (15 - 17)

Website: www.iisalbertibormio.gov.it

Contact person:
Attilio Tarantola
attilio.tarantola@iisalbertibormio.it
Francesca Dossi
francesca.dossi@iisalbertibormio.it

Stelvio National Park

Website: www.stelviopark.it

Contact person:
Massimo Favaron
massimo.favaron@stelviopark.it

PILOT SITE 11: Italy, Sondrio

Istituto Comprensivo "Martino Anzi" Bormio
Stelvio National Park

Their main subject is the ever-changing Alpine landscape, intrinsic to our way of life and an essential component of our cultural and natural heritage.

Istituto Comprensivo "Martino Anzi" Bormio

Age of students: from 6 to 14 years

Website: www.comprensivobormio.gov.it

Contact person:
Albina Andreola
albina.andreola@gmail.com

Stelvio National Park

Website: www.stelviopark.it

Contact person:
Massimo Favaron
massimo.favaron@stelviopark.it

PILOT SITE 12: Italy, Brescia

Liceo Scientifico Statale "ANNIBALE CALINI" - BRESCIA
Parco dell'Adamello

Known for exploring mountain area, which they want to incorporate even more (timetables, experts).

Liceo Scientifico Statale "ANNIBALE CALINI" - BRESCIA

Age of students: from 15 to 19 years

Website: www.liceocalini.gov.it/calinipress

Contact person:
Mauro Bozzoni
bozzonim@libero.it

Parco dell'Adamello

Website: www.parcoadamello.it

Contact person:
Anna Maria Bonettini
anna.bonettini@parcoadamello.it

PILOT SITE 13: Italy, Brescia

Liceo Scientifico ENRICO FERMI SALÒ (BS)
Parks of Alto Gara Bresciano




Liceo Scientifico ENRICO FERMI SALÒ (BS)

Age of students: from 14 to 19 years

Website: www.liceofermisalo.gov.it

Contact person:
Luisa Superti
bsps05000x@istruzione.it

Parks of Alto Garda Bresciano

Website: www.cm-parcoaltogarda.bs.it

Contact person:
Beatrice Zambiasi
beatrice.zambiasi@cm-parcoaltogarda.bs.it

Most of their students come from the mountain area, where sustainable activities are especially important.

PILOT SITE 14: Slovenia, Gorenjska

Biotehniški center Naklo
Triglavski narodni park




Biotehniški center Naklo

Age of students: 15 - 20

Website: www.bc-naklo.si/

Contact person:
Urška Kleč
urska.klec@bc-naklo.si

Triglavski narodni park

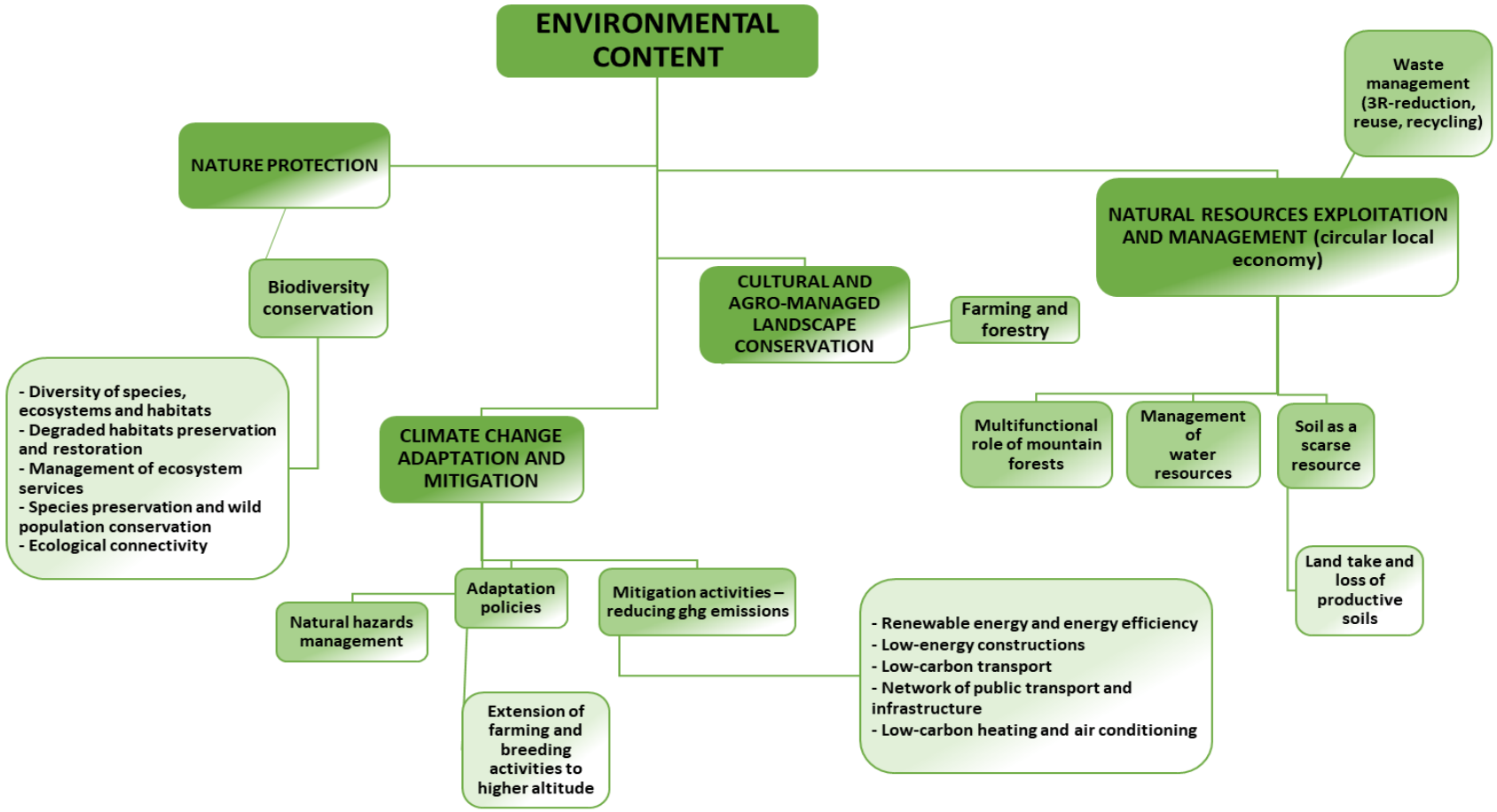
Website: www.tnp.si/en/learn/

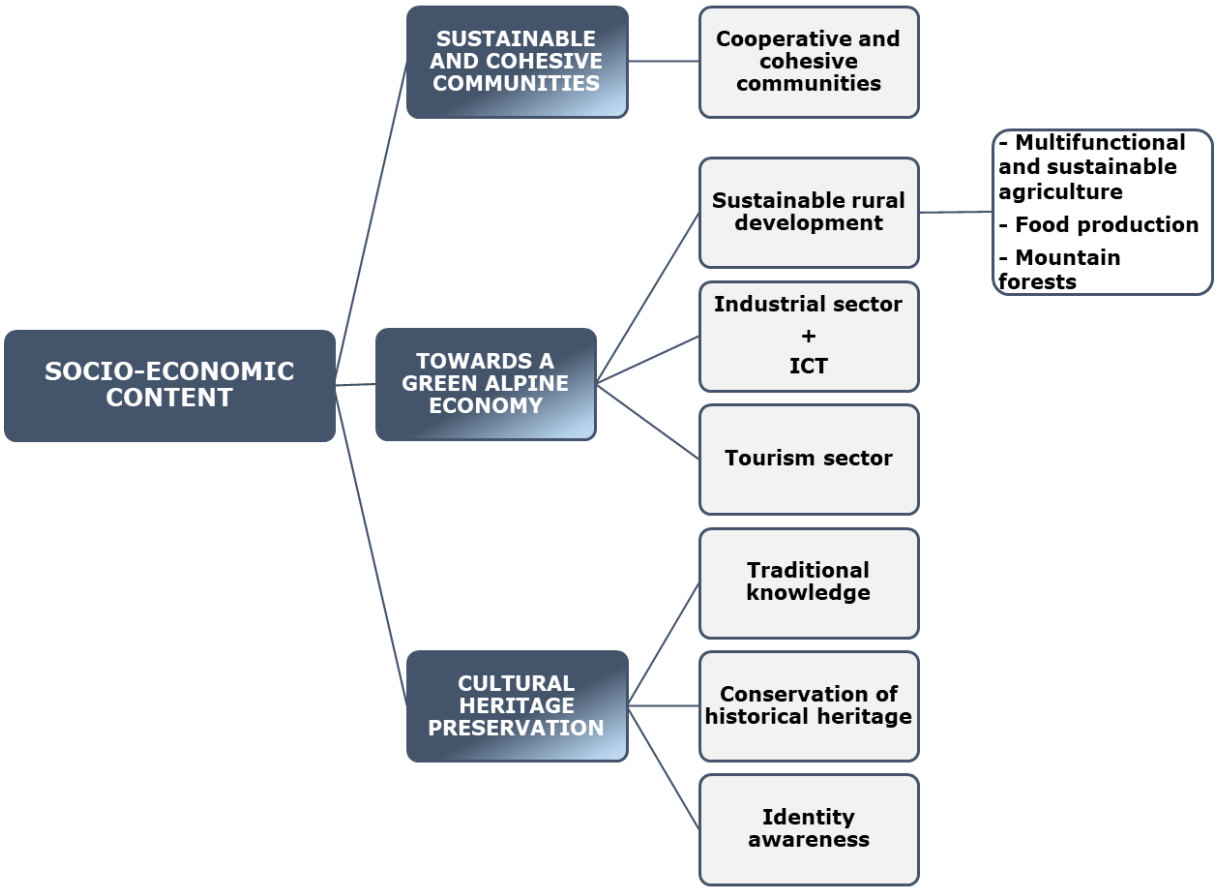
Contact person:
Anže Krek
anze.krek@tnp.gov.si

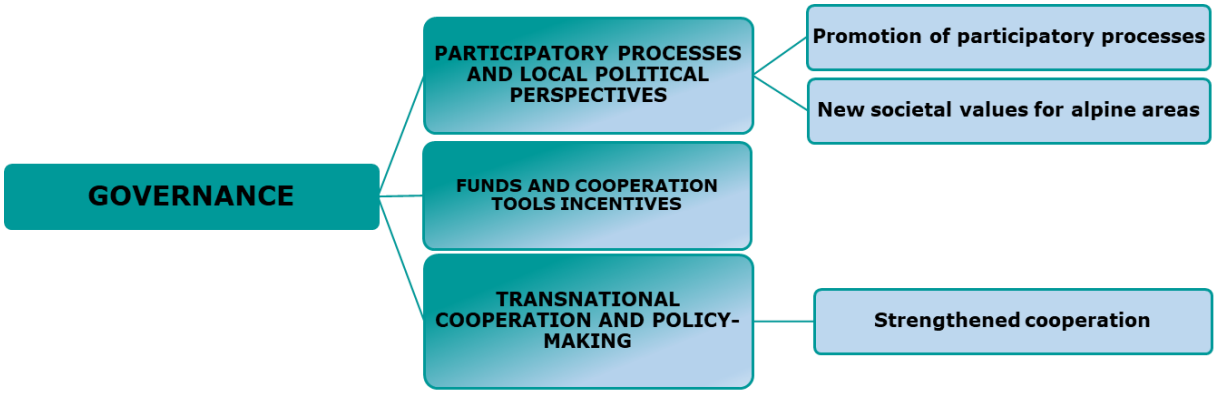
The main theme of the school year 2017/2018 are the Alps. We hope our students will feel a connection with the Alps through pilot activities even more.

2. ALPINE KEY SUSTAINABLE DEVELOPMENT ISSUES, PRESENTED IN PILOT ACTIONS

The project is built to deal with complex and critical issues related to sustainable development of the Alpine area in the fields of environment, society and economy, and governance (three main strategic pillars). Issues were presented to the students in a way that encouraged their resolution.




SOCIO-ECONOMIC CONTENT
SUSTAINABLE AND COHESIVE COMMUNITIES
Cooperative and cohesive communities
TOWARDS A GREEN ALPINE ECONOMY
Sustainable rural development
- Multifunctional and sustainable agriculture
- Food production
- Mountain forests
Industrial sector + ICT
Tourism sector
CULTURAL HERITAGE PRESERVATION
Traditional knowledge
Conservation of historical heritage
Identity awareness


GOVERNANCE
PARTICIPATORY PROCESSES AND LOCAL POLITICAL PERSPECTIVES
Promotion of participatory processes
New societal values for alpine areas
FUNDS AND COOPERATION TOOLS INCENTIVES
TRANSNATIONAL COOPERATION AND POLICY-MAKING
Strengthened cooperation

3. PRESENTATION OF PILOT ACTIONS

Pilot actions (PA hereinafter) are presented for each pilot site in successive order and are designated as PA and a successive number (from 1 to 23).

Number	Pilot site	Name of the pilot action	Alpine context drivers
ENVIRONMENTAL PILLAR			
1	PS14	Let's go to find the alpine plants on mountain pasture Vogar	Nature protection Diversity of species, ecosystems and habitats
2	PS9	Biodiversity of Valtellina valley	Nature protection Diversity of species, ecosystems and habitats
3	PS13	Fish biodiversity in Parco Alto Garda Bresciano	Nature protection Species preservation
4	PS14	On the path of carnivorous plants	Nature protection Management of ecosystem services
5	PS3	Nature Calendar	Cultural and agro-managed landscape conservation
6	PS5	Ecology, Agronomy and territorial survey at Chartreuse Regional Park	Agro-managed landscapes Farming
7	PS2	"Draußen unterrichten"– Biodiversity Strategies	Climate change adaptation and mitigation Natural hazards management
8	PS9	The morphology of Valtellina's Alpine territory	Climate change adaptation and mitigation Climate change
9	PS12	The trees in the alps signal climate change: the case of sonico chestnut trees (in Camonica Valley)	Natural resources exploitation and management, Sustainable rural development - Multifunctional role of mountain forests
10	PS13	The quality of water in Parco Alto Garda Bresciano	Natural resources exploitation and management Water
11	PS14	Physicochemical and biological state of selected water ecosystems in the Alpine space	Natural resources exploitation and management Water
12	PS1	Educational Program - Waste problems in alpine regions and in a global perspective	Natural resources exploitation, Waste management
13	PS1	Excursion: Consumption-critical excursion through an alpine tourist spot using the example of Berchtesgaden	Natural resources exploitation, Waste management - consumption

Number	Pilot site	Name of the pilot action	Alpine context drivers
SOCIO-ECONOMIC PILLAR			
14	PS10-11	Do we take care of our alpine environment? – promotion of sustainable behaviour in a school environment	Sustainable and cohesive communities
15	PS7	From field to the kitchen – rediscovering plants, crops and flowers of mountain area at Clusone	Towards a green alpine economy, sustainable rural development - farming
16	PS14	Agriculture in the hilly countryside of Bohinj	Towards a green alpine economy, Sustainable rural development - farming
17	PS7	Opportunities for youth in the Alps with the activity from indigenous Bruna alpina/Bruna Italiana cow to cheese Bernardo, where students rediscover traditional cheese recipe from mountain area at Clusone	Towards a green alpine economy, Sustainable rural development - breeding
18	PS4	Impact of Tourism on Wild Alpine Fauna	Towards a green alpine economy, Tourism sector
19	PS4	Digital path created by pupils for other pupils	Towards a green alpine economy, ICT development, Tourism sector
20	PS14	Mountaineering safety	Towards a green alpine economy, Tourism sector - Sport and Leisure
21	PS8	Multifunctional alpine sustainable pastures (research of historical – cultural heritage of the alpine pastures in Valtelina)	Cultural heritage preservation, Traditional knowledge and conservation of historical heritage
GOVERNANCE PILLAR			
22	PS9	Young people raising awareness about climate change in the local community of Valtellina valley	Local cooperation
23	PS14	The challenges of managing protected areas on the example of the Triglav National Park	Policy making

3.1. Presentations

3.1.1. Let's go to find the alpine plants on mountain pasture Vogar - **PS14**

ASM Pillar: Environmental
Macro-issues: Nature protection
Key alpine SD Issue: Diversity of species, ecosystems and habitats

Let's go to find the alpine plants on mountain pasture Vogar

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo
- Triglav National Park

SD VALUES

- Universalism: To protect the environment;
- Benevolence: To be responsible;
- Tradition: To be moderate;
- Security: Healthy lifestyle.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about alpine plants regarding their biodiversity, adaptations to alpine climate, habitats
- Recognize and identifies endangered species of alpine plants
- Is familiarized with legislation concerning the protected area of TNP and protection of plants

- Understand the principles of sustainable exploitation of natural resources (alpine plants, grazing on and mowing of the lower and higher alpine meadows)
- Can anticipate the negative consequences of excessive exploitation of natural resources (alpine plants)
- To plan, prepare, execute and control your own work
- Connecting theory with practice and to think interdisciplinary
- To collaborate with classmates in the field
- Develop sense and values for nature, environment, and natural features
- To train communication and presentation skills

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Timescales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility of actions and choices done;
- Normative: Gradually recognize the meaning and applicate norms and values underlying actions;
- Strategic: use learner-centred methods for designing, implementing and adapting SD actions in the local communities
- Collaboration: Collaborate with others and learn from others; understand and respect the needs, perspectives and actions of others (empathy)
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; actions, interests and mandates of key stakeholders in the problem constellation
- Self-Awareness: Evaluate and further motivate actions, feelings and desires; Be active in environment;

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Gaining knowledge about alpine plants, ecosystems and legislature	VET module Frontal lecture from the TNP expert in the classroom	PowerPoint presentation, self-notes	BC Naklo	3 h
2.	Making of identification cards for selected alpine plants	Individual work, working with sources	Scientific information on www, scientific botanical book and identification keys, computer, notes	BC Naklo or at home	3 h
3.	Trip and field work on Vogar	Learning by doing, observe the plants with different senses and photo hunting, identification of typical alpine plants by using photo identification keys	Notes, identification keys for alpine plants	Vogar, Bohinj	8 h in total
4.	Presentation of selected alpine plants in the field	Peer to peer learning	Identity cards for selected alpine plants	Vogar, Bohinj	5-10 min

Activity description

Students of the VET Module Protection of natural values and biodiversity were learning about the protected areas, natural values and protected species of plants and animals throughout the school year. During the pilot action, they paid special attention to the Alpine world. First part of pilot action was carried out in the classroom with extensive lecture given by the expert from Triglav National Park (TNP), where students learnt about phytogeography, Alpine climate and ecosystems, altitudinal zonation of vegetation, adaptations of Alpine plants (morphological and physiological), nature conservation and environmental legislation in Slovenia through time, effects of anthropogenic activities (mountaineering, paragliding, livestock grazing, forestry), opportunities and threats, and the role of education, supervision, and sanctions. The second part of the pilot action was fieldwork on mountain pasture Vogar. Before the actual fieldwork, students got the list of the selected Alpine plants and had to prepare identity cards for each plant that included Slovenian and Latin name, family name, photograph, a detailed description of the morphology (roots, stem, leaves, flower, and fruit), habitats, locations, and special features. During the hike, students were observing and actively

identifying the Alpine plants with the help of experts from TNP. When students encountered the plants from their list, they presented the ID card for a particular plant to the whole class (peer-to-peer learning). After discussion, they took photos of presented plants (photo hunting).

Outdoor activities

- Trip and field work on mountain pasture Vogar

Students explored the mountain pasture Vogar and tried to find and identify the plants for which they had already prepared ID cards. Once the plant was identified the student who was responsible for its ID card had to present it. They also took pictures of the plants - photo hunting.

Tools and materials description

PowerPoint presentation, computers, list of the selected plant species for preparation of identity cards for plants, identification keys for plants, mountaineering gear (backpack, mountain shoes, sports clothing).

Project STRATEGIES

Strategies, methods, techniques

individual learning - each student chose one of the typical alpine plants, based on his/her interest (build on an individual's innate motivation) and use different sources to prepare ID cards for alpine plants
learning by observing and by doing – students observe the plants with different senses (sight, touch and smell) and through lenses – photo-hunting, identified the plants by using photo identification keys
peer to peer learning, cooperative learning – students present the plant to classmates

Cross-curricular strategies

Cross-curricular: Even though the pilot action was implemented only in the framework of the VET module Protection of valuable natural values and biodiversity (in the Nature preservation programme one day per week is strictly dedicated to this VET module), the contents were also in line with subject biology, geography, physical education.

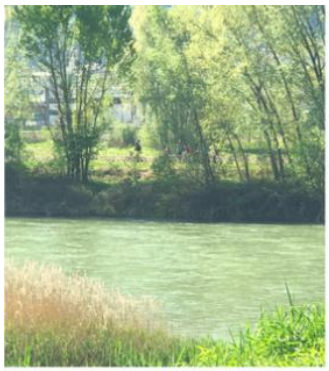
Interdisciplinary: Biology, Geography (Topology, Climate, Soil), Geology, History, Arts and Photography

3.1.2. Biodiversity of Valtellina Valley - **PS9**

ASM Pillar: Environmental
Macro-issues: Nature protection
Key alpine SD Issue: Diversity of species, ecosystems and habitats

Biodiversity of Valtellina Valley

Photo gallery



The landscape along the Sentiero Valtellina



FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Istituto Comprensivo 2 Damiani di Morbegno
- Parco delle Orobie Valtellinesi (non-formal)

SD VALUES

- Universalism: to protect the environment, to be unified with nature;
- Self-direction: freedom, curiosity, creativity;
- Hedonism: enjoying life;
- Achievement: to be intelligent, successful;
- Security: a healthy lifestyle;
- Benevolence: responsibility, friendship;
- Commitment to sustainable development;
- Sense of identity.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Identify typical species with the use of photo-identification keys;
- Gain knowledge about alpine plant species and their adaptations on alpine extreme environmental conditions;
- Gain knowledge about alpine flora in the province of Sondrio (and Costiera dei Ceck) with focus on abiotic parameters which influence on alpine flora in the territory;
- Gain knowledge about the structure of alpine plants and illustrate them with the aim to make botanical charts;
- Gain knowledge about alpine plants taxonomy and define a level of biodiversity on the territory – provide a list of plant species with a focus on endemic species;
- Understand the importance of biodiversity in line with the complexity of Alpine ecosystems;
- To be familiar with environmental legislation (nature conservation, protection of endangered plant species);
- Understand the principles of sustainable exploitation of natural resources (alpine plants);
- Can anticipate the negative consequences of excessive exploitation of natural resources (alpine plants);
- Recognize human impacts and their consequences on the environment (climate change, transport), ecosystems and propose sustainable actions, which will try to solve the issue or mitigate the consequences;
- Develop orientation skills (use of a compass, read a map);
- Interpret the environment and landscape;
- Create a sense of belonging to the Alps;
- To be aware of his/her role in the process of raising awareness about biodiversity, climate change in the Alps – provide didactic tools, models of participative approach (IDs of Alpine plants – WikiToLearn, guiding tour through exhibition);
- Develop communication, presentation, digital and social skills;
- Develop Learning to learn skills.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Timescales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility for the (sustainability aspects) of the project's process and output/outcome;
- Normative: Gradually recognize the meaning and applicate norms and values underlying actions; Gradually recognize the meaning and applicate norms and values underlying actions; Concepts of justice, equality, social-ecological integrity, and ethics;
- Strategic: Be committed to integrity and ethics;
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Recognize and understand relationships and complex systems;
- Collaboration: Collaborate with others and learn from others;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Be able to reflect on one's own role in the local community and (global) society; Evaluate and further motivate actions, feelings and desires; Be active in environment;
- Integrated Problem-Solving: Think about a problem critically; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	School board meeting: planning of interdisciplinary curricula	// Comparison National school Law, Institute's Curriculum, Key Alpine SD Goals - Subtopics, SD Competence Assessment, SD Key Issues - Sub-topics and school curricula	School National Law, institute's curriculum, Key Alpine SD Goals - Subtopics, SD Competence Assessment, SD Key Issues - Sub-topics and school curricula	IC 2 Damiani Morbegno	4h
2.	Classroom work: lessons, where students gain knowledge about alpine flora, biodiversity, climate change	EAS, ESBL Discussion Working in pairs and groups Cooperative learning Individual work Evaluation of informative material Writing workshop	Adobe Page, PowerPoint presentation, CMAPS, Mindmap, self-notes, scientific botanical book and identification keys, botanical card	IC 2 Damiani Morbegno Home	Curricular hours in different subjects + Individual students homework
4.	Bike trip alongside the River Adda from Morbegno to Sondrio and visited Sentiero Valtellina	Learning by doing Cooperative learning, Practical learning, Learning by doing, Nature interpretation, Active lesson of the botanical expert	Notes, identification keys for alpine plants	Sentiero Valtellina	8h
5.	Gaining knowledge about alpine flora	Lessons, implemented by botanical expert	PowerPoint presentation, self-notes	Classroom	2h
6.	Outdoor activity - Polo della biodiversità - Morbegno	EAS ESBL Learning by doing Cooperative learning, Practical work, Learning by doing, Active lesson of the botanical expert	Notes, identification keys for alpine plants	Polo della biodiversità, Morbegno	5h
7.	Outdoor activity in Costiera dei Ceck	EAS ESBL Learning by doing Cooperative learning, observe the territory, collect botanical elements Active lesson of the botanical expert	Notes, identification keys for alpine plants	Costiera dei Ceck	8h
8.	Production of IDs of alpine plants	Peer to peer learning Cooperative learning, Use of various sources of information	Identity cards for selected alpine plants	Classroom	4h

Activity description

The pilot action was planned and implemented with the aim to raise awareness among students about plant biodiversity, climate change, a local protected area (Parco delle Orobie) with a special focus on the local environment. The interdisciplinary pilot action lasted the entire school year 2017/2018 and was closely intertwining with other pilot activities, creating a continuous link among them and a network of knowledge, skills and competencies.

One thing to point out is that the pilot action was marked by sustainable mobility – pupils commuted to their locations with bicycles or on foot. Pupils went on a bike trip alongside the River Adda from Morbegno to Sondrio and visited Sentiero Valtellina. Along the way, pupils were learning about the typical Alpine plants and their adaptations, about the effects of human activities and climate change on Alpine vegetation. Pupils visited the Polo Della biodiversita – Morbegno/Alpine biodiversity centre, where they autonomously searched and identified Alpine plants and studied their morphological adaptations to the Alpine conditions. With the help of the identification keys, they tried to define differences between different plant species. Preparations for the botanical fieldwork at Costiera dei Ceck took place in the classroom and pupils learned how to prepare

a good plan of a field trip. One of the goals of this fieldwork was also the orientation in the hills and forest using a topographic map and a compass. At the end of all fieldwork, pupils got back to the classroom, where they worked on the collected materials and data. Pupils produced identity cards for selected Alpine plants, which contained photograph/illustration, information about taxonomic classification, morphological characteristics and adaptations, and habitats. The botanical IDs will be posted on WikiToLearn.

Outdoor activities

- Bike trip alongside the River Adda from Morbegno to Sondrio and visited Sentiero Valtellina
- Trip and fieldwork on Polo della biodiversità – Morbegno - Alpine biodiversity centre
- Trip and fieldwork on Costiera dei Ceck

The pilot actions were marked by sustainable mobility. Students commuted to their fieldwork with bicycles or on foot.

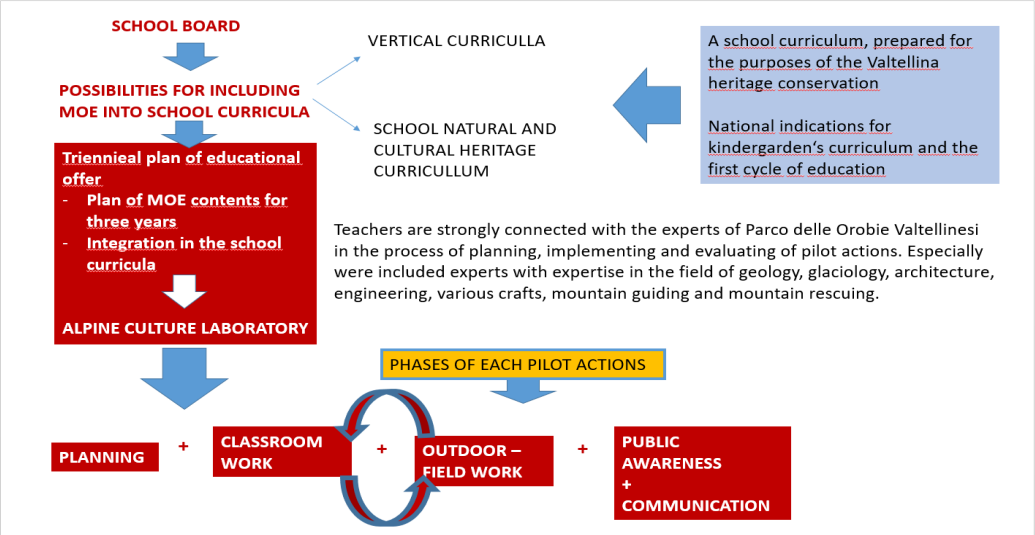
Tools and materials description

- Adobe Page, PowerPoint presentation, CMAPS, Mindmap, self-notes, Drive, LIM, PC, camera
- Use of various sources to collect information about plants for ID cards of typical alpine plants and their habitats (edaphic, topographic, atmospheric)
- photo - identification keys for alpine plants, GPS, topographic maps, compasses,
- mountaineering gears (backpacks, mountain shoes, sports clothing), bicycles

Project STRATEGIES

Strategies, methods, techniques

Pilot site is engaged in the preparation of vertical Alpine school curricula.



Enquiry-based learning:
1. Preparation phase:
Fieldwork where they learned about the area in a scientific way – topography, geology, geography, botany
- riding a bicycle
- collecting samples for later analysis
The purpose of fieldwork is to obtain materials for the next phase and to raise the motivation for the next phase.

2. Prior knowledge to guide you / Inquiry and investigation
Students acquire knowledge by using active methods in various subjects in the field of biodiversity, botany, typical Alpine plants, the adaptation of plants to the Alpine climate, the influence of man and climate change on the Alpine flora.

The knowledge is gained through learner-centred methodology: use of ICT (PPT, Adobe, brainstorming with MindMap, presenting concepts with CMAPS), EAS (episodes of situated learning), mini-lessons, discussions, working in pairs, groups, cooperative learning, jigsaw cooperative learning.

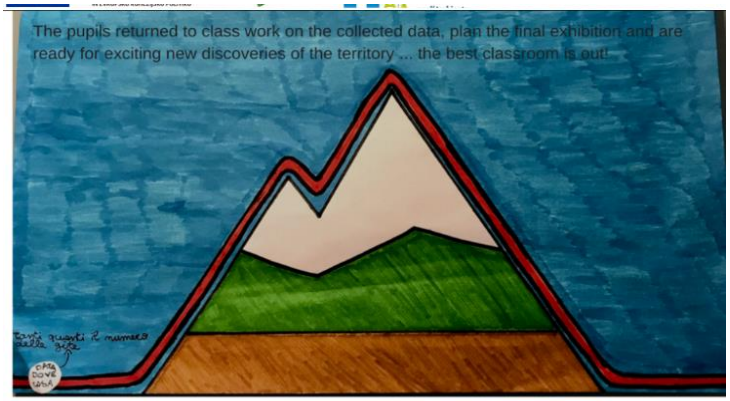
In the field, students:
- try to identify plant species, their morphological adaptations to Alpine climate conditions and with the help of key plant identification key try to define the differences between species
- orientate themselves in the hills and the forest through a topographic map and a compass
- make drawings and photographs of plants for use in the next phase

*Learning through game: Orienteering race motivates students to upgrade their orienteering skills and help them to get familiar with the new environment.



3. A solution to the problem
On the basis of the collected results, photographs, drawings and data from various sources, the students made ID botanical cards
For the purposes of the subsequent presentation, they made a model of the terrain where they worked and placed points with QR codes on it, where they presented the natural and cultural heritage of the area

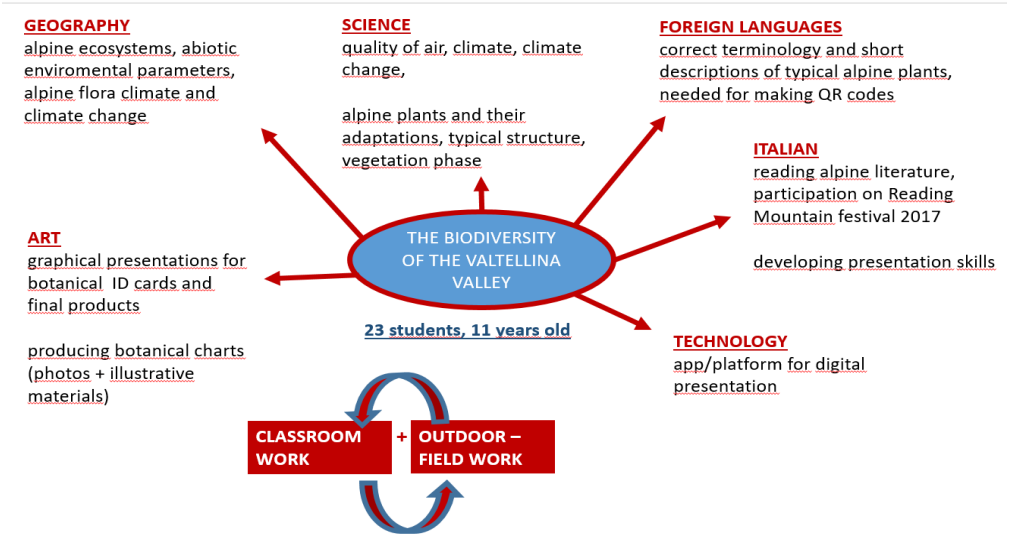
4. Presentation and evaluation
The course and results of the pilot actions were presented to the local community at the exhibition titled Climate changes and possible scenarios for the Valtellina area. During the course of the exhibition, students presented the knowledge they have acquired.






Cross-curricular strategies

Pilot action was structured in line with the cross-curricular approach. Even though it was also interlinked with other pilot actions (The morphology of the Valtellina's alpine territory) and initiatives (Reading Mountains Festival, the campaign of Radon detection - ARPA, Municipal Administration of Morbegno).



3.1.3. Fish biodiversity in Parco Alto Garda Bresciano - **PS13**

ASM Pillar: Environmental
Macro-issues: Nature protection
Key alpine SD Issue: Species preservation and wild population conservation

Fish biodiversity in Parco Alto Garda Bresciano

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Liceo Scientifico Enrico Fermi Salo
- Local fishermen's association
- Park of Alto Garda Bresciano (non-formal)
- Ichthyologists and other experts of biodiversity and endemism

SD VALUES

- Self-direction: curiosity, creativity;
- Tradition: respect for tradition;
- Achievement: to be capable, intelligent;
- Stimulation: variety in life;
- Universalism: protection of the environment.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes):

- Gain awareness of the importance of conserving biodiversity;
- Management of the aquatic ecosystems as renewable resources;
- Gain awareness of the material and energy flows in the ecosystem - the food chain;
- Gain knowledge about fish as one of the ecological factors through which we determine the water quality of various water bodies;
- Identifying and describing endemic species in the local environment (lake trout and carpione, another endemic species of lake trout) can define their conservation status and the causes for it;
- Gain knowledge about the conservation measures.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: information and data about plausible local area future multiple scenarios - possible, probable and desirable, timescales relevant to the problem and possible solutions, possibly previously evaluate the consequences of actions and how to prevent undesirable ones
- Strategic: Concepts and methods for strategy building;
- System Thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation; Think Global, act Local;
- Integrated Problem-Solving: Different problem-solving frameworks related to sustainability; Technologies to foster sustainable development; Think about a problem critically;

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	A conference, titled Garda's biodiversity and mountain lakes in Parco Alto Garda Bresciano	Frontal method, discussion	Slide, video presentation	Lesson in classroom	5h
2.	Excursion v hatchery, where they grow lake trout for conservational purposes	Excursion, learning by observing.	/	Hatchery of river Toscolano, in Gaino	5h

Activity description

Alpine lakes are one of the most sensitive ecosystems. Students learnt that on the example of Lake Garda. Namely, certain fish species from Lake Garda are considered as endangered due to overfishing, morphological alteration of reproductive habitats, alteration of hydrological conditions (e.g. construction of the Valvestiono dam), genetic pollution, and possibly competition from introduced species. Students visited the fish hatchery in Gaino on the river Toscolano to see what the preventive measures against fish extinction can be. Students were introduced with an example of good practice how hatchery staff succeeds in maintaining vigorous populations of endangered fish species by complicated but efficient strategies. Students also participated at the conference about Garda's biodiversity and mountain lakes in Parco Alto Garda Bresciano. They focused on lake trout and carpione, another endemic species of lake trout. Students learnt that all organisms in lake ecosystems are included in the food chain and people are part of it as final consumers. Students discussed the human influence on the lake ecosystem. Namely, people are at the top of the food chain, their actions have profound consequences for both the ecosystem and themselves.

Outdoor activities

- Excursion to a hatchery in Giano on the river Toscolano, where they are breeding lake trout for conservational purposes

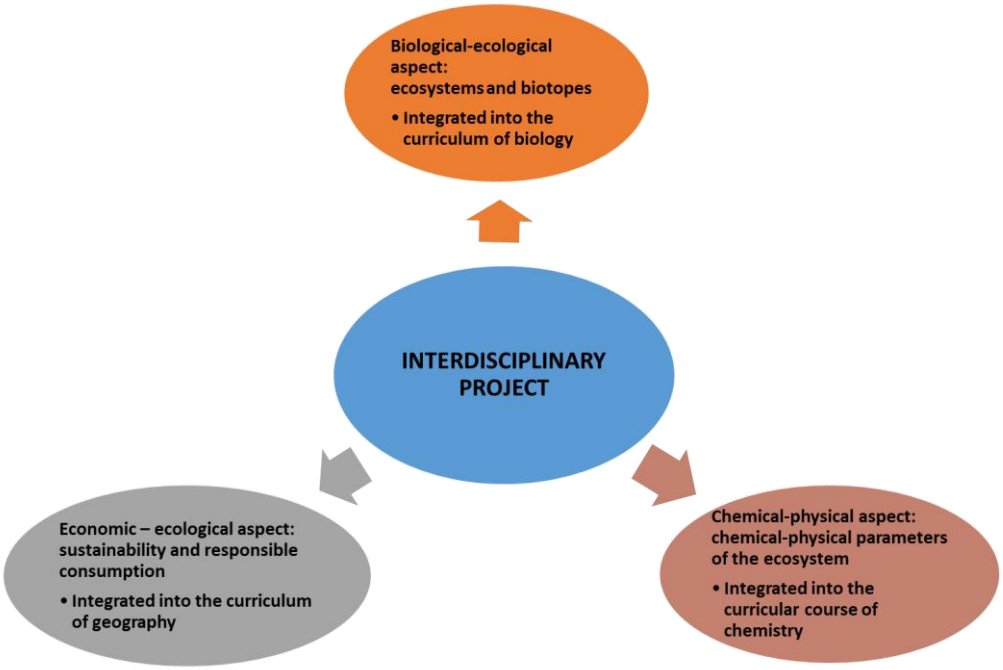
Tools and materials description
/

Project STRATEGIES

Strategies, methods, techniques

- In the pilot action, learning in the classroom and in the field were intertwined, and various non-formal educators (fishermen's association, ichthyologists, experts for biodiversity and endemism)
- Learning by observing

Cross-curricular strategies

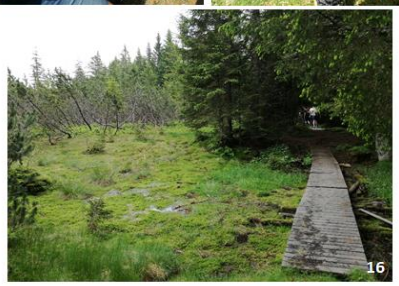


3.1.4. On the path of carnivorous plants - **PS14**

ASM Pillar: Environmental
Macro-issues: Nature protection
Key alpine SD Issue: Management of ecosystem services

On the path of carnivorous plants

Photo gallery



FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo
- Triglav National Park

SD VALUES

- Universalism: to protect the environment, to be one with nature;
- Benevolence: to be responsible;
- Tradition: respect for tradition;
- Security: a healthy lifestyle, to be secure.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Master the basics of ecology and awareness of the importance of preserving biodiversity for the stability of ecosystems (e.g. Wetlands, high altitude peat bog);
- Recognize biotic and abiotic parameters that the wetland consists of and understand their impact on the ecosystem;
- Understand material flows in the wetlands;
- List and explain wetland functions - wetland ecosystem services;
- Know the connection between the principles and objectives of sustainable development and the implementation of spatial activities;
- Monitoring of the ecosystem (the wetland) and records its ecological status;

- Know basics of laboratory and analytical techniques and know how to use them in the laboratory or in the field;
- Know how to obtain, process, and evaluate the results of analytical measurements;
- Develop independent learning: plan, prepare, implement, and evaluate your own work;
- Develop communication and presentation skills;
- Collaborating with classmates in the field;
- Act professionally responsible.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Analysis approaches, Timescales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility of actions and choices done;
- Normative: UE, national and regional regulations, Gradually recognize the meaning and applicate norms and values underlying actions;
- Strategic: Concepts and methods for strategy building, use learner-centred methods for designing, implementing and adapting SD actions in the local communities;
- Collaboration: how to use communication tools; Collaborate with others and learn from others; Systems Thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Evaluate and further motivate actions, feelings and desires; Be active in environment;
- Integrated Problem-Solving: Different problem-solving frameworks, related to sustainability; Think about a problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Lessons about wetlands (Types, biotic and abiotic parameters, endemic organisms, legislation, ecosystem services …)	The frontal method with discussion, using different sources and materials …)	Presentations, videos, leaflets about Ramsar convention	classroom	4 hours
2.	Gaining knowledge about Goreljek Peatbog (ecosystem, formation, flora and fauna, anthropogenic activities in the surrounding areas, opportunities and threats). Hike around the Goreljek Peatbog, brainstorming and discussion along the way Looking for carnivorous plants during the hike.	Students hiked along Goreljek peat bog, they stopped at every learning point in the learning path and discussed the content of learning point. Learning through game, adventurous learning – they tried to find carnivorous plants during their hike. When they finally found it, they were very motivated to learn more about it and discuss their characteristics, adaptation ...	Taking notes, learning boards along the trail	Goreljek, Pokljuka, Slovenia	2 hours
3.	On-site physicochemical analysis of water from a peat bog	Group work, practical work, learning by doing …	School equipment for water analysis (multimeter with electrodes), table for physicochemical parameters	Goreljek, Pokljuka, Slovenia	20 min
4.	Observing selected wetland in the local environment - an inventory of biotic and abiotic factors	Individual work - students write a report at the end about the observation of the selected wetland	School equipment for water analysis (multimeter with electrodes), table for physicochemical parameters	Selected wetland in the local environment	5 months

Activity description

In the pilot activity within the Ecosystems, Eco-remediation and Spatial Planning module in the program of Nature protection technician, students first learned in class about wetlands as ecosystems, their types, abiotic and biotic factors and their effects on the ecosystem. Special attention was paid to ecosystem services and the human impact on wetlands.

In the second part of the pilot action, students visited Goreljek Peat bog on the Pokljuka Plateau, the one that is taken advantage of for educational and research purposes. Students walked around the peat bog (learning path) and gained knowledge about the wetland ecosystem and its formation, characteristic flora and fauna, anthropogenic activities in the surrounding areas, and opportunities and threats. Students did on-site analyses of the T, pH, and conductivity of the water, and they practically confirmed these facts. They were also observing the colour of the water, which was coloured, yellow-brownish due to the presence of humic acids. Students were looking for a carnivorous plant named round-leaved sundew Drosera rotundifolia.

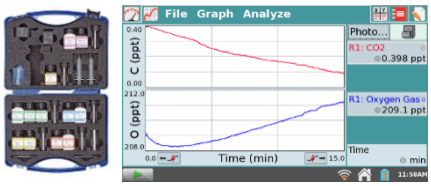
Each student then selected a wetland in the local environment, which he/she observed for 5 months. The observation included listing biotic and abiotic factors, photographing organisms and determining human impact on the ecosystem. When finished with the observation, each student wrote a report and presented it in the class.

Outdoor activities

- Visit of the learning path to Goreljek peat bog, analysis of the physicochemical water parameters and looking for carnivorous plants, determining the human impact and discussion about ecosystem services
- 5-month long observation of a selected local wetland - individual work

Tools and materials description

- Physicochemical analyses of water: multimeter and electrodes for measuring of the temperature, pH, conductivity, and dissolved O_2; kit with fast qualitative tests for determination of the NH_4^+, NO_3^-, NO_2^-, PO_3^{4-} ions; pH papers



Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning: Wetlands in my local environment - do I know them

a. Introduction to a problem: The teacher presents the assignment to the students and the information about the report on their observation of wetlands in the local environment

b. Students receive theoretical and practical knowledge in the classroom and in the field:
   - frontal lecture and use of different sources: wetlands as an ecosystem, abiotic and biotic parameters, ecosystem services, human impact on the wetland, conservation legislation
   - visit of the peat bog Goreljek learning path: learning by observing, practical and research work - analysis of biotic and abiotic parameters
     Learning through game, adventurous learning – they tried to find carnivorous plant round-leaved sundew *Drosera rotundifolia* during their hike. When they finally found it, they were very motivated to learn more about it and discuss their characteristics, adaptation ...

c. Practical work: Individual work - students selected a wetland in the local environment, which they observed individually for 5 months. The observation included listing biotic and abiotic factors, collecting data, analysing it and writing a report, which also includes photographs.

d. Evaluation and presentation: Collaborate learning: students make a presentation of their selected wetland for their class. The student, teacher and classmates jointly evaluate the student's work.

Cross-curricular strategies

Cross-curricular: Even though the pilot action was implemented only in the framework of the VET module Ecosystems, eco-remediation and spatial planning module (in the Nature preservation technician program one day per week is strictly dedicated to this VET module), the contents were also in line with subject biology, chemistry, geography, and physical education.

Interdisciplinary: Biology, chemistry, geography, geology …

3.1.5. Nature Calendar - **PS3**

ASM Pillar: Environmental
Macro-issues: Cultural and Agro-managed landscape conservation
Key alpine SD Issue: Farming and forestry

Nature Calendar

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization:

- Volksschule Sieggraben, Kindergarten Sieggraben, Montessorischule Bad Sauerbrunn, Kindergarten Drassburg, Volksschule Drassburg, Volksschule Schattendorf, Volksschule Loipersbach, Nature park Rosalia-Kogelberg (non-formal)
- The company that developed the "Nature calendar" app also has an important role in this pilot action. They made a presentation about the app and the corresponding material at the beginning of the implementation and provided technical support throughout the year and were also present at the evaluation meeting at the end of the pilot activity.
- The teachers depending on the activity cooperated with the local beekeepers, farmers, foresters or doctors and meteorologists - climatologists.

SD VALUES

- Universalism: to protect the environment, to be unified with nature;
- Self-direction: curiosity, creativity, choosing your own goals;
- Hedonism: enjoying life;
- Stimulation: excitement:
- Achievement: to be intelligent, successful, new capabilities;
- Security: a healthy lifestyle;
- Benevolence: responsibility, friendship;
- Commitment to sustainable development;
- Value and respect for diversity.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Know the basic life processes (growth and development of plants, plant organs - leafing, flowering, development of the fruit of the plant);
- Improving knowledge about the organisms living in a particular ecosystem - the field border (recognizes the organism and knows the name, knows its phenological phases and its use);
- Knows the basics of ecological connections (impact of abiotic parameters on plants and animals - seasons, climate change, Alpine climate, the impact of human activities on their living environment)
- Can take care of the plants (planting, watering, pruning ...);
- Establishes contact with nature through frequent observation, exploring the environment with different senses, collecting, recognizing with the use of pictorial identification keys;
- Learns the basics of the scientific approach - carries out simple experiments (growing plants under different conditions);
- Develops responsible behaviour toward the environment;
- Understand that every region has its characteristic landscapes, history of land use, its own cultural sites, animals and plants. Due to this reason, people travel around to visit those sights;
- Understands the difference between regions as protected areas provide an economic benefit for them;
- Learn about the importance of cooperation across borders in topics concerning nature. Rivers, mountains, the effects of climate change, animals and plants do not stick to borders;
- Get a feel for the biodiversity in the alpine region.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Accept the responsibility of actions and how to prevent undesirable ones;
- Strategic: Use learner-centred methods for designing, implementing and adapting SD actions in the local communities, and to deal with risks and changes;
- Collaboration: Collaborate with others and learn from others;
- System Thinking: Alpine key issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation; Analyse how systems are embedded within different domains and different scales;
- Self-Awareness: Be aware of its own role in the local community and society; Be active in environment, Think global act local;
- Integrated Problem-Solving: Inclusive and equitable solution options ICT and Technologies to foster Sustainable Development; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Planting the hedge	Field work	Local shrubs	School, at the hedge	one day
	Taking care of the hedge	Field work	Watering can, secateurs	School, at the hedge	Ongoing throughout the year
2.	Observation activities	Field work, observation, phone app	Nature wall calendar, a4 aluminium boards, explorer card, phone app	School, at the hedge	Ongoing throughout the year
3.	Additional Material	Art, crafting, stories, games, worksheets	Educational materials including leaf diary, blossom diary, seasonal hedge stories, games	School, classroom	Ongoing throughout the year
4.	Field Trips	Field trip	-	Nature Park Rosalia-Kogelberg	Throughout the year

Activity description

In the pilot action “Nature Calendar” the 5 participating elementary schools and kindergartens planted a 10-seasons-hedge on their school estates, consisting of 12 native shrub species. All the activities in the pilot action were adapted to early childhood (4 – 10 years). Throughout the school year, they carried out the activities “Nature Calender” that were connected to the planted shrubs.

The app “Naturkalender” is an existing tool that allows collecting data from those shrub species and other typical species of animals, plants and their phenological phase. Some of the collected data was integrated into the European Phonological Database hosted by the Austrian “Zentralanstalt für Meteorologie und Geodynamik” (ZAMG) and will be available for climatologists all over the world. Pupils help to gain a deeper understanding of the effects of climate change on biodiversity with their observations. Apart from this, the phenological data provides useful information for the nature park Rosalia-Kogelberg, giving them information on things like when the orchard blooming season is starting or other typical phenomena that are important for economic sectors like farming, beekeeping, tourism and forestry.

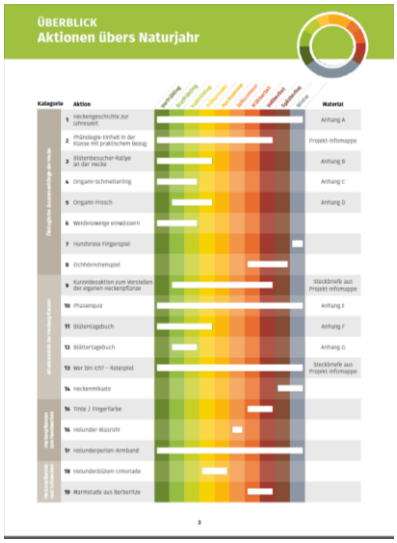
Outdoor activities

- Planting the hedge, taking care of the hedge
- Observation activities (recognizing animals and plants using pictorial identification keys, observing of the development of animals (insects, frogs), determining of phenological phases, counting and measurement in connection with plant development)
- Field trip to beekeepers, farmers, foresters or doctors

It is vital that the students make notes by drawing and writing about their observations in the diary/app.

Tools and materials description

- App "Naturkalender"
- Materials and information handbook for the teacher about the app



- Boards and special designed phenological calendars for noting the date of phenological occurrences
- Researchers card with a magnifying glass for nature observation
- Educational material including leaf-diary and a blossom-diary
- 10 seasonal stories for storytelling in the classroom with plants and animals in the hedge as main characters
- Teaching materials with games and information for a better understanding of the shrub-species.

Project STRATEGIES

Strategies, methods, techniques

In this year-round pilot activity, the red thread is the observation of planted shrubs, which serve as a model organism for learning about growth and development of plants (determination of phenological phases). The first phase of the pilot activity included fieldwork - planting shrubs and taking care of them (watering, pruning...). It is accompanied by additional activities that enable experiential and inductive learning through the process of observation, measurement and comparison (frog development, tracking vegetation phases). Taking notes of the information about the activity in a diary - app, drawing, and storytelling allows the development of a scientific way of thinking and is in some ways a self-evaluation of the learning process. Through activities, transformative learning is encouraged that leads to a change in attitude toward the environment ... All activities promote learning through games that are of paramount importance in this child development phase. The pupils collect the observation data on special wall calendars in every classroom.
In addition, each school in the auditorium has a "nature park corner", where pupils report on ongoing projects, present drawings etc.

Cross-curricular strategies

Subjects in primary schools are not strictly separated but connected with each other. Materials from the support material cover activities in General Science, German language, Mathematics, Physical Education, Art and Cooking. Most of the subjects were taught outside in nature. The chance of natural learning places is that the realities can be used meaningfully by the learner, i.e. for concrete learning goals in the areas of knowledge, ability, understanding for learning impulses on the three levels of interaction, subject-object, subject - subject and subject can be used with themselves and thus the learning place becomes a resonance space

- All activities in kindergarten were integrated into the day.

3.1.6. Ecology, Agronomy and territorial survey at Chartreuse Regional Park - **PS5**

ASM Pillar: Environmental, Socio-economic
Macro-issues: Cultural and Agro-managed landscape conservation, Towards a green alpine economy
Key alpine SD Issue: Farming, Sustainable rural development

Ecology, Agronomy and territorial survey at Chartreuse Regional Park

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- EPLEFPA Reinach High school and Vocational School
- Chartreuse Regional Park

SD VALUES

- Universalism: to protect the environment, to be unified with nature, social justice;
- Self-direction: curiosity, choosing your own goals;
- Hedonism: enjoying life;
- Stimulation: excitement in life, variety in life;
- Achievement: to be intelligent, successful, ambitious, new capabilities;
- Security: a healthy lifestyle, develop a sense of belonging;
- Benevolence: responsibility, friendship, to find meaning in life;
- Tradition: respect for tradition;

- Commitment to sustainable development;
- To develop a sense of identity.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gaining knowledge using different approaches - observing, interviews ...;
- Getting to know various agricultural activities suitable for the Alpine world;
- Getting to know different occupations in the protected area;
- Gaining knowledge in the field of biodiversity /fauna, flora, adaptation of organisms on abiotic parameters in alpine environment, ecosystems, typical alpine landscape, mountain agriculture;
- Learn different techniques of safe mountaineering in the Alps;
- Develop a scientific approach (collect and analyse information, carry out an experiment, understand cause and effect relationships, make a presentation and present it to the media);
- Be aware of ethics in science and our responsibility to the environment;
- Preserve and develop students' curiosity;
- Develop critical thinking.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Accept the responsibility of actions and choices done;
- Normative: Gradually recognize the meaning and applicate norms and values underlying actions; Negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interest uncertain knowledge and contradictions;
- Collaboration: How to use communication tools; Collaborate with others and learn from others; Understand and respect the needs, perspectives and actions of others (empathy);
- Systems thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation; Analyse how systems are embedded within different domains and different scales;
- Self-awareness: Evaluate and further motivate actions, feelings and desires;
- Integrated Problem-solving: ICT and technologies to foster sustainable development.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Meeting with management and educators of the natural park	Interviewing experts	/	St Pierre de Chartreuse, France	½ day
2.	Hiking with the ranger of natural reserve "Hauts de Chartreuse"	Outdoor activity, Observation of fauna, flora, geology on site	Binoculars	Chartreuse, France	½ day
3.	Meeting with a shepherd in a pasture	Visit on site Questioning, debating	/	Alpette pasture, Chartreuse, France	½ day
4.	Visiting milk-cooperative (cheese production)	Interviewing experts Tasting cheese	/	Entremont-le-Vieux, France	½ day
5.	Visiting beekeeper	Interviewing expert Tasting honey	/	Saint Même le Haut, France	½ day
6.	Visiting biogas plant	Visit on site Interviewing experts	/	La Motte Servolex, France	½ day
7.	Visit and meeting with a market gardener in organic farming	Visit on site Interviewing experts	/	Chambéry, France	½ day

Activity description

Students went on a 5-day excursion to the Chartreuse Regional Park, where their activities were predominantly focused on sustainable key issues in the protected area and sustainable agricultural activities on mountain farms. They met with shepherd and farm owners, discussed their activities, defined development, risk and opportunities for activities, and learnt about organic farming, mountain pasture, production of dairy products and beekeeping. They also visited the biogas plant, where students gained knowledge about waste management and energy production. Students hiked with the Chartreuse Regional park officer, where they observed Alpine flora, fauna and geomorphological characteristics of the territory. At the end of the activity, the students made presentations and posters.

Outdoor activities

- Meeting with management and educators of protected area
- Hiking with the Chartreuse Regional park officer
- Getting to know the possible activities and occupations on a mountain farm: mountain pasture, milk-cooperative (cheese production), beekeeper, biogas plant on the farm, organic farming, selling products/vegetables in specialized shops

Tools and materials description

- Binoculars, terrain shoes and equipment
- Tools needed to make the presentation

*A 5-day excursion is an organizational challenge for the activity coordinator and teachers.

Project STRATEGIES

Strategies, methods, techniques

- Learning by observing
- Interviewing
- Cooperative learning: students will have to work in a group to design a presentation about a specific topic they have chosen, linked with sustainable development issues

Cross-curricular strategies

French EPLEFPA schools – biotechnical schools have a speciality in their curricula, required by French Ministry of Agriculture. They conduct EATDD curricula, which encourage interdisciplinary approaches in the field of Ecology, Agronomy, Land use and Sustainable development. The cross-curricular approach in a French school is easier for planning and implementing because of the weekly-changing timetables. This excursion was implemented in EATDD curricula.

3.1.7. "Draußen unterrichten"– Biodiversity Strategies - **PS2**

ASM Pillar: Environmental
Macro-issues: Climate change Adaptation and Mitigation, Cultural and agro-managed landscape conservation
Key alpine SD Issue: Natural hazards management, Forestry

"Draußen unterrichten"– Biodiversity Strategies

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Neue Mittelschule Rechnitz
- Nature park Geschriebenstein

SD VALUES

- Universalism: to protect the environment, to be unified with nature;
- Self-direction: freedom, curiosity, creativity, choosing your own goals, to be independent;
- Stimulation: excitement in life;
- Achievement: to be intelligent, successful, new capabilities;
- Security: security of community, healthy lifestyle, develop a sense of belonging;
- Benevolence: friendship, to find meaning in life, to develop responsibility, to be helpful;
- Tradition: respect for tradition;

- Conformity: self-discipline and politeness;
- Commitment to sustainable development.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Promotion of various vocations, for example, a hydraulic engineer, urban and rural planning, biologist, natural hazards (working conditions, duties);
- Define the forest as an ecosystem and its functions;
- Define the ecosystem and species biodiversity in the forest and understand how it affects the ecosystem stability;
- Forest management - understand forest management plans, define the development phase of the forest and forest protection measures;
- Weather stations - understand how they work, understand the connection between intense rainfall and potential natural hazards (floods, landslides);
- Understand the connection between forest management measures and potential natural hazards;
- Measures which can be used for the prevention or mitigation of natural hazards;
- Develop monitoring skills in an outdoor laboratory and soil observations (soil horizons, water capacity of soil);
- Properties of construction in the flood and landslide area;
- Planning and carrying out work processes;
- Teamwork;
- Communication with peers, teachers and experts;
- Improve spatial orientation;
- Improve presentational skills.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Accept the responsibility of actions and how to prevent undesirable ones; Understanding the consequences of (un)sustainable forest management; Preparing models and analyses on sustainability impact; Preparing an evacuation plan in case of natural hazards;
- Strategic: Use learner-centred methods for designing, implementing and adapting SD actions in the local communities, and to deal with risks and changes;
- Collaboration: Collaborate with others and learn from others; Collaborate with stakeholder to specify, negotiate sustainability values, principles, objectives and goals;
- System Thinking: Alpine key issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation; Analyse how systems are embedded within different domains and different scales;
- Self-Awareness: Be aware of its own role in the local community and society; Be active in environment; Think global act local;
- Integrated Problem-Solving: Inclusive and equitable solution options ICT and Technologies to foster Sustainable Development; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Read and draw a plan	Curricular teaching Interdisciplinary teaching	Geological plan, vegetation plan, papers, pencil	Steep slope, forest and creek	2h
2.	Plot design - long-term monitoring	Competence-oriented Learning of profession	Clinometer, compass, logger tape	forest	2h
3.	Overview of raining station and water management	Curricular teaching Interdisciplinary teaching	Toy blocks, tape, hyetometer	Creek and forest	2h
4.	Flood management, knowledge about landslide	Action-oriented teaching	Model houses, model trees and a board, flags, shovel, pickaxe	Creek and forest	3h
5.	Flood management, knowledge about landslide	Curricular teaching Interdisciplinary teaching	Plan, photographs, small logs	forest	2h
6.	Measure trees	Action-oriented teaching	Diameter tape, calliper	forest	3h
7	Reflexion yourself and the own work, the data in a report for students and the general public	Dialogue and Coaching process interdisciplinary teaching	Papers, pencil, clothespin, string, communication tools	In the field	2h

Activity description

Pupils learnt about natural processes and natural hazards in the Faludital/Rechnitz area. The activity included a whole week of fieldwork. The activity site where the pupils carried out various tasks was half an hour drive away from the school.

Part of their activities was dedicated to studying the risks of flooding and (sustainable) flooding management. Pupils observed the weather station, learned about the history of flooding and interpreted the local landscape (steep slopes, forest and creek) and used all that information to define the flooding risk of the area in line with geological and vegetation plan. They made a model of the settlement and prepared simulations of extreme precipitation events on forested and deforested steep slopes and estimated the possibilities of landslides in both cases. Students tried various positions of the settlement to test the risks of flooding and landslides. With a board, little trees, miniature houses and a watering it is possible to model a slip hang and create a settlement near the hang. In that manner, pupils get a vision about the importance of smart spatial planning of settlements in areas with flooding risks, the possible consequences of heavy rain and the overflooding aftermath. The second part of the activities was dedicated to forest management. Pupils learnt how to measure trees with diameter tape, clinometer and calliper and compare their measurements with the national forest development plan. Pupils studied the forest development plan, proposed the sustainable actions for forest management and conducted a plot design for long-term monitoring. This way they established a series of permanent sample points to provide an outdoor laboratory for the study of natural processes.

Outdoor activities

See above

Tools and materials description

Clinometer (Suunto), compass, increment borer, diameter tape, logger tape and calliper, axe, pit saws, shovel, pickaxe, small logs, toy blocks, hectometre, geographic, geological plans, forest map, app, photographs

Project STRATEGIES

Strategies, methods, techniques

Experiential learning - use of model

1. Introductory phase:
   - Introductory motivational activity: pupils get acquainted with the area - orientation in a new area
   - Introductory activities: with the help of different learner-centred methodologies pupils gain the knowledge needed for the experiment
   - Retrospective learning: pupils define the flooding risk based on the flooding frequency in the area.
   - Visualisation: visiting a weather station and using the hyetometer to measure the rainfall and therefore improving their perception of these methods.
   - Learning by doing: research soil horizons with a shovel and try to determine their characteristics, define water storage capacity with the bottle experiment.
   - Learning by doing: Pupils learnt how to measure trees with diameter tape, clinometer and calliper and compare their measurements with the national forest development plan. Pupils studied the forest development plan, proposed the sustainable actions for forest management and conducted a plot design for long-term monitoring.

2. Phase - Concrete experience: a teacher and an expert gave instructions and then the pupils independently performed the activity:
   - Pupils divided the forested slope into 2 areas: one is the control area, the second one is for the experiment where they cut the trees. They use water to simulate extreme rainfall and define the area where there is the highest risk of landslides.
   - Analysing the information gained through the experiment they choose the optimal location for building a settlement
   - The Wau effect that improved the motivation was when they cut down a tree.

3. Phase - Reflective observation and abstract conceptualisation:
   - Pupils analyse the tasks and activities and form conclusions with the help of a questionnaire prepared by the teacher and the expert.

4. Phase - Transfer the knowledge
   - Pupils also played a role game, in which they tried to imitate the task of the major, experts, government and local people in the process of hazard management.

Cross-curricular strategies

Activity was planned and implemented within the Nature park school. It incorporated an interdisciplinary approach in the field of biology, geology, geography and included the promotion of different vocations.

3.1.8. The morphology of Valtellina's Alpine territory - **PS9**

ASM Pillar: Environmental
Macro-issues: Climate change Adaptation and Mitigation
Key alpine SD Issue: Climate change

The morphology of Valtellina's Alpine territory

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Istituto Comprensivo 2 Damiani di Morbegno
- Parco delle Orobie Valtellinesi (non-formal)

SD VALUES

- Universalism: to protect the environment, to be unified with nature, see beauty in the world;
- Self-direction: freedom, curiosity, to be independent;
- Stimulation: excitement in life, variety in life;
- Achievement: to be intelligent, successful, new capabilities;
- Benevolence: responsibility, friendship;
- Tradition: respect for tradition;
- Commitment to sustainable development;
- Believe that people can make a difference.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about geology, geomorphology, glaciology in line with characteristics of alpine territory, alpine phenomena and climate change
- Gain knowledge about geology, geomorphology, glaciology in the province Sondrio and Valtellina valley
- Classify the rock types with identification keys
- Identify the surface geomorphological phenomena
- Through observation of territory try to interpret an origin of geological and geomorphological phenomena
- Understand that geological and geomorphological characteristics of territory have an impact on alpine ecosystems and their complexity
- Recognize some geomorphological and glacial phenomena (Giants' pots) as a natural heritage and consequently evaluate (positive and negative) impacts of human activities (mass tourism)
- Propose sustainable actions for the conservation of natural heritage
- To plan, prepare, implement and evaluate his/her own work
- Try to connect theoretical knowledge, gained in the classroom, with the fieldwork – interdisciplinary thinking
- Use different sources to collect information (think critically – find, select and validate information)
- Develop scientific thinking (the process of scientific work: collecting information, plan and implement the experiment, analyzing the results and conclusions)
- Create a sense of belonging to the Alps
- To be aware of his/her role in the process of raising awareness about sustainable development key issues in the Alps (mass tourism, climate change, loss of biodiversity, transport) among local people- provide didactic tools, models of participative approach (IDs of geomorphological phenomena – WikiToLearn, guiding tour through exhibition)
- Develop communication, presentation, digital and social skills
- Develop Learning to learn skills (the process of individual learning)

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Time scales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility for the (sustainability aspects) of the project's process and output/outcome;
- Normative: Gradually recognize the meaning and applicate norms and values underlying actions; Gradually recognize the meaning and applicate norms and values underlying actions; Concepts of justice, equality, social-ecological integrity, and ethics;
- Strategic: Be committed to integrity and ethics;
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Recognize and understand relationships and complex systems;
- Collaboration: Collaborate with others and learn from others; Understand diversity especially those related to cultural and social aspects;
- Self-Awareness: Be able to reflect on one's own role in the local community and (global) society; Evaluate and further motivate actions, feelings and desires; Be active in environment;

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	Define the quality of air and try to analyse the results in line with the cause of climate change	Cooperative learning, Practical learning Learning by doing Laboratory work Research work	Pc, Arduino boards	digital atelier	10h
2.	Organisation of an exhibition, titled "Climate changes and possible scenarios for Valtellina"	Individual work, develop communication and presentation skills	Photos, pictures, images	Cloister of Sant Antonio in Morbegno	6h
3.	Bike trip alongside the River Adda from Morbegno to Sondrio and visited Sentiero Valtellina	Cooperative learning, Learning by observing, Learning by doing, interpret the landscape	Bikes, photos, bags/boxes for collecting samples	Sentiero Valtellina	8h
4.	Gaining knowledge about glacial geomorphology	Frontal lecture from the glaciologist expert in the classroom	PowerPoint presentation, notes	Classroom	2h
5.	Educational trip in Cavaglia by Bernina express	Cooperative learning, Learning by observing, Observing through photographic lenses,	Photos, pictures	Cavaglia (Switzerland)	8h
6.	Gaining knowledge about Valtellina geomorphology	Frontal lecture from the geologist expert in the classroom	PowerPoint presentation, self-notes	Classroom	2h
7.	Classification of rocks into rock types and preparation of IDs of typical rock types	Learning by doing, Practical work, Collecting information using various sources, Collaborative learning	Notes, identification keys for rocks	Digital Atelier	2h

Activity description

Pilot action “The (geo) morphology of the Valtellina’s Alpine territory” of the I.C.2 Damiani Morbegno (PS9) was divided into 3 inter-connected topics: climate change, glaciology, and geology. The pilot action lasted the entire school year 2017/2018 and many activities were carried out, some in the classroom others in the field. Topics were included in different school subject – multi-perspective approach:

a. Climate changes

Pupils gained knowledge about anthropogenic activities, which contribute to climate changes, and about the climate change monitoring systems. Pupils measured physicochemical parameters of the air, such as temperature, humidity, and carbon dioxide concentration with Arduino boards with the aim of determining the air quality. Pupils participated in awareness-raising campaign of Radon detection (ARPA Lombardia, Municipal administration of Morbegno). In addition, pupils actively approached their local community to raise awareness about the issues of climate change. They prepared an exhibition entitled "Climate changes and possible scenarios for Valtellina", where they presented their work and results. Students guided visitors through the exhibition, which was enriched by lectures on climate change experts (impact of climate change on the local environment, the melting of glaciers, and the economic consequences.)

b. Glaciology

In the preparation phase, pupils visited Sentiero Valtellina alongside river Adda from Morbegno to Sondrio on bicycles to collect samples for their subsequent analysis in the classroom. In the classroom, under the mentorship of an expert, they acquired knowledge about the glacial morphology of the province Sondrio, the mountain glaciers and valleys with focus on erosive phenomena, which have contributed to the current

conformation of the Valley. In addition, pupils took the Bernina express and visited the Glacier garden in Cavaglia (Switzerland), where they went on a hike in the Posschiavo Valley. During their hike in Cavaglia pupils collected information on potholes, deep holes curved in the rock with typical cylindrical shapes. Data was analysed later in the classroom, the presentation was prepared and translated.

c. Geology

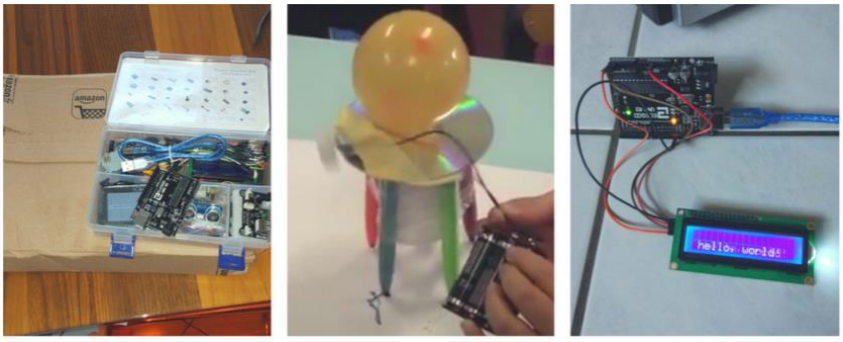
In the classroom and in the laboratory pupils were learning about the rock types, geomorphology of Valtellina, glacial morphology of the province Sondrio, the mountain glaciers and valleys with focus on erosive phenomena, which have contributed to the current geomorphological conformation of the Valley. The geological fieldwork took place at various locations, in Morassione, Valgerola, Val Masino, and Valmalenco and the main priority was to analyse the valley ground.

Outdoor activities

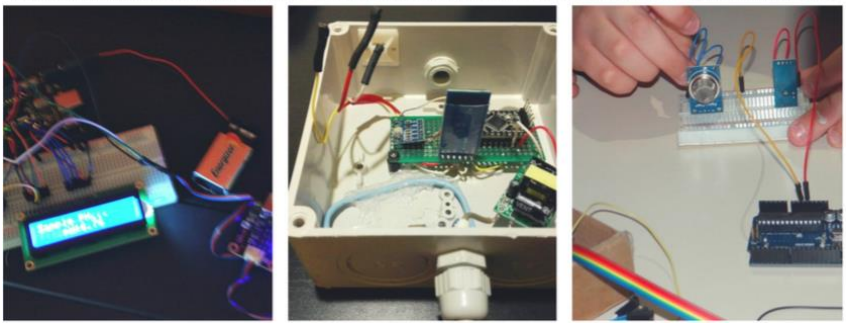
- An educational trip by bike along the Valtellina path
- An educational trip in Cavaglia by Bernina express

Tools and materials description

- PowerPoint presentation of an expert and self-notes.
- Identification keys for rocks
- Use of technological platforms, for processing and sharing of cards and for researching and processing information.
- Textbooks, LIMs, easily available materials, PCs, Arduino boards for the collection of some environmental parameters (temperature, humidity, CO2 concentration).



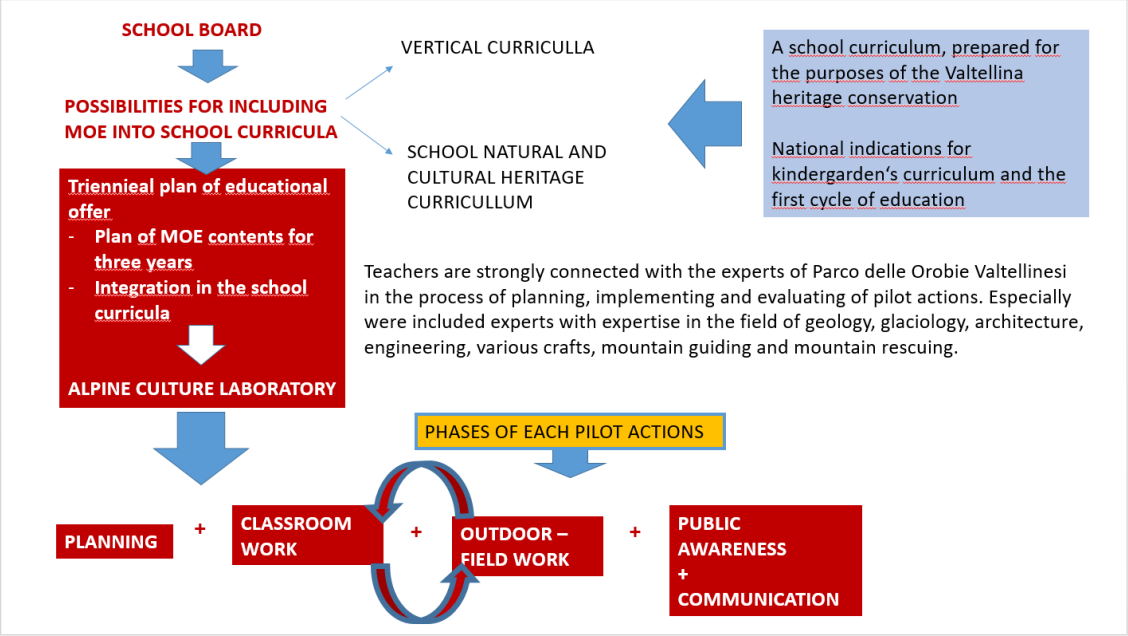
Pupils and teachers study to learn how to detect certain environmental parameters through Arduino boards



Project STRATEGIES

Strategies, methods, techniques

Pilot site is engaged in the preparation of vertical Alpine school curricula.



Inquiry-based learning:

1. Preparation phase:

Fieldwork where they learned about the area in a scientific way – topography, geology, geography, botany …

- riding a bicycle
- collecting samples for later analysis
- The purpose of fieldwork is to obtain materials for the next phase and to raise the motivation for the next phase.

2. Prior knowledge to guide you / Inquiry and investigation

Students acquire knowledge by using active methods in various subjects in the field of glacial geomorphology of the province Sondrio: - the mountain glaciers, valleys, erosive phenomena, the conformation of the valley, potholes. The knowledge is gained through methodology: use of ICT (PPT, Adobe, brainstorming with MindMap, presenting concepts with CMAPS), EAS (episodes of situated learning), mini-lessons, discussions, working in pairs, groups, cooperative learning, jigsaw cooperative learning.

In the field students:

- try to research geomorphological phenomena with using different senses
- a scientific approach to geomorphological phenomena: measure depth, a diameter of potholes and try to find the date of discovery
- make drawings and photographs of various rocks and geomorphological phenomena

3. A solution of the problem

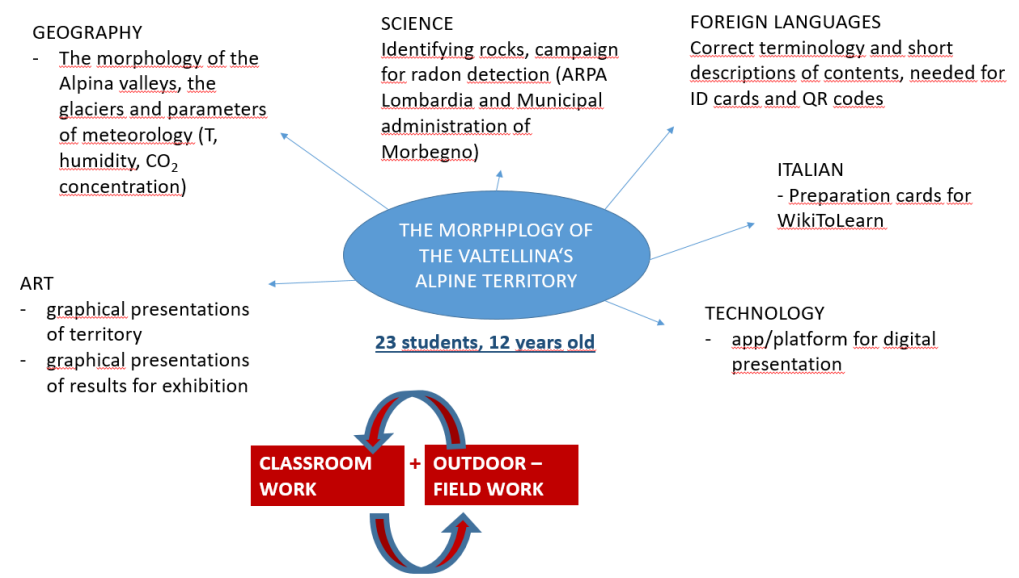
In the classroom/laboratory students review and analyze the samples – they try to classify the rocks with identification keys. They observe their characteristics with different senses. They collect data, make an analysis and graphical presentation. They prepare cards of rock types in Valtellina area for publishing on WikiToLearn

Cross-curricular work on final products of pilot action - ID cards of typical rock types (preparation of text, translation, use of ICT)

4. Presentation and evaluation

The course and results of the pilot actions were presented to the local community at the exhibition titled Climate changes and possible scenarios for the Valtellina area. During the course of the exhibition, students presented the knowledge and results they have acquired.

Cross-curricular strategies



3.1.9. The trees in the Alps as a signal of climate change: the case of Sonico chestnut trees (in Camonica Valley) - **PS12**

ASM Pillar: Environmental, Socio-economic
Macro-issues: Cultural and Agro-managed landscape conservation, Natural resources exploitation and management, Towards a green alpine economy
Key alpine SD Issue: Forestry – multifunctional role of mountain forest, Sustainable rural development

The trees in the Alps as a signal of climate change: the case of Sonico chestnut trees (in Camonica Valley)

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Liceo Scientifico Statale Annibale Calini
- Parco dell'Adamello (non-formal)

SD VALUES

- Universalism: to protect the environment, to be unified with nature;
- Self-direction: curiosity, creativity;
- Stimulation: excitement in life;
- Achievement: to be intelligent, to be successful, new capabilities;
- Security: a healthy lifestyle;
- Benevolence: friendship, to be responsible;
- Commitment to sustainable development;
- Belief, that people can make a difference;
- Sense of identity.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about tree varieties, the population of trees (trees community), forest ecosystem with an emphasis on typical Alpine forest and its development through history;
- Gain knowledge about plant physiology, growth process and impact of abiotic environmental parameters on the growth of trees (geo-morphological structure, quantity and distribution of orographic precipitation);
- Gain knowledge about the ecological services of the forest;
- Gain knowledge about using tree characteristics to determine the climate conditions where they grew;
- Understand the importance of sustainable forest management and the consequences of uneconomical forest exploitation;
- Gain knowledge of tree marking and can perform it with help;
- Gain knowledge of forest sampling and the equipment needed to perform it;
- Use of basic research methods (sampling, performing measurements, analysis, graphical presentation, interpretation of results, dissemination);
- Develop competencies of collaborative working;
- Knows prehistoric art in Camonica Valley.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios - possible, probable, desirable; Analysis approaches; Timescales relevant to the problem and possible solutions; Create one's own vision for the future; Possibly previously evaluate the consequences of the actions and how to prevent undesirable ones;
- Strategic: Viability, feasibility, efficiency of systemic interventions and the potential of those interventions to produce unintended consequences; Use learner-centred methods for designing, implementing and adapting SD actions in the local communities and to deal with risk and changes;
- Collaboration: How to use Communication tools; How to use participative and cooperative methods; Collaboration with others and learn from others;
- System thinking: Alpine key sustainability issues, their causes and consequences, actions, interests and mandates of key stakeholders in the problem constellation; Think Global, act Local.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	Field activity	Excursion, laboratory activity, work, collaborative work, frontal method, individual activity	/	Sonico (centuries-old chestnut forest)	3h
2.	Field activity	Sampling	Sampling tools	Coren de le fate	4h
3.	Lesson	Presentation	/	Sonico (hotel)	2h
4.	Field activity	Excursion	/	Sonico (Cross area), Rino (Oglio River), Coren de le fate	11h
5.	Management	Workgroup	/	Sonico (hotel)	4h
6.	Field activity	Sampling	Sampling tools	Malga Valley (forest), Malga Valley (trenches and forest)	8h

Activity description

Students learned about Camonica valley as a territory with special geographic, geological and climate conditions. They studied the forest from the viewpoint of individual plant (plant physiology), a community of trees as well as the entire forest ecosystem, where they focused on the specificities of Alpine forest ecosystems. They were also interested in the roles of forest ecosystems (ecological, social and economic) and forest wildlife. From the point of view of forest management, they were determining the development phase of the forest by measuring the width and height of the trees. Students learnt about sustainable and unsustainable forest management practices and their economic and environmental impact. They also focus on the rules of behaviour in the forest, as well as the impact of human activities on the forest. Students tried to feel the forest with all their senses - stopping in the dark ditch and walking on moss. These experiences have a significant impact on their motivation for learning. The students conducted a simulation of writing a letter to the authorities, with which they wanted to raise awareness of the forest management state and the implementation of reforestation (its organization and implementation).

Outdoor activities

- Excursion to Sonico where there is a centuries-old chestnut forest, Coren de le fate, Rino (Oglio River and Malga Valley)

Tools and materials description

- Presser gimlet, diameter measurer, ruler, axe-brand

Project STRATEGIES

Strategies, methods, techniques

The students learned about the forest in the outdoor classrooms, the motivation grew with the observation of the forest using different senses (examples - walking in the forest in the dark, walking on the moss). Through learning by doing and practical work students sampled the forest. The data were collected, statistically processed and analysed. Based on the information, they discussed together with experts further measures in forest management (research work).
Students also simulated problem work with a participatory approach - writing letters to local authorities and carrying out an afforestation action.

Cross-curricular strategies

Activities were carried out using the interdisciplinary approach: botany, geomorphology, physic, economy, law, dendrology, ecology, history, plant physiology, environmental geology, hydrological science, pedology, zoology, meteorology.

3.1.10. The quality of water in Parco Alto Garda Bresciano – **PS13**

ASM Pillar: Environmental
Macro-issues: Natural resources exploitation and management
Key alpine SD Issue: Water

The quality of water in Parco Alto Garda Bresciano

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Liceo Scientifico Enrico Fermi Salo
- Park of Alto Garda Bresciano (non-formal)

SD VALUES

- Self-direction: curiosity, creativity;
- Universalism: broad-minded, to see the beauty and peace in the world;
- Tradition: respect for tradition;
- Achievement: to be intelligent, new capabilities.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes):

- Understanding of the influence of pollutants on ecosystems;
- Preparing samples for analyses of environmental parameters – water;
- Use of laboratory equipment and appropriate measuring instruments;
- Carrying out analytical methods for the evaluation of environmental/water parameters in the field and in the laboratory;
- Performing field physicochemical measurements and assessing the state of aquatic and riparian ecosystems;
- Describing, explaining and implementing the basics of technologies, their critical points and environmental parameters that need to be monitored in the individual technological process - classical paper production;
- Collecting, recording, processing the results of the measurements, graphically presenting them and analysing them for the needs of the reports.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Analysis approaches; how to evaluate possible impacts; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones;
- Normative: EU, national and regional regulations;
- Strategic: Concepts and methods for strategy building; Use learner-centred methods for designing, implementing and adapting SD actions in the local communities, and to deal with risks and changes;
- Collaboration: How to use communication tools, collaborate with others and learn from others;
- System Thinking: Alpine key sustainability issues, their causes and consequences; Think Global act Local;
- Self-Awareness: Be able to reflect on one's own role in the local community and (global) society;
- Integrated Problem-Solving: Technologies to foster sustainable development; Think about problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	Water quality assessment surveys through chemical-physical analysis of lake and river water samples.	Frontal method, group work, practical work, laboratory work, discussion, evaluation	laboratory equipment	Lago di Garda Lessons at school and laboratory at school.	10h
2.	Data processing, graphics presentation and analysis	Frontal method, research work, discussion, evaluation	ICT	Lessons at school and laboratory. Excel as a software instrument to work.	20h
3.	Use of water to produce paper. Comparison with the Japanese method of production	Frontal method, group work, laboratory activity	equipment and raw materials for papermaking	Lessons and laboratory at the Museo della Carta in Toscolano Maderno.	5h

Activity description

Students sampled and analysed the physicochemical parameters of water in lake Lago di Garda and river. In the process of compiling a report, students had to collect results, analyse them and make graphical presentations for the report - this process was carried out independently under the supervisor of the teacher.

During the museum visit, the students learned about the classic technology of paper production in the local environment and its history and made paper according to the Japanese method. They also compared the production process from a sustainable point of view, with an emphasis on consumption and pollution of water.

The project activities continued with internship of some students. One part of the pilot activity focused on the hydrogeological study of the river basin, where students gained knowledge about the territory of the Parco Alto Garda and its hydrological characteristics. Students were also getting familiar with rock types and their historical origins and glacial phenomena.

Outdoor activities

- Water sampling of the river and the Lago di Garda which was used for later analysis
- Visit of the Museo della Carta and Toscolano Maderno, where they participated in a papermaking workshop

Tools and materials description

- Equipment for performing analysis of the physicochemical parameters of water
- Equipment and raw materials for papermaking

Project STRATEGIES

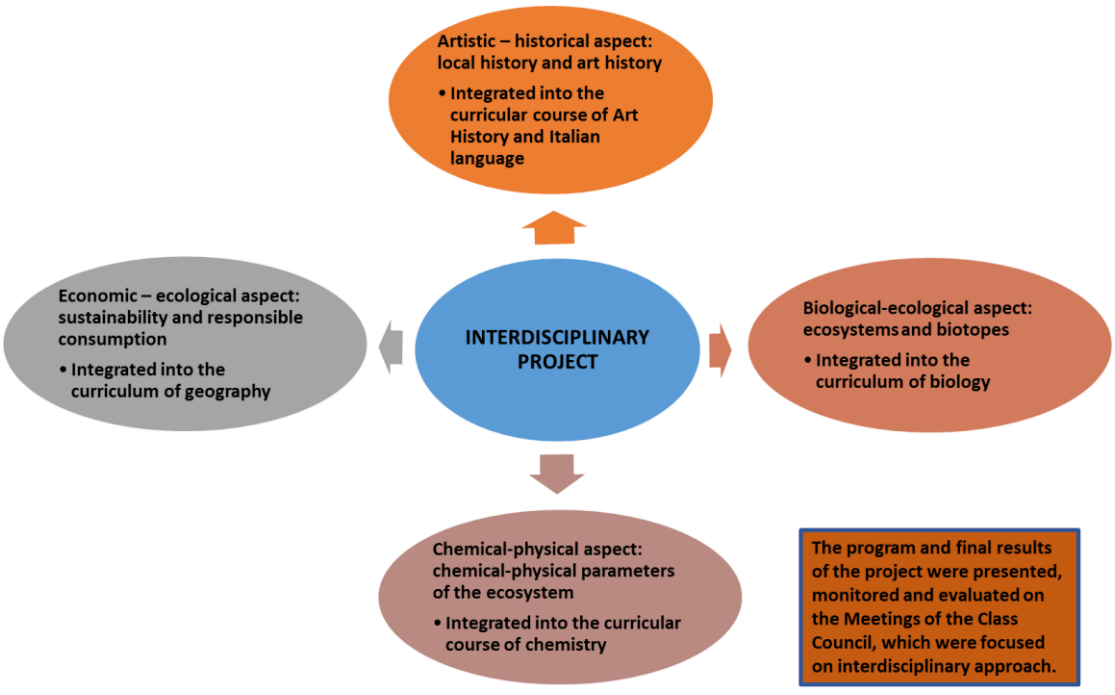
Strategies, methods, techniques

Pilot action used different methods: work in the classroom, in the field, with the help of non-formal educators (museum, associations…).

More information about those methods:

- Practical work/learning by doing: sampling and analysing physicochemical parameters of water in the field, papermaking;
- Laboratory work: implementation of analytical techniques;
- Research work: preparation of the report (collection and processing of data, graphical presentation and analysis), introduction part consists of theory which they procured from various sources;
- Teamwork and collaborative work: group work, reporting on the results of analyses to classmates, followed by a discussion.

Cross-curricular strategies



3.1.11. Physicochemical and biological state of selected water ecosystems in the Alpine space - **PS14**

ASM Pillar: Environmental
Macro-issues: Natural resources exploitation and management
Key alpine SD Issue: Water

Physicochemical and biological state of selected water ecosystems in the Alpine space

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo
- Triglav National Park
- Slovenian Environment Agency (ARSO)

SD VALUES

- Universalism: to protect the environment;
- broad-minded, to see the beauty and peace in the world;
- Tradition: respect for tradition;
- Security: a healthy lifestyle;

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Know basics of laboratory and analytical techniques and knows how to use them in the laboratory or in the field;
- Know physicochemical and ecological properties of alpine surface elements;
- Is familiarized with legislation concerning protected area (Triglav national park), Natura 2000 and monitoring activities arising from The EU Water Framework Directive;
- To perform physicochemical and ecological analyses of water samples independently;
- Know how to obtain, process, and evaluate the results from analytical measurements (how to write a report);
- Know how to maintain laboratory instruments and equipment;
- Understand the effects of pollutants on various (aquatic) ecosystems;
- To plan, prepare, implement, and evaluate your own work;
- Connecting theory with practice and to think interdisciplinary;
- To collaborate with classmates in the field;
- Develop sense and values for nature, environment, and natural features;
- To develop communication and presentation skills.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Time scales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility of actions and choices done;
- Normative: EU, national and regional regulations, gradually recognize the meaning and applicate norms and values underlying actions;
- Strategic: Use learner-centred methods for designing, implementing and adapting SD actions in the local communities;
- Collaboration: Collaborate with others and learn from others;
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandated of key stakeholders in the problem constellation;
- Self-Awareness: Be aware in its own role in the local community and society;
- Integrated Problem-Solving: Think about a problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Carry out physicochemical and ecological analyses within the framework of VET module Ecological analysis and monitoring	Learning by doing, Practical work, laboratory work, work in the field	laboratory equipment, identification keys,	classroom, school laboratory	whole school year- 186 hours
2.	Gaining knowledge about the Radovna River, sanitation of Bled Lake, monitoring of the freshwater ecosystems	Frontal lecture + demonstration from the ARSO and TNP expert in the field Job shadowing – they observe the experts in their work at the field	Professional multifunctional sensor, table for physicochemical parameters	Grabče, Zgornje Gorje, Slovenia	60 min
3.	On-site physicochemical analysis of Radovna River	Group work of students, - practical work, learning by doing, research work collaborate work	School equipment for water analysis (multimeter with electrodes, a kit for qualitative determination of certain ions), table for physicochemical parameters	Grabče, Zgornje Gorje, Slovenia	45 min
4.	Sampling of benthic invertebrates with catching net and collecting stones from the river, observation and identification	Group work, - practical work, learning by doing, adventurous learning – walking in cold water and searching the benthic invertebrates, research work	Taking self-notes and photographs, identification keys for selected benthic invertebrates	On the bank of Radovna River, Krnica, Zgornje Gorje, Slovenia	2 h
5.	Students write a report at home on the physicochemical and ecological analyses they carried out	individual work, work in smaller groups	results of the analysis, computer	at home	4 h

Activity description

This pilot action was the practical conclusion of the VET module Ecological analyses and monitoring, which the students attended the whole school year. The main objective of the VET module is to teach the students how to define the physicochemical and biological state of selected surface water ecosystems (theoretical knowledge + practical skills in the laboratory and in the field).

Students gained knowledge about monitoring of the freshwater ecosystems and sampling methods at alpine river Radovna from the expert, who performed a demonstration of water analysis with the use of professional instruments. In addition, students performed physicochemical analysis on their own by using school equipment (temperature, pH, conductivity, and dissolved O_2 using multimeter and electrodes; and kit with fast qualitative tests for determination of the NH_4^+, NO_3^-, NO_2^-, PO_4^{3-} ions) and compared the results of both analyses. They also sampled benthic macroinvertebrates with catching net and collected stones from the river. They tried to identify them with the help of photo-identification key and assessed the ecological state of the river Radovna.

After the activities were carried out, the students had to write a report about the analyses where they wrote down the results, analysed and presented them.

Outdoor activities

Hike up the valley of Radovna River and gaining knowledge and developing skills about physicochemical and ecological monitoring, sampling methods.

Tools and materials description

- Mountaineering gear (backpack, mountain shoes, sports clothing)
- Notes
- Table for the writing of the measured physicochemical parameters
- Photo-identification keys for assessing the ecological state and benthic invertebrates
- A sampling of benthic invertebrates: lab tray, catching net, magnifying glass, forceps, spoon, Pasteur pipette
- Physicochemical analyses of water: multimeter and electrodes for measuring of the temperature, pH, conductivity, and dissolved O_2; kit with fast qualitative tests for determination of the NH_4^+, NO_3^-, NO_2^-, PO_3^{4-} ions; pH papers.

Project STRATEGIES

Strategies, methods, techniques

- Continuous learning through the school year (frontal method, individual and teamwork, practical work);
- Frontal presentation and demonstration of sampling and analysing of water and identification of the benthic invertebrates by the experts from ARSO and TNP – job shadowing;
- Work in smaller groups - research work:
- Analysis of physicochemical parameters of the alpine river Radovna – practical work, learning by doing
- Active observation and photo-hunting, identification of benthic invertebrates with photo identification keys – practical work, adventurous learning – walking in cold water and searching the benthic invertebrates
- Presentation of identified invertebrates to the classmates – collaborative learning
- Preparation of the report (individual work or in smaller groups)

Cross-curricular strategies

Cross-curricular: Even though the pilot action was implemented only in the framework of the VET module Ecological analysis and monitoring (in the Nature preservation programme one day per week is strictly dedicated to this VET module), the contents were also in line with subject biology, chemistry, geography, and physical education. Chemistry and Biology teachers teach the module jointly.

3.1.12. Educational Program - Waste problems in alpine regions and in a global perspective - **PS1**

ASM Pillar: Environmental,
Macro-issues: Natural resources exploitation and management
Key alpine SD Issue: Waste management

Educational Program - Waste problems in alpine regions and in a global perspective

Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Gymnasium Berchtesgaden
- Berchtesgaden National Park

SD VALUES

- Universalism: protecting the environment, see the beauty in the world, social justice,
- Tradition: respect for tradition;
- Self-direction: self-respect, creativity, choosing own goals,
- Conformity: self-discipline,
- Sense of belonging,
- Hedonism: enjoying life, pleasure.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- (Local) waste production, waste separation, waste prevention and recycling;
- Decomposition times of different types of waste;
- Understanding problems that are caused by the huge amount of waste;
- The complexity of the global plastic waste problem;
- Problems and possible solutions of fast fashion and synthetic fibres in clothes;
- Own contribution to problem-solving;
- Reflection of one's own consumption behaviour;
- Teamwork;
- Communication and presentation skills;
- Analysing and solving problems;
- Develop scientific thinking;
- Self-reflection of own behaviour;
- Open to other opinions and varying perspectives.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about local waste production; Evaluating possible impacts; Theory about the future and desirable future scenarios; create one's own vision of the future; foresee consequences of actions; Accept responsibility of actions and choices done;
- Normative: Concepts of justice, equity, social-ecological integrity, Ethics; Gradually recognize the meaning and applicate norms and values underlying actions; Negotiate sustainability values, principles, goals and targets in a context of conflicts of interest, uncertain knowledge and contradictions; Be open to other opinions;
- Strategic: Be committed to integrity and ethics; Be open to varying perspectives; Be willing to act despite inconclusive or incomplete information;
- Collaboration: communication between each other, categorize different opinions; functional values regulation social cohesion in local communities; Teamwork; Collaborate and learn from others; Be able to motivate; Understand and respect the needs, perspectives and actions of others (empathy); Understand diversity especially those related to cultural and social aspects; Embrace diversity among cultures and social groups;
- Systems Thinking: Alpine key sustainability issue, the cause and consequences: waste; Relations between different causes: Actions, interests and mandates of key stakeholders in the problem constellation; Be able to think about the problem critically and globally; Think global act local;
- Self-Awareness: Know one's own role in the local community and society; Reflect one's own role in the local community and society; Evaluate actions, feelings and desires; Be active in environment; Deal with one's feelings and desires;
- Integrated Problem-Solving: Different problem-solving frameworks related to sustainability and develop viable solutions; Be able to think about a problem critically and globally; Apply problem-solving approaches and develop viable, equitable solutions; Deal with conflicts in a group; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time for Activity
1.	Comparing the weight of pupils and the average weight of waste each of them produces in one year	Calculating and visualizing abstract figures	bathroom scale, calculator, current figures for local waste production	classroom	10 min
2.	Guessing game: Composition of residential waste (statistics)	Self-reflection and visualization	100 marbles, 8 glasses, current statistics of the composition of residential waste	classroom	15 min
3.	Matching game: raw material and the final product	Learning with playful character	laminated cards with photos of different raw materials and corresponding products (e.g. sand - glass, mineral oil - plastic)	classroom	5 min
4.	Sociogram: Waste prevention and separation at school	Movement in the room, learning alternatives	prepared questions regarding the topic	classroom	10 min
5.	First Association: Write down all things you can think of which are made of plastic in our everyday lives	Connotations, a reflection of everyday life	notes and pens	classroom	1 min
6.	Research game about plastic waste facts finding the 3 fake news	Autonomous research, critical analysis of facts	laminated notes with facts about plastic waste including 3 fake news, laminated notes with background information	classroom	15 min
7.	Matching game: degradation times of waste in the oceans	Reflection and learning with playful character	laminated cards with photos of different waste (e.g. a bottle of glass, a bottle of plastic	classroom	10 min
8.	Geographical game: mark garbage patches in the world map	Reading maps, finding places	laminated world map, water-soluble pen, list of garbage patches in oceans worldwide	classroom	5 min
9.	World Café: discussing questions written on paper tablecloth and writing down answers	Discussion in small groups	tables, paper tablecloths, pens in different colours, a prepared question for each table	classroom	20 min
10.	Creating an exposition about fast fashion, sportswear and recycling, health problems regarding clothes made of synthetic fibres, upcycling ski in small groups and presenting a creative solution for each problem	Research work, creative work, presentation of problem and solution in front of the class	tables, facts related to topics, notes, pens, clothes, shoes, old skis (as material for exhibition)	classroom	45 minutes
11.	Experiment: Filtering microplastics from cosmetic products	Experimental work, Research work, creative work, presentation of problem and solution in front of the class	Tea filters, cosmetics including microplastics (e.g. shower scrub, shampoo), washbasin, scissors, binocular, list of microplastics added to cosmetics	classroom	25 minutes

Activity description

This pilot activity deals with the connection between consumption and waste and local and global hazards of waste. The pupils should become aware of the tremendous amount of waste we produce in our daily lives. Pupils gain knowledge about waste production, separation, prevention and recycling on the local and global level. Problems that are caused by the huge amount of waste are shown to the pupils.

They devote special attention to the waste problem in mountains (possibilities of waste separation and recycling in alpine space, long-term decomposition of waste in mountains). They deal with the risks and dangers associated with waste in alpine regions and in a global perspective. They also get to know the problems of fast fashion and synthetic fibres in clothes and think about possible solutions and plan a little exhibition by themselves. They present their innovative solutions to others. In another part, the pupils get active themselves again and upcycle old socks.

The pilot activity is composed of several activities and games (e.g. guessing game, matching game, geographical game, first association, sociogram,…), which present SD key issues to the pupils and foster easier visualization of statistical data and raise awareness about these issues. To illustrate the topic microplastics, the pupils filter microplastics from cosmetic products themselves. In this way, the topic becomes more apparent and easier to understand. They touch the microplastics and use magnifying glasses to observe it in detail.

Outdoor activities

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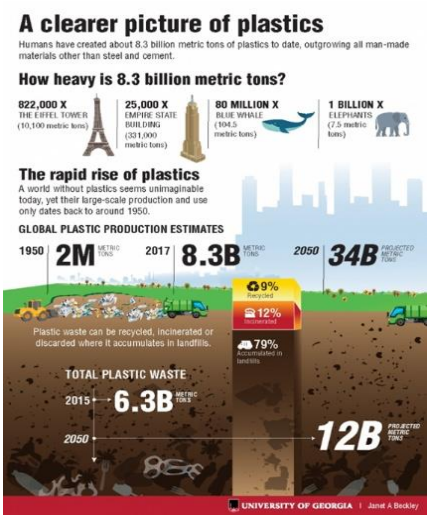
Tools and materials description

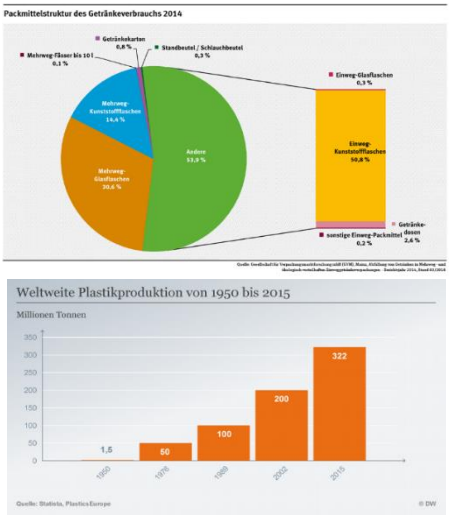
The whole range of activities, tools and materials, which are used in the pilot activity are described above in *Unit of Learning structure (phases of the project/times/structure in activities*.

Below there are only some examples of the tools and materials:

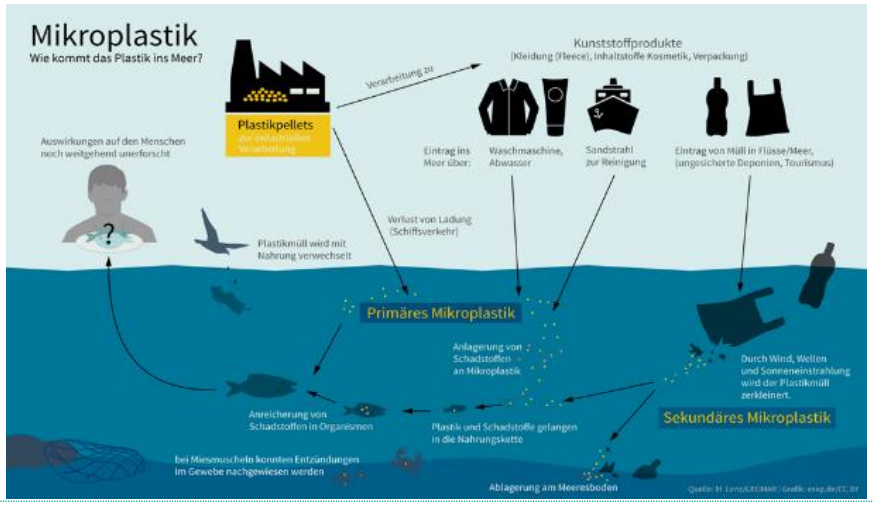
- Globe and world map – the pupils mark garbage patches into a world map

- The data (see below) is to be presented to the pupils with the use of laminated cards and with marbles and glasses





- Exhibition: old socks, shoes, skies, clothes ….
- Posters, pens, tables
- Experiment with microplastics: tea filters. Cosmetic products including microplastics, washbasin, scissors, binocular and list of microplastics, added to cosmetics:



Project STRATEGIES

Strategies, methods, techniques

For a better understanding of the first part of the activity, they used methods like visualization, learning through games, experiment ...

For carrying out of the activity they used enquiry-based learning:

- Identify the problem: How could we raise awareness about waste problems in the Alps?
- Observe and document elements, that contribute to the problem: Pupils learn about waste, the origin of the waste, health consequences, environment with the use of different interactive approaches: guessing game, matching game, sociograms, first associations ...
- Learn skills needed to address the problem: Work in groups – discussion about using recycling to raise awareness of people about the waste in the Alps (what and how to use them)
- Create a new solution using your skills, process and knowledge: Pupils prepare an exhibition, where they do recycling and upcycling to present issues with fast fashion, sportswear and recycling, potential health problems from wearing synthetic materials … → raising awareness through creativity
- Share your solution with others: Pupils present their innovative solutions to the others

Cross-curricular strategies

The activity was carried out interdisciplinary connecting biology, geography, sociology, chemistry…

3.1.13. Excursion: Consumption-critical excursion through an alpine tourist spot using the example of Berchtesgaden - **PS1**

ASM Pillar: Environmental
Macro-issues: Natural resources exploitation and management
Key alpine SD Issue: Waste management - consumption

Excursion: Consumption-critical excursion through an alpine tourist spot using the example of Berchtesgaden

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Gymnasium Berchtesgaden
- Berchtesgaden National Park

SD VALUES

- Universalism: protecting the environment, see the beauty in the world, inner harmony, to be broadminded, social justice, equality;
- Benevolence: honesty, to be responsible;
- Conformity: self-discipline;
- Tradition: respect for tradition;
- Security: sense of belonging;

- Power: wealth, social power;
- Achievement: to be influential, successful;
- Hedonism: enjoying life, pleasure;
- Self-direction: creativity, choosing own goals, self-respect.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Globalization and environmental problems;
- Global production of consumer goods as food and clothes and its impacts;
- Need and motivation for consumption;
- Problems of high consumption;
- Sustainable consumption: labels for eco-textiles, fair trade products and organic food;
- Advantages of regional products focussing on food, clothes and typical souvenirs;
- Reflection of one's own consumption behaviour;
- Critically questioning of origin of products;
- Think about global consumption critically;
- Teamwork;
- Presentation and communication skills;
- Development of scientific thinking;
- Development of a questionnaire;
- Self-reflection of own behaviour;
- Open to other opinions and varying perspectives.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about globalization, environmental problem, global production of consumer goods, sustainable consumption; Evaluating possible impacts; Theory about the future and desirable future scenarios; create one's own vision of the future; foresee consequences of actions; Accept responsibility of actions and choices done;
- Normative: Concepts of justice (justice in global trade), equity, social-ecological integrity, Ethics; Gradually recognize the meaning and applicate norms and values underlying actions; Negotiate sustainability values, principles, goals and targets in a context of conflicts of interest, uncertain knowledge and contradictions; Be open to other opinions;
- Strategic: Be committed to integrity and ethics; Be open to varying perspectives; Be willing to act despite inconclusive or incomplete information;
- Collaboration: communication between each other, categorize different opinions; functional values regulation social cohesion in local communities; Teamwork; Collaborate and learn from others; Be able to motivate; Understand and respect the needs, perspectives and actions of others (empathy); Understand diversity especially those related to cultural and social aspects; Embrace diversity among cultures and social groups;
- Systems Thinking: Alpine key sustainability issue, the cause and consequences: waste; Relations between different causes: Actions, interests and mandates of key stakeholders in the problem constellation; Be able to think about the problem critically and globally; Think global act local;
- Self-Awareness: Know one's own role in the local community and society; Reflect one's own role in the local community and society; Evaluate actions, feelings and desires; Be active in environment; Deal with one's feelings and desires;
- Integrated Problem-Solving: Different problem-solving frameworks related to sustainability and develop viable solutions; Be able to think about a problem critically and globally; Apply problem-solving approaches and develop viable, equitable solutions; Deal with conflicts in a group; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Introduction to the topic "consumption"	Class discussion	Some facts and figures about local and global consumption, blackboard, chalk	Classroom	15 min
2.	Developing questions for the survey in local stores	Teamwork in small groups (4 students, two times each focus	Fact sheets focusing on food, textiles and typical alpine souvenirs, paper, pen	Classroom	45 min
3.	Geographic game: Where were my clothes produced?	Visualisation - reading world map and finding countries	laminated world map, water-soluble pen	Classroom	10 min
4.	Matching game: Places and work steps during the production of jeans and a t-shirt (examples)	Reflection and learning with a playful character, visualization	laminated photos of different steps of jeans and t-shirt production, laminated world map, water-soluble pen	Classroom	20 min
5.	A survey in local stores	Teamwork in small groups (4 students in each group)	map with marked store locations, questionnaires, pens, clipboards	Fieldwork	60 min (only survey; without way from school to stores and back)
6.	Presentation of the survey results	Teamwork, presentation, discussion	posters, pens in various colours, blackboard, magnets	Classroom	75 min

Activity description

This pilot action is dedicated to sustainable consumption in which pupils learn about the needs and motivation for consumption and about the impacts of long chains between producers and final consumers of products (especially clothes, food, typical souvenirs). They deal with their own consumption behaviour and get awareness for global production of consumer goods. They question critically the origin of "alpine" products and get to know different labels for eco-textiles, fair trade products and organic food. In a preparatory lesson, they also develop their own survey and later they interview shop owners and assistants of local stores of Berchtesgaden. They created some posters with the most important findings of their survey and presented their results to the others.

Outdoor activities:

During the excursion through the centre of Berchtesgaden, the pupils used their questionnaire to interview shop owners and their assistants.

Tools and materials description

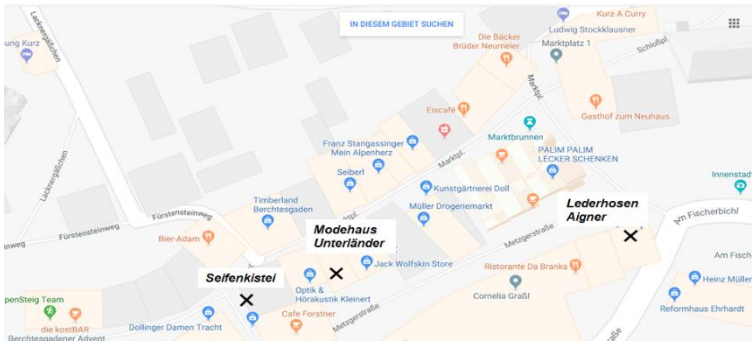
The whole range of activities, tools and materials, which are used in the pilot activity are described above in *Unit of Learning structure (phases of the project/times/structure in activities)*

Below there are only some examples of the tools and materials:

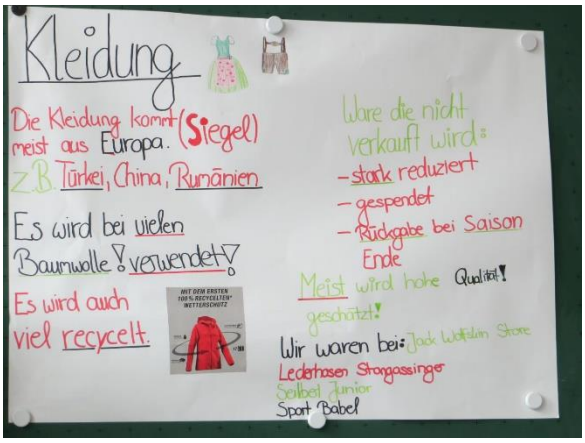
- Questionnaire prepared by pupils for interviewing local stores of Berchtesgaden

Keywords: Globalization; Cheap Fashion; Traditional clothing; Origin; Price; Material; Organic cotton; Synthetic fibre clothing; Internet competition; Second hand; traditional clothing (Leather trousers)

- Map with local stores



- Posters, pictures, pens, magnets - for the pupils' presentation



Project STRATEGIES

Strategies, methods, techniques

For carrying out of the activity they used enquiry-based learning:

- Identify the problem: Are we sustainable with regard to clothing, food, souvenirs?
- Observe and document elements, that contribute to the problem: Pupils learn about production phases and locations through different games
- Learn skills needed to address the problem: Preparing a questionnaire on clothing, food, typical souvenirs for interviewing shop owners and assistants of local stores
- Create a new solution using your skills, process and knowledge: Pupils question the local stores and analyse the answers in groups
- Share your solution with others: They design a poster that includes the results of their research and the possibilities for improving sustainability.

Cross-curricular strategies

The activity was carried out interdisciplinary connecting religion and ethics, geography, sociology…

3.1.14. Do we take care of our alpine environment? – Promotion of sustainable behaviour in a school environment - **PS10-11**

ASM Pillar: Socio-economic
Macro-issues: Sustainable and cohesive communities
Key alpine SD Issue: Cooperating and cohesive communities

Do we take care of our alpine environment? – Promotion of sustainable behaviour in a school environment

Photo gallery



FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Istituto di Istruzione Superiore Alberti Bormio
- Istituto Comprensivo Martino Anzi Bormio
- Stelvio National Park (non-formal)

SD VALUES

- Universalism: protecting the environment;
- Self-direction: independent, curious, creativity, choosing your own goals;
- Achievement: to be intelligent, to be capable of, to be successful;
- Security: a healthy lifestyle, sense of belonging;
- Tradition: respect for tradition;
- Benevolence: friendship, meaning in life, to be responsible;
- Commitment to sustainable development;
- The belief that people can make a difference.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about key sustainable development issues in the Alps (environment, society, economy and governance) and can recognize them in their local environment;
- Understand the importance of a sustainable school environment;
- To be familiar with environmental legislation and recommendations for implementing sustainable measures in the local environment;
- Adopt the basics of research work: identify the problem, collect information, perform an experiment, analyse and evaluate the information;
- Develop digital, communication and presentational competences;
- Evaluate the information collected using different sources;

- Develop competence learning to learn: plan, implement and evaluate their own learning process;
- Develop the competence of teamwork, collaborative learning;
- Develop a sense of belonging to the Alpine space.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area future multiple scenarios-possible, probable and desirable; Time scales relevant to the problem and possible solutions; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones;
- Normative: Concepts of justice, equality, social-ecological integrity, and ethics; Gradually recognize the meaning and applicate norms and values underlying actions;
- Strategic: Be committed to integrity and ethics;
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Recognize and understand relationships and complex systems;
- Collaboration: Collaborate with others and learn from others; Understand diversity especially those related to cultural and social aspects;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Evaluate and further motivate actions, feelings and desires.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	Gaining knowledge about key SD issues in the Alps and local environment	Frontal lecture	PowerPoint presentation, self-notes	Istituti Alberti/Anzi Bormio	4h
2.	Making of identification cards for the article about Statuto Valtellina	Group work, working with sources	Statuto Valtellina, identification keys, computer, notes	Istituti Alberti/Anzi Bormio	20h
3.	Presentation of selected articles of Statuto Valtellina	Group work, working with sources	Computer presentation, software dedicated	Istituti Alberti/Anzi Bormio	10 min/group
4.	Preparation about a questionnaire about the environment: a questionnaire about the relation and care of our environment	Dedicated software to prepare the questionnaire and data analysis	Computer presentation, software dedicated	Istituti Alberti/Anzi Bormio	10h

Activity description

Student of Istituto di Instruzione Superiore Alberti spent their pilot action in the classroom where they were learning about key SD issues in the Alpine region with special emphasis on cases in the local environment and the Statute of Valtellina community, which consists of operational guidelines and monitoring tools. For easier understanding, students prepared identification cards with examples.

Pupils made online closed-question questionnaires (QuestBase software) for their peers, teachers and other school staff in order to evaluate the state of the art and determine the opportunities for further development of sustainable policies. Pupils processed the retrieved data and made statistical analysis (transformations of data in “true” and “false” events, arithmetic mean and standard deviation, data histograms and their interpretation through the study of Gaussian curve, comparison of the results, preparation of detailed report with the results and the evaluation of statistical errors). Questionnaire analysis was the foundation for further pilot actions where proposals for a more sustainable school environment will be put into practice. The students also presented younger pupils from the primary school Instituto Comprensivo "Martino Anzi" the necessity for a more sustainable school and also invited them to fill in the questionnaire.

Collected measures to make the school environment more sustainable where the measures will be implemented gradually in the next few school years, while teachers will be cooperating in the cross-curricular implementation of measures and will be related to the national curricula.

Outdoor activities

Pupils and teachers visited the school in Silandro (Alto Adige) - Trentino as an example of good practice. They paid attention to sustainable practices, which were introduced as part of the experimental mountain curriculum.

Tools and materials description

Lecture in the classroom:

- PowerPoint presentation (Prezi) and self-notes, QuestBase software for a digital questionnaire

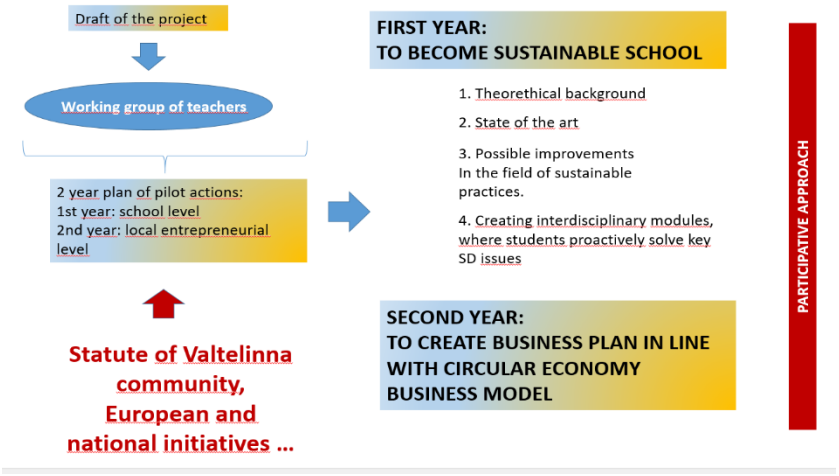
Individual work:

- Computer, notes, underline key questions to ping specific answers, List of the selected questions relating to the choice of eco-friendly material and clean energy

Project STRATEGIES

Strategies, methods, techniques

The pilot site decided to implement a two-year plan of pilot activities, where they move from the school environment to the local one:



Inquiry-based learning:

1. Introduction activity (Group work, working with various sources, peer to peer learning)

Students gain knowledge about the Statute of Valtellina community:

- preparation of identification cards (with the use of identification keys)
- presentation of selected articles – create presentations

2. Preparation activities - research work:

Students prepare a questionnaire about school sustainability practices and opportunity for their improvements from the viewpoint of an individual (what about my behaviour…). They use QuestBase software to produce an online questionnaire. In the process of preparation of questionnaire, students have to use existing knowledge because they have to prepare a pool of closed, but significant answers

They define the target group and the type of questions

They also made an experiment with the pilot sample to test the effectiveness of prepared questionnaires.

3. Practical work

Individual work: Filling in the questionnaire

Peer to peer learning: Students have to motivate younger students for sustainable behaviour: filling in the questionnaire

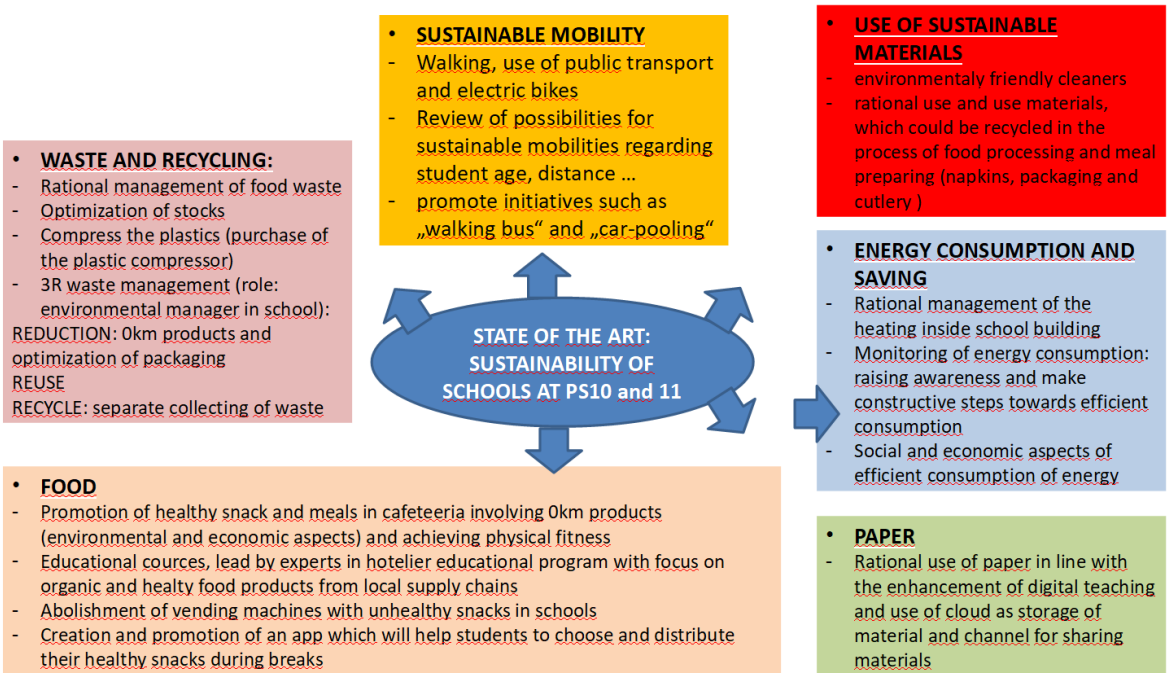
A scientific approach to research: Collecting and processing data, producing statistical analysis in order to identify the strengths and weaknesses of current sustainable practices and opportunities for their improvements.

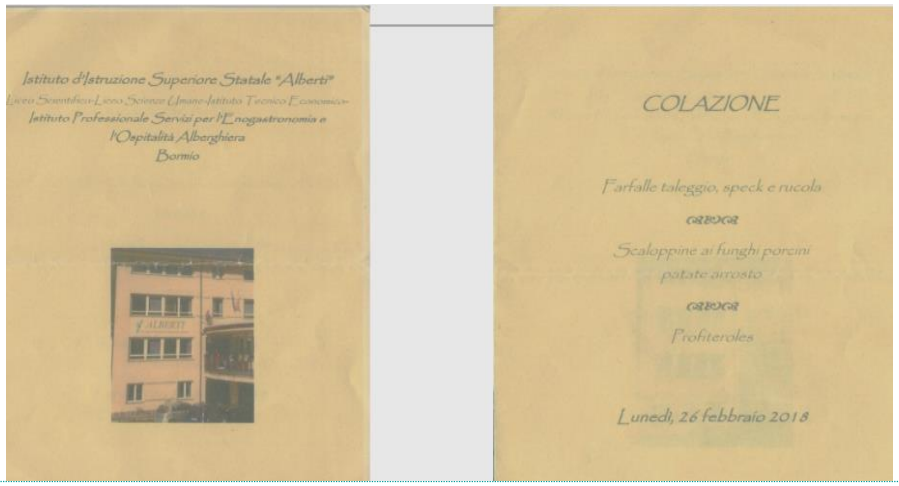
4. Evaluation, which includes strongly participative approach

5. Presentations
The bottom-up approach, used in this action, allow teachers to modify and internalize the interdisciplinary modules, which will become the nucleus of the ASM curriculum

Cross-curricular strategies

Cross-curricular: From existing sustainability proposals, new cross-curricular links will be created with regard to the topics. In order to implement the measure in the future, teachers of individual subjects will cooperate. The food-related outcome was a menu consisting of traditional dishes from locally produced ingredients and prepared with modern food-processing techniques.





3.1.15. From field to the kitchen – rediscovering plants, crops and flowers of the mountain area in Clusone - **PS7**

ASM Pillar: Environmental
Macro-issues: Cultural and Agro-managed landscape conservation
Key alpine SD Issue: Farming

From field to the kitchen – rediscovering plants, crops and flowers of the mountain area in Clusone

Photo gallery





FORMAL and NON-FORMAL organizations involved

List of the involved schools and non-formal organization

- Azienda Bergamasca Formazione/CFP Clusone
- Parco delle Orobie Bergamasche (Expertise such as naturalist and mountain guide as non-formal)
- Andrea Messa (expert in cereals as a non-formal educator)
- Marco Del Bono (expert in beer productions as a non-formal educator)
- Luca Giupponi (expert in mountain's flowers and flora alpine as a non-formal educator)
- Vanessa Vaio (expert in plants and projects of revaluing places and heritage as a non-formal educator)
- ERSAF (expert in the conservation of biodiversity as a non-formal educator)

SD VALUES

- Universalism: protecting the environment, to be unified with nature
- Self-direction: curiosity, creativity, choosing your own goals
- Stimulation: variation in life
- Achievement: to be intelligent, to be successful, to be capable of …
- Security: a healthy lifestyle
- Tradition: respect for tradition, devout
- Benevolence: true friendship, to find meaning in life, responsibility
- Sense of identity
- Commitment to sustainable development
- The belief that people can make a difference

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Knows the name of alpine flowers, plants;
- Knows the adaptations of alpine flora on alpine environment;
- Can recreate the living environment - making a garden/park with alpine plants;
- Knows the conservational law and the endangered alpine species of plants and chooses plants for the garden/park in accordance with respecting local laws and preserving local biodiversity;
- Making a herbarium with alpine plants;
- Understands the importance of local varieties of vegetables, maize for maintaining a high level of biodiversity;
- Is open to different approaches to biodiversity conservation;
- Is ready to actively approach local biodiversity conservation - create a gene bank of vegetable varieties and maize (collection of seeds, seedlings and their analysis, field experiment - determine germination percentage, planting, growth and development, description of plants and their properties, local varieties - conservation techniques);
- Recognizes seeds of different vegetable and crop plants;
- Understands the specificities of the cultivation process in the alpine environment;
- Understands the problems of seed production - the cultivation of seeds for the purpose of dissemination and can act in accordance with the principles of good practice;
- Knows and performs the process of making flour from corn seeds (rubbing, cleaning, milling, packing, labelling);
- Recognizes different types of flour;
- Collects recipes for flour dishes and prepares them (biscuits, polenta ...);
- Can use a small stone mill, sieves;

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Analysis approaches; Time scales relevant to the problem and possible solutions;
- Collaboration: Collaborate with others and learn from others; Embrace diversity among cultures and social groups;
- System Thinking: Alpine key sustainability issues, their causes and consequences; Recognize and understand relationships in complex systems; Think Global act Local;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Apply the precautionary principle; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Reflect on its own values and personal behaviours; Be active in environment;
- Integrated Problem-Solving: Think about a problem critically; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity- inquiry-based learning	Didactic Methods	Materials	Location	Time For Activity
1.	Preparation of pilot activities and modules about biodiversity connected to alpine plants, local varieties of vegetables and corn	Introductory activity Book and Video	Sheets and Pen	CFP Clusone	1h
2.	Getting to know alpine plants, foraging them for the task later - making an alpine garden/park and producing a herbarium	Outdoor Activity	Plastic Bag, Scissors and Felt Pencil	CFP Clusone	5h
3.	Chemical analysis of local corn varieties - seeds	Laboratory Activities	Microscope Balance	CFP Clusone	5h
4.	Field experiment of planting seeds of local corn varieties and seeds and seedlings of local vegetable varieties (acquired by pupils from local people) - first attempt to test the germination percentage	Outdoor Activities	Seeds off local varieties of corn, vegetable seeds and seedlings	CFP Clusone	10h
5.	Practical work - plant growth and development	Field	gardening tools	CFP Clusone	10h
6.	Students gain an insight into the process of flour production from the field to the table - rubbing, cleaning, milling, packing and labelling	Laboratory	Machines for rubbing, cleaning, milling, packaging and labelling	CFP Clusone	30h
7.	Preparation of dishes from flour and collection of recipes for making a cookbook	Kitchen, Laboratory	Kitchen Tools	CFP Clusone	20h

Activity description

Pupils of ABF/CFP Clusone were discovering their territory through various activities. They were learning about the biodiversity of alpine plants and prepared herbarium of Alpine plants. They made a thematic garden, where they planted typical Alpine plants in line with conservation regulations.

Students established a seed bank from the collected seeds of crops and vegetables from the elderly in their local environment. Students collected different varieties of grains, made their chemical analysis and grew them in the school vegetable garden. They also determined the germination rates and learnt about the whole process from the field to the kitchen: the cultivation of seeds, observation of growth, harvesting and hulling, milling, packing and labelling. Finally, students collected the recipes, where flour was one of the main ingredients and prepared some of the dishes (biscuits, polenta) in the school kitchen.

Outdoor activities

- Getting to know alpine plants, foraging them for the task later - making an alpine garden/park and producing a herbarium
- Practical work: Field experiment of planting seeds of local corn varieties and seeds and seedlings of local vegetable varieties (acquired by pupils from local people) - first attempt to test the germination percentage

Tools and materials description

- camera, notes, pencils, sketchbooks
- equipment for work in the: garden, laboratory and kitchen

Project STRATEGIES

Strategies, methods, techniques

The process of work with students is very easy and based learning on doing. We experience work in small groups with tasks and activities divided according to the degree of difficulty and the different levels of learning and to do this we use SELF EVALUATION, FLIPPED CLASSROOM, OUTDOOR EDUCATION, and COOPERATIVE LEARNING.

Inquiry-based learning:

a. Preparation phase: Define actions and plan a module about biodiversity in their local environment - local varieties of field crops)

b. Observe elements that contribute to the problem: Module about biodiversity in their local environment:

- gain knowledge about alpine plants and their adaptations, endangered species and nature protection legislation
- importance of biodiversity of local crops and vegetable varieties, identification of seeds of individual varieties of crops and vegetables, methods of conserving local varieties

c. Solve the problem:

- planning and carrying out the process of collecting seeds seedlings of local crops and vegetables varieties
- practical work: chemical analysis of the collected seeds, carrying out the experiment with germination of the seeds, monitoring the process of growth and development - carrying out all the tasks related to better growth and development of plants (removing weeds, watering), observation and inventory of all properties
- preparing flour packages from the field to the table: rubbing, cleaning, milling, packaging and labelling
- preparing dishes from flour (polenta, biscuits) and writing a cookbook

d. Share your ideas/solution with others (or maybe the evaluation process):

preparing a table with all the ideas and solutions and cross the data, create a presentation to share on our website

Inquiry-based learning with the participative approach: raising awareness within a local community about the alpine plants and their biodiversity

- Preparation phase: Teacher and experts discuss possible local SD issues: how to raise awareness of Alpine plants among students within the local community
- Introduction phase: Teacher and experts present the selected issue to the class
- Learning phase: Students gain knowledge in the classroom and in the field on Alpine plants, their adaptations to extreme climate conditions and their status of protection. Students also make herbarium of Alpine plants.
- Problem-solving phase:
- Students created the mountain park in one of the public areas, managed by Local Governance of Clusone. Teachers and non-formal educators motivated students and guided them with instructions, hints …
- Evaluation and dissemination:

The four general categories of criteria that were used to evaluate student work depending on the targeted standards or outcomes and the purpose of the performance task are four criterion types focus on evaluating: content, process, quality, and impact. Let's consider each type.

- Content criteria are used to evaluate the degree of a student's knowledge and understanding of facts, concepts and principles.
- Process criteria are used to evaluate the proficiency level of performance of a skill or process, as well as the effectiveness of the methods and procedures used in a task.
- Quality criteria are used to evaluate the overall quality and craftsmanship of a product or performance.
- Impact criteria are used to evaluate the overall results or effects of a product or performance given its purpose and audience.

Cross-curricular strategies

The activities were planned interdisciplinary so the cross-curricular approach was essential when carrying out the pilot action: OAM (Marketing), Science, Dairy Production, Cultivation, Chemistry, Math, Geography and History.

This pilot action is part of the UDA project - educational interdisciplinary module project that is implemented once a week, 50 hours per year. The result of the research is evaluated inside the curricula and it is important for the success at school.

For example, OAM teacher gives a task on collecting data of prices of milk and makes a business plan as a result of its UDA, Dairy Products teacher gives a task to create a perfect cheese with the ingredients and dairy products we have at school and makes experiments with saffron, to make the good balance of flavours. At the end divided into groups, every student is evaluated for his/her task and goal and has to explain his/her role in the process.

3.1.16. Agriculture in the hilly countryside of Bohinj - **PS14**

ASM Pillar: Socio-economic
Macro-issues: Towards a green alpine economy
Key alpine SD Issue: Sustainable rural development – Multifunctional and sustainable agriculture, Food production

Agriculture in the hilly countryside of Bohinj

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo (BC Naklo)
- Triglav National Park (TNP)
- The tourist farm Pr' Odolnek
- Bohinj Tourist Association

SD VALUES

- Universalism: to protect the environment, to be unified with nature, to be broadminded;
- Self-direction: freedom, curiosity, choosing your own goals, to be independent;
- Achievement: to be intelligent, successful, new capabilities;
- Security: a healthy lifestyle, family security, a sense of belonging;
- Conformity: self-discipline, respect for the elders;
- Tradition: respect for tradition, devotion;
- Benevolence: responsibility, helpful, to find the meaning in life.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Understands the importance of the protected areas (the example of TNP);
- Understands the importance of the sustainable farming and sustainable use of natural resources;
- Understands the challenges of mountain farms in the protected area;
- Knows the valuable natural and cultural features of the protected area (the example of TNP);
- Is familiar with the agricultural and environmental legislation;
- Is familiar with agriculture in Slovenia: the past, present, and future;

- Is familiar with basic rules of conduct in the protected area (on the example of TNP);
- Is familiar with the quality label of the TNP (the "bohinjsko" label);
- Understands the principles of sustainable exploitation of natural resources (water, soil, wood);
- Can anticipate the negative consequences of the excessive exploitation of natural resources (water, soil, wood);
- Is able to link knowledge about different sectors – sustainable farming, husbandry, dairy, forestry, agricultural land management, tourism, farm tourism, eco-farming, etc.;
- To develop entrepreneurial thinking;
- Developing presentation and communication skills.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible information - possible, probable and desirable; Create one's own vision for the future;
- Normative: EU, national and regional regulations, funds, resources and opportunities for development;
- Strategic: Use learner-centred methods for designing, implementing and adapting SD actions in the local communities;
- Collaboration: Understand and respect the needs, perspectives and actions of others;
- System thinking: Alpine key sustainability issues, their causes and consequences; Think Global, act Local;
- Self-Awareness: Be aware of its own role in the local community; Evaluate and further motivate actions, feelings and desires;
- Integrated-problem solving: Think about a problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
Project days - the first day					
1.	Visiting the Alpine Diary farming museum	Learning by observing – visiting a museum	Notes and camera	Stara fužina, Bohinj	2 hours
2.	Visiting the tourist farm Pr' Odolnek that has cheese production facilities	Learning by observing, tasting cheese (use all senses), interview of the owners, discussion about agricultural policy and land development programme		Studor, Bohinj	2 hours
3.	Getting to know the cultural countryside of Bohinj	Learning by observing		Koprivnik – Podjelje, Bohinj	2 hours
4.	Visiting the tourist mountain eco-farm Gorjup	Learning by observing, tasting of various dried meat products (use all senses), discussion about organic farming, challenges of mountain farms in the protected area, and quality label of the TNP (the "bohinjsko" label)		Podjelje, Bohinj	2 hours
Project days – the second day					
5.	Preparing presentations of topics discussed during the first project day and presenting them	Working in small groups, using various sources	Computer, using various sources	Classroom	6 hours
6.	Writing a paper: Similarities and differences between students' farms and visited farms – past and present	Individual work, using various sources, intergenerational cooperation	Computer, using various sources (historical data)	Working from home	5 hours

Activity description

One of the two main objectives of this pilot action was learning about agriculture in the past and the present. Students learnt about the past in Alpine dairy farming museum in Stara Fužina, Bohinj. Rich and diverse permanent display offers an insight into the history of agriculture and in a life of shepherds in the Bohinj's (mountain) pastures in an authentic environment.

The second objective was learning about the characteristics of agriculture in Bohinj - especially in the part that lies within the protected area of the TNP. That part is a typical Alpine region with little cultivated land, where mountain pastoralism was and is still prevailing agricultural activity.

Agriculture in Bohinj is nowadays closely intertwined with tourism and students learnt this first-hand on two practical examples. The first visit was at the tourist farm Pr' Odolnek with cheese production facilities. Group proceeded its field trip on foot and during the walk, students were observing valley and hilly countryside, immovable cultural heritage, linked to the agricultural activity in the past, and the remains of the traditional use of agricultural land that persist through time.

In the settlement Podjelje, students visited the tourist mountain eco-farm Gorjup. The self-sufficient farm is an example of a good practice where they practice so-called "green and sustainable tourism", which is very suitable for the Alpine protected area.

During the next day, students (divided to small groups) used various sources to research topics such as: agricultural and environmental legislation, agriculture in Slovenia - the past, present, and future, sustainable farming, husbandry, dairy, forestry, agricultural land management, tourism, farm tourism, eco-farming, sustainable use of natural resources and negative consequences of the excessive exploitation of the natural resources (water, soil, wood), challenges of mountain farms in the protected area, and quality label of the TNP (the "bohinjsko" label).

During History class, they were comparing farms in past and present as well as searched for similarities and differences between their farms and the farms they visited on the first project day.

Outdoor activities

- Students spent the first project day in the field where they learned by observing, use of different senses …

Tools and materials description

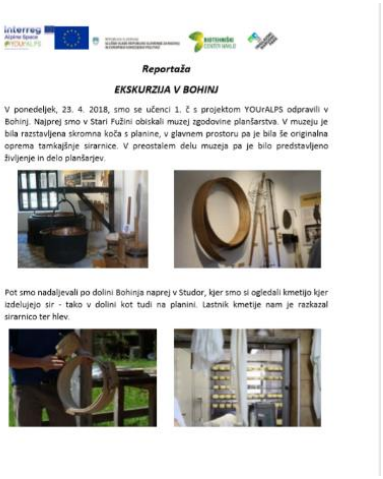
Computers, the use of various sources – it is necessary to mention the use of oral sources since the history of farms is mostly transmitted orally from generation to generation – intergenerational cooperation.

Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning:

- Introduction to a problem: COMPARING ALPINE FARMS IN THE PAST AND PRESENT
- Learning with observing – students visit several examples of good practices of ecological farms in the Alpine areas that produce traditional dairy and dry-meat products, and have a tourism activity.
- Students use various sources for researching – gaining practical knowledge.
- Students write papers where they use practical knowledge gained during the project days. They learn about the history of their farm by asking their family members – intergenerational cooperation and use the information to compare opportunities for farms in the alpine areas in the past and present.



Reportaža

EKSKURZIJA V BOHINJ

V ponedeljek, 23. 4. 2018, smo se učenci 1. č s projektom YOUrALPS odpravili v Bohinj. Najprej smo v Stari Fužini obiskali muzej zgodovine planšarstva. V muzeju je bila razstavljena skromna koča s planine, v glavnem prostoru pa je bila še originalna oprema tamkajšnje sirarnice. V preostalem delu muzeja pa je bilo predstavljeno življenje in delo planšarjev.

Pot smo nadaljevali po dolini Bohinja naprej v Studor, kjer smo si ogledali kmetijo kjer izdelujejo sir - tako v dolini kot tudi na planini. Lastnik kmetije nam je razkazal sirarnico ter hlev.

Students prepared a reportage about the trip.

<u>Cross-curricular strategies</u>

BC Naklo carries out project days twice per year, where students through project work gain additional knowledge. In this pilot action, there was cross-curricular cooperation of History (comparison of farms in the Alpine world in the past and present) and the Slovenian language (report, interview, presentation).

3.1.17. Opportunities for youth in the Alps with the activity from indigenous Bruna alpina/Bruna Italiana cow to cheese Bernardo, where students rediscover traditional cheese recipe from the mountain area in Clusone - **PS7**

ASM Pillar: Environmental, Socio-economic
Macro-issues: Cultural and Agro-managed landscape conservation, Towards a green alpine economy
Key alpine SD Issue: Farming - Breeding, Sustainable rural development - Multifunctional and sustainable agriculture, food production

Opportunities for youth in the Alps with the activity from indigenous *Bruna alpina/Bruna Italiana* cow to cheese Bernardo, where students rediscover traditional cheese recipe from the mountain area in Clusone

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Azienda Bergamasca Formazione/CFP Clusone
- Parco delle Orobie Bergamasche (Different experts as non-formal educators: biologist, climatologist, geologist and nature lovers)
- Andrea Messa (non- formal educator, expert in cereals and animal feeding)
- Giancarlo Poloni (non-formal educator, expert in saffron cultivation)
- Giacomo Perletti (non-formal educator, expert in cheese and dairy products)
- Daniele Negroni (non-formal educator, expert in breeding and bruna alpina)

SD VALUES

- Universalism: Protecting the environment;
- Self – direction: curiosity, creativity, choose your own goals;
- Achievement: to be intelligent, to be successful;
- Security: a healthy lifestyle, a sense of belonging;
- Tradition: respect for tradition;
- Benevolence: friendship, to be responsible;
- The sense of identity;
- Commitment to sustainable development;
- The belief that people can make difference.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Knows the indigenous breed of cow Bruna Italiana/ Bruna Alpina, its characteristics (optimal ratio between quality and quantity of produced milk), conservation measures (breeding programs and goals);
- Knows the chemical and biological characteristics of milk and analytic techniques;
- Understands that the unique chemical composition of Bruna Italiana cow milk contributes to the quality of dairy products, particularly cheese;
- Understands the advantages and disadvantages of cow breeding in mountain pastures;
- Knows plants that grow on pastures;
- Knows the differences in the production of cheese in high and low altitudes;
- Knows Bernardo cheese - its properties and production techniques (the process of ripening, refining of the taste with spices);
- Analysing the chemical and biological properties of milk;
- Use of a microscope;
- Knows how to make Bernardo cheese by the traditional recipe (and also other traditional cheeses);
- Knows how to add additives - spices to cheese (saffron: the process of planting bulbs, growth, the collection of flowers, drying, grinding);
- Collecting recipes of dishes that include Bernardo cheese as an ingredient.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Analysis approaches; Time scales relevant to the problem and possible solutions;
- Collaboration: Collaborate with others and learn from others; Embrace diversity among cultures and social groups;
- System Thinking: Alpine key sustainability issues, their causes and consequences; Recognize and understand relationships in complex systems; Think Global act Local;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Apply the precautionary principle; Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Reflect on its own values and personal bias; Be active in environment;
- Integrated Problem-Solving: Think about a problem critically; Be open to varying perspectives;

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods - inquiry-based learning	Materials	Location	Time For Activity
1.	Preparation of Activities and Modules about Mountain Cows and Farming	Book and Video	Sheets and Pen	CFP Clusone	1h
2.	Research of Biodiversity outside School by Foraging And Analyse plants that grow on pastures	Foraging/Outdoor Activity	Plastic Bag, Scissors and Felt Pencil	CFP Clusone	5h
3.	Chemical and biological analysis of Milk	Laboratory Activities	Microscope Balance	CFP Clusone	5h
4.	Field experiment: Determination of the rate of saffron germination	Outdoor Activities	Seeds of Ancient Varieties of Corn and rye	CFP Clusone	10h
5.	Working Outside the Field - growth and development of saffron plants	Outdoor Activities	Hoe and Scoop	CFP Clusone	10h
6.	Cleaning, drying, grinding of Saffron Flowers	Laboratory Activities	Cleaning Machine	CFP Clusone	5h
7.	Making Cheese Products	Laboratory Activities	Milling Machine	CFP Clusone	5h
8.	Label Cheese and Dairy Products	Laboratory Activities	Packaging Machine	CFP Clusone	10h
9.	Making Dishes and Recreate Recipes using cheese as raw material. In the end, they produce a cookbook - Created by Students for other Students	Kitchen, Laboratory Activities	Kitchen Tools	CFP Clusone	20h

Activity description

Students familiarized themselves with the indigenous *Bruna Alpina/Bruna Italiana* cow breed and its unique qualities and learned about breeding programs. Students collected plants on Alpine meadows and pastures that make up the diet of the cows and identified them. Students made an analysis of chemical and biological characteristics of milk. In addition, cultivation of saffron was an extensive part of their activities. Students planted saffron bulbs and monitored their growth. At harvest, they cleaned and milled the flowers. Saffron has become one of the main ingredients of the Bernardo cheese students learnt to produce. Later on in the kitchen, students prepared dishes containing saffron cheese. In the end, students created a cookbook, where they collected traditional recipes. Bernardo cheese produced by students and other dairy products were presented on local events, fair of pasture and breeding (Latteria Val di Scalve, Rifugio Cassinelli), other promotional events.

Possible expansion of the activity: Expand the set of crops and create a complete meal with the produced ingredients.

Outdoor activities

- Research of Biodiversity of plants growing on mountain pasture
- Practical fieldwork: determining the germination percentage, monitoring of growth and development, harvesting flowers

Tools and materials description

- Camera, notes, pencils, sketchbooks
- Equipment for work in the: field, dairy workshop, and kitchen

Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning: Producing with Bernardo cheese

a. Preparation phase: What is Bernardo cheese – surveying elderly people, youth (intergenerational cooperation) … interviews and data elaboration

b. Observing elements that contribute to the problem: VET module about Mountain Cows and Farming

c. Solving the problem: get familiar with the whole process from the field to the kitchen (learning by doing, practical work)

- Analysing plants on Alpine meadows and pastures – collecting samples and identifying plants
- Laboratory work: Analysing chemical and biological characteristics of milk
- Cultivation of saffron and its preparation: from bulbs to picking flowers, cleaning flowers, milling and drying
- Producing and packaging Bernardo cheese.
- Preparing traditional meals, dishes, where cheese is one of the ingredients. In the end, they
- created a cookbook with traditional recipes.
- Analysing economic factors of production

d. Sharing ideas/solution with others: Presentation of Bernardo cheese and the production technique at local events, fair of pasture and breeding and other promotional events, and in articles

The action also contained elements of experiential learning, as students handled a realistic situation in which a farmer does all the planning for his product, from the field/pasture to the store.

Four general criteria categories used for evaluation of student work depending on the targeted standards or outcomes and the purpose of the performance task are four criterion types focus on evaluating: content, process, quality, and impact.

- Content criteria - used to evaluate the degree of a student's knowledge and understanding of facts, concepts and principles.
- Process criteria - used to evaluate the proficiency level of performance of a skill or process, as well as the effectiveness of the methods and procedures used in a task.
- Quality criteria - used to evaluate the overall quality and craftsmanship of a product or performance.
- Impact criteria - used to evaluate the overall results, effects of a product or performance given its purpose and audience.
- Pedagogic methods - the process of work with students is very easy and based learning on doing. We experience work in small groups with tasks and activities divided according to the degree of difficulty and the different levels of learning and to do this we use SELF EVALUATION, FLIPPED CLASSROOM, OUTDOOR EDUCATION, and COOPERATIVE LEARNING.

Cross-curricular strategies

The activities were planned interdisciplinary so the cross-curricular approach was essential when carrying out the pilot action.

OAM (Marketing), Science, Dairy Production, Cultivation, Chemistry, Math, Geography and History.

3.1.18. Impact of Tourism on Wild Alpine Fauna - **PS4**

ASM Pillar: Socio-economic, Environmental
Macro-issues: Towards a green alpine economy, Nature protection
Key alpine SD Issue: Tourism sector, Degraded habitats, preservations and restoration

Impact of Tourism on Wild Alpine Fauna

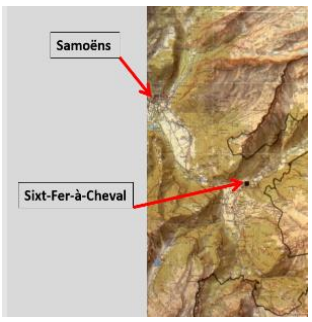
Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- College Andre Corbet Samoëns
- Natural Reserve Sixt-Passy



SD VALUES

- Universalism: Protecting the environment, unity with nature;
- Benevolence: Responsibility;
- Conformity: Self-discipline;
- Security: a healthy lifestyle;
- Self-direction: curiosity, self-respect.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Understanding the concept of interdependence between the individual and the environment;
- Promote the ability to read the human activities impacts on ecosystems;
- Provide tools and models to actively participate in nature conservation;
- Provide tools for species recognition and classification.
-

Integration of SD non-formal competences (knowledge, skills, attitudes)

- System thinking: recognize and understand relationships in complex systems;
- Self-awareness: be aware of its own role in the local community and society; Be active in environment;
- Integrated problem solving: Think about a problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Presentation of the protected area and wild fauna during the winter	Slideshow in a classroom (introductory activity) carried out by the teacher and the educator from the park	PowerPoint presentation, papers, pencil	Classroom	2 hours
2.	Activities in the field seeking animal's tracks, observing some species (dear, ibex,…) discover adaptations to the winter environment	Discovering animals tracks - interpretation on the base of observation Observation of Ibex and chamois with telescope	Telescope	Fieldwork - Giffre valley	1 day
3.	Snowshoeing in Giffre valley. Learning about the historical and present-day activities in the local environment. Realize the technology and leisure activities affect the nature and alter it.	Learning through observing the anthropogenic impact, especially on tourism Retrospective learning - learning from past events	Snowshoes Winter sport equipment	Fieldwork - Giffre valley	
4.	Feedback in class and discussion about the rules of the protected areas and reasons behind them.	Discussion with ski patrollers Visualisation - draw pictogram of human activities in protected areas	Notebook Pencil	Classroom	2 hours

Activity description

The pilot action was carried out in the Giffre valley, an area where pristine nature and wildlife are negatively impacted by human activities, such as tourism, skiing and other leisure activities. Students tried to find sustainable solutions for mass tourism, what will contribute to the higher level of human safety and survival of the animals. Students talked about the tourist infrastructure and its possible socio-economic consequences, which would also affect students' lives like increasing prices of properties, seasonal jobs, etc. One of the aims of the pilot action was to present the impacts of winter tourism activities on Alpine animals (deer, chamois, ibex, and members of the Phasianidae family) to students. Students learnt about the animals' lifestyle adaptations, observed the animals and their tracks, and tried to interpret what the shape of their tracks tells

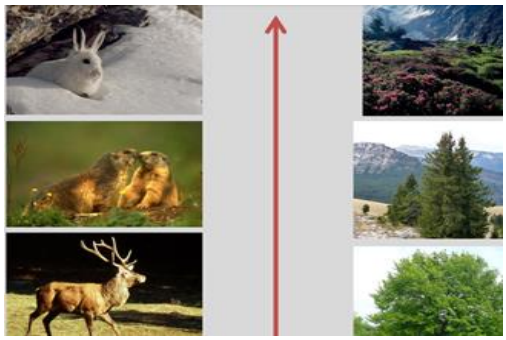
about the animal's lifestyle. Students discussed the effects of human activities on mountain fauna and consequent strategies of animals to limit disturbances and competition. In addition, part of the activities was dedicated to avalanches and understanding the causes for avalanches and their frequency on slopes with/without trees. In order to understand the theory better, students made a miniature avalanche model and tested possible scenarios. Students also acquired practical knowledge on how to react in case of avalanches.

Outdoor activities

- Activities in the field seeking animal tracks, observing some species (dear, ibex…) and figuring out how they adapt to the environment in which they live. Discovering animal tracks and observing Ibex and chamois with a telescope
- Snowshoeing in Giffre valley and observing the nature and effects of winter and summer tourism.

Tools and materials description

- PowerPoint presentation, papers, pencil



- Telescope for observing animals
- Snowshoes
- Winter sport equipment

Project STRATEGIES

Strategies, methods, techniques

Learner-centred methodologies:

- Introductory activity: audio-video presentation about alpine animals and their winter adaptation followed by a discussion.
- Interpretation of nature on the base of observation:

interpret what a track's shape indicates about an animal's lifestyle: small pillows indicate that animal has to be quiet for hunting, hoofs enable it to start running very quickly when the animal is being attacked
interpret what eye position indicates if the animal is carnivore or herbivore

- Retrospective learning - learning from past events: Interpretation of a monument commemorating a natural disaster which destroyed a small village (storytelling: an old legend about a natural disaster)
- Experiential learning - learning with the use of miniature model: the probability of landslides and more in-depth learning about deforestation of slopes their effect
- Learning with observation: observing human infrastructure in the field - ski tracks, hydroelectric dam, protected areas and reflecting on the economic choices and their impacts.
- Visualisation - express yourself through art: draw pictograms of human activities in the protected areas in groups of 2-3 students and explain its restrictions and the reason behind them. This group work is a base for discussion.

Cross-curricular strategies

An interdisciplinary approach to the presentation of human activities (also tourism) was used in this campaign. A cross-curricular approach was not used since the school faces a small number of pupils and teachers who are simultaneously learning at several schools, which makes communication and cross-curricular approach hard to implement.

3.1.19. Digital Path created by Pupils for Pupils - **PS4**

ASM Pillar: Socio-economic
Macro-issues: Towards a green alpine economy
Key alpine SD Issue: ICT development, Tourism sector

Digital Path created by Pupils for Pupils

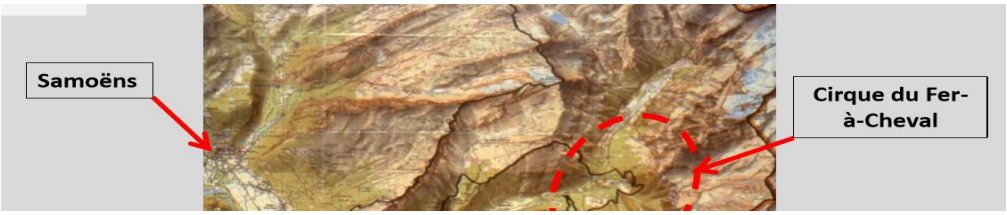
Photo gallery




FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- College Andre Corbet Samoëns
- Natural Reserve Sixt-Passy



SD VALUES

- Universalism: to protect nature, to be unified with nature;
- Self-direction: curiosity, creativity, new capabilities;
- Conformity: self-discipline;
- Tradition: respect for tradition;
- Security: Sense of belonging;
- Benevolence: responsibility;
- Power: Social recognition.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes):

- Be able to apply participatory methods for collaborating with diverse Stakeholders;
- Be able to reflect on one's own role in the local community and (global) society;
- Promote the ability to read the human activities impacts on ecosystems;
- Understanding the concept of the environment as an integrated system of relationships;
- Create a sense of belonging to the territory.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Self-awareness: Be active in environment;
- Collaboration: Collaborate with others and learn from others; Learning how to use participative and cooperative methods; Provide tools and models to actively participate in nature conservation;
- Integrated problem solving: Understanding the concept of the environment as an integrated system of relationships.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods - inquiry-based learning	Materials	Location	Time for activity
1.	Presentation in class about the project and the site "Cirque du Fer à Cheval" (history, natural environment, potential topics)	Introductory activity: Slideshow in the classroom Discovering the potential topics	PowerPoint presentation, papers, pencil	Classroom	2h
2.	Students spend one day in discovering a protected area and gaining new ideas Start determining a path and capture some materials (photo, video, interview…)	Learning by observing. Practical work - observing through photographic lenses: taking photos and videos	Camera Notebook Pencil	Fieldwork - "Cirque du Fer à Cheval"	1 day
3.	Building a 3D model of a path in the "Cirque du Fer à Cheval"	Technical creative work: Building a 3D model of territory for creating learning path (use of taken media material).	Craft supplies	Classroom	5h
4.	Discussion: - students present their models to classmates - students discuss methods, used for learning through games (Treasure hunt, police investigation…), which were suitable to use for building the digital path - testing of the application to discover possibilities.	Presentation competence, peer to peer learning, learning through games	Mobile application	Classroom	5h
5.	Pupils create a trailer to present digital path		Camera, computer	Classroom	5h

Activity description

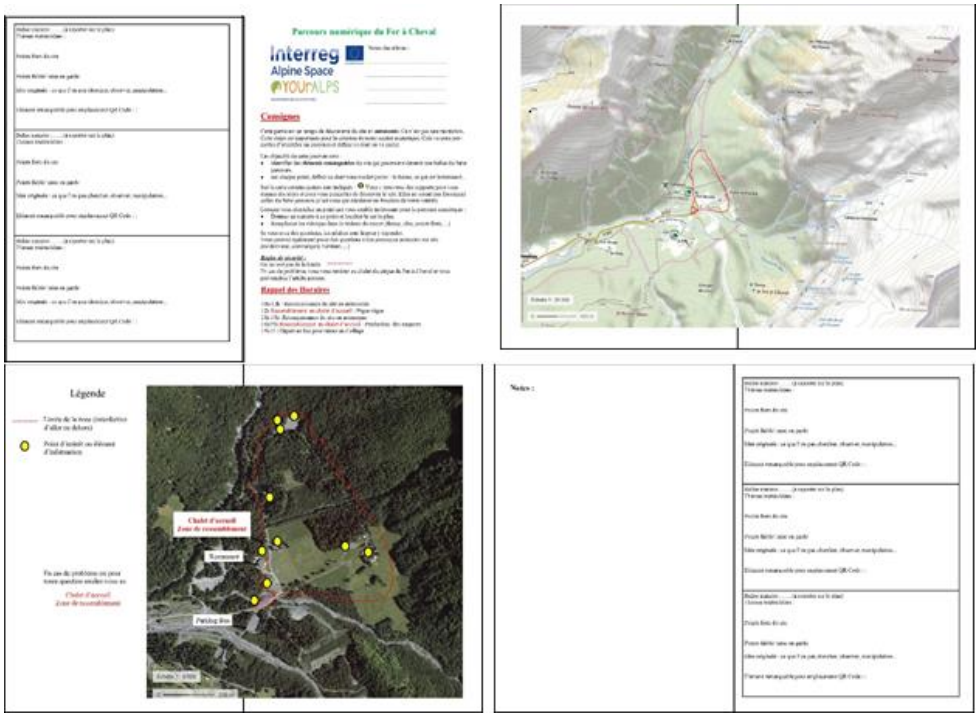
The site "Cirque du Fer à Cheval" is a very famous Alpine natural heritage with cirque glaciers, which is partly conserved by the protected area. The annual visit of the place is around 200 000 tourists and among them, there is also a lot of youth, especially during spring and summer months. Students were invited to create a digital path with the aim to present the place from environmental and cultural aspects to their peers - peer to peer learning. Students first gained the knowledge about historical, environmental and cultural values of the site. Students researched the ICT's possibilities (photos, videos, tracking sounds, games …) to tackle the task. Students went in the field to explore and envision a learning path with learning points. Students collected some materials, needed for preparation of the digital map of the path (photos, videos, interviews, soundtracks …). Students created 3D models of their path from different materials based on their exploring on site and prepared materials. Currently, the students create a draft of a path (a trailer) and the final version of the application will be finished next year.

Outdoor activities

- Students spent a day discovering the site Cirque du Fer à Cheval. They were also collecting material (photos, videos) which they used for the 3D model design.

Tools and materials description

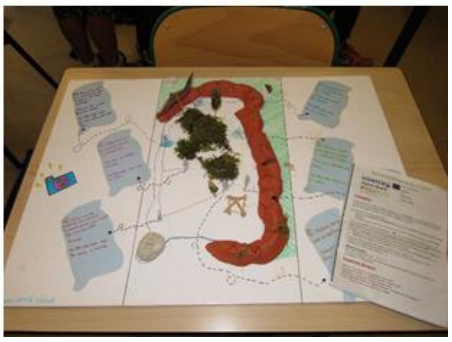
- PowerPoint presentation in the classroom (joint doc)
- The document that each group of pupils have on the field to determinate a possible path and interpretation' potentials.



- Mobile application testing

a. Building 3D models of a path



- Creating a video trailer about the digital path (a picture from the video)

Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning:

- Introduction of the problem: to create a digital path for visiting, which will enable peer to peer learning
- Students receive theoretical knowledge, which is needed for problem-solving (presentation - PPT): students gain knowledge about historical, environmental and cultural values of the site
- Practical work (group work of 3-4 students)
  on the site exploring and envisioning a learning path with learning points
  - students receive maps of territory with marked interests points, but they explore the area by their own interests. in the exploring process, they find some hidden tools for easier observation (binocular, magnifying glass, historical documents)
- Create a possible solution to the problem: building a 3D model of their path
  Students create 3D models of their path from different materials based on their exploring on site and prepared materials. Instead of a classical interview and evaluation of their activities, they have to create 3D models. The methodology allows us a synthetic view of their interests, which is a very important component of peer-to-peer learning.
- Work in a classroom, cooperative learning:
  - each group of students presents their 3D models to other students
  they start to prepare contents and forms of their presentation, which would be interesting for peers (treasure hunt, police investigation …)
  they test the application to overview its possibilities
- Evaluation and presentation:
  pupils create a draft of path - trailer, which presents the results of their work. The final version of the application will be finished next year.

Cross-curricular strategies

The cross-curricular approach was not used because of the small number of pupils and teachers the school has. They put a lot of emphasis on interdisciplinary implementation of the activity: language, science, history, geography, art, sport ...

3.1.20. Mountaineering Safety - **PS14**

ASM Pillar: Social - economic
Macro-issues: Towards a green alpine economy
Key alpine SD Issue: Tourism sector - Sport and leisure

Mountaineering Safety

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo
- Mountain Rescue Association of Slovenia - MRAS (unit GRS Bohinj)

SD VALUES

- Benevolence: to be responsible, to be loyal, friendship;
- Security: to be safe in the mountains, a healthy lifestyle;
- Self-direction: curiosity, creativity, freedom, choosing your own goals;
- Stimulation: excitement in life, daring;
- Hedonism: enjoying life;

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Organize, coordinates and executes nature guiding in a protected area;
- Know how to organize and prepare programs for different target groups;
- Plan and organize work assignments for the group;
- Caring for their own safety, the safety of others (is familiar with certain rescue techniques and with the basics of first aid and CPR);
- Communicating with colleagues, experts, clients, subscribers;
- The use of modern information and communication technology;
- Understand the importance of appropriate equipment when performing outdoor activities;
- Develop a sense of responsibility towards the environment, nature;
- Is familiar with the MRAS organization structure, its priority tasks, and training of mountain rescuers.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Possibly previously evaluate the consequences of actions and how to prevent undesirable ones; Accept responsibility of actions and choices done;
- Strategic: Use learner-centred methods for designing, implementing and adapting SD actions in the local communities;
- Collaboration: How to use communication tools, how to use participative and collaborative methods, Collaborate with others and learn from others; Understand and respect the needs, perspective and actions;
- Self-Awareness: Be aware in its own role in the local community and society;
- Integrated Problem-Solving: Think about a problem critically; Adapt physical skills to mountain performance requirements.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	VET module Nature guiding - theoretical and practical lessons	Learner-centred methodologies	Mountaineering gear (backpack, mountain shoes, sports clothing)	Guiding in the vicinity of the school and throughout the Gorenjska region	One day per week - throughout the year
2.	Theoretical and practical training in MRAS rescue equipment	Presentation, simulation of mountain accidents - practical training, learning by doing	Rescue equipment, first aid kit	School	2 days - project days
3.	Implementation of nature guiding in small groups of students	Teamwork, practical work, learning by doing, participative approach	Use of different sources, bicycles, sports clothes, helmets	Gorenjska region - the Radovna river valley	1 day/group of 3 students

Activity description

Nature guiding is one of the key professional school subjects in the final year of the Nature conservation program. This school subject gives students competencies to organise any kind of tour in nature (hiking, mountaineering, cycling, tourist, educational, etc.) and for that, they need to use all the knowledge they gained throughout their schooling. These students also require the knowledge and skills how to act properly in the case of accidents and the first aid; therefore, they attended MRAS training during project days.

The non-formal educators in this 2-days pilot action were active mountain rescuers from Mountain rescue service Bohinj, which is an independent unit of the Mountain rescue association of Slovenia (MRAS). On the first day, students started in the classroom where they had an extensive lecture about MRAS - history, volunteers, training, their activities and raising the awareness about the dangers in the mountains, the importance of appropriate equipment, knowing one's own abilities, and nature preservation measure.

After the lecture students proceeded outdoors with practical activities. Mountain rescuers presented and practically demonstrated the use of various equipment: summer and winter mountaineering and climbing equipment, rescue equipment, and first aid and CPR kits. Mountain rescuers explained and demonstrated different situations of accidents and rescue procedures. Students actively observed them and tried to copycat them. In addition, they were also role-playing different scenarios where some students took on the role of casualty others took on the role of the rescuers. In the latter situations, they were challenged to actively observe the situation, Identify and asses the problem, take immediate actions, and take care of the casualty.

Towards the end of the school year, small groups of students selected the nature guiding topic themselves, planned and implemented it, and also evaluated it after they carried it out. Example: three students chose to organise a cycling tour along the valley of the Radovna River, where hilly meadows were selected as learning points of natural and cultural heritage, as well as a tour of the traditional homestead, a sawmill, a flour mill and a Cretaceous lake. They wrote a report on the finished nature guiding activities.

Outdoor activities

- All-day guided tours on foot, with bikes e.g. along the valley of the Radovna River

Tools and materials description

- Mountaineering gear (backpack, mountain shoes, sports clothing), bicycles …
- MRAS rescue equipment
- first aid kits
- presentations

Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning joined with the participative approach:

- Introduction phase: the teacher presented the assignment of the whole day nature guiding to the students
- Learning phase: students got acquainted with individual phases of nature guiding and what they need to take into account during each phase - carried out in the classroom and in the field
  One of the important topics was security - project days with MRAS:
  demonstration of rescue techniques - learning by observing
  simulation of mountain accidents - role play, experiential learning, learning by doing
- Problem-solving phase (participative phase): small groups of students choose the topic of their activity then they plan and implement the guiding
- Evaluation of finished work: Students perform self-evaluation, in addition, they are also evaluated by the teacher and classmates
- Dissemination phase: Students offer their services to local tourist associations, retirement associations...

Cross-curricular strategies

The VET module Nature Guiding is designed cross-curricular and interdisciplinary. Students take this module in the 4th year because when they are planning and implementing it, they have to use professional skills they have gained in 4 years and are linked to the natural and cultural heritage of the area.

3.1.21. Multifunctional sustainable mountain pastures (research of historical – cultural heritage of the alpine pastures in Valtellina) - **PS8**

ASM Pillar: Socio-economic
Macro-issues: Towards alpine green economy, Cultural heritage preservation
Key alpine SD Issue: Sustainable economy, Traditional knowledge, Conservation of cultural heritage

Multifunctional sustainable mountain pastures (research of historical – cultural heritage of the alpine pastures in Valtellina)

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Instituto Tecnologico di Agraria, Agroalimentare e Agroindustria Sondrio
- Parco delle Orobie Valtellinesi

SD VALUES

- Universalism: to be broadminded, to protect the environment, to be unified with nature Self-direction: freedom, curiosity, creativity, choosing your own goals;
- Achievement: to be intelligent, successful, new capabilities;
- Security: Healthy lifestyle;
- Tradition: Respect for tradition;
- Benevolence: responsibility, loyal, friendship;

- The sense of identity;
- Value and respect for diversity;
- Commitment to sustainable development.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Understand the process of product selection based on its marketing and economic potential;
- Develop a positive attitude toward local alpine areas and their traditions;
- Is familiar with cheese and other dairy products of the region;
- Understand the technology for traditional cheese and dairy making;
- Be versed in professional terminology of mountain pasture and dairy production;
- Propose improvements in dairy product promotion;
- Compare different dairy products from an economic point of view;
- Know the specifics of mountain pasture (effect of pasture on the ecosystem, biodiversity of plants);
- Identify different herbs/plants in mountain pasture;
- Understand the connection between milk quality and pasture quality;
- Define the quality of pasture on a particular meadow and propose steps for improvement;
- Compare mountain pasture of today and of the past (similarities and differences);
- Be familiar with cultural heritage;
- List examples of economically sustainable practices in a mountain pasture;
- Develop communication and presentation skills;
- Develop "learn to learn" skills;
- Develop teamwork and cooperative learning skills and other social competences;
- Learn to identify business ideas in your local environment and develop entrepreneurial thinking;
- Develop Math, Science and IT skills (digital competences);
- Raising awareness about the "farm to table" process and its importance for the local community.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Analysis approaches;
- Normative: Gradually recognize the meaning and applicate norms and values underlying actions;
- Strategic: Concepts and methods for strategy building; Use learner-centred methods for designing, implementing and adapting SD actions in the local communities, and to deal with risks and changes;
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation;
- Self-Awareness: Different role for Sustainable development in the local community and global society; Reflect on its own values and personal bias; Be active in environment;
- Integrated Problem-Solving: Different problem-solving frameworks related to sustainability; ICT and Technologies to foster Sustainable Development; Facilitate collaborative and participatory approach and to deal with conflicts in a group; Think about a problem critically.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1..	Promotion of local dairy products	Cooperative learning, Learning by doing	Computer Camera books	School	December - February

2..	Evaluation of dairy products from an economic point of view (to interview elderly people, adults, young people, interpret statistics …)	Cooperative learning, Jigsaw method, interviews, research	computer, camera books, audio - recorder,	School	December - February
3.	Gain knowledge about mountain pasture (environmental and cultural-historical point of view), valorize mountain pasture	attend scientific conferences as a source of information, practical work, learning by doing	books, worksheets, plant-identification keys	School, Alpe Piazza	January - June

Activity description

Mountain pasture was a key SD issue, that was explored in a cross-curricular and interdisciplinary way. Students who attended the conference acquired knowledge about the cultural and natural heritage of mountain pasture. Using different sources in different school classes (Italian language and history) they explored the historical and cultural aspects of mountain pasture (customs, songs …) in the area of Valtellina, while also using correct professional terminology. Students attending the zootechnics and crop-production VET module compared mountain pasture of today and of the past with a focus on the effects of pasture on the ecosystem and plant biodiversity. They identified grazing plants and, based on data analysis, discussed the connection between grazing plants and quality of dairy products, as well as the effect of grazing on the landscape. They learned about sustainable pasture practices that are also economically viable. Students proposed sustainable solutions for improvement of pasture.

In Marketing class students critically reviewed the promotional activities of local companies that offer dairy products. Then, using the jigsaw method, the evaluated the economic potential of traditional cheese and other dairy products and ran a role-playing simulation of a company deciding which potential product to invest in and offer on the market. Students directed the learning process - inquiry-based learning, joined with the participative approach, with emphasis on self-evaluation.

Outdoor activities

- Attending a scientific conference about mountain pasture in the Valtellina area (cultural and historical aspect, comparison of mountain pasture of today and of the past, economic aspect)
- Interviewing elderly people, adults and youth in order to acquire information about their familiarity with traditional dairy products.
- Visiting a mountain pasture and identifying grazing plants using a plant identification key and evaluating the quality of pasture. Students later prepared proposals for improvement of pasture.

Tools and materials description

- Audio recorder, Camera, Computer, Books, Worksheets, Photo - identification keys ...

Project STRATEGIES

Strategies, methods, techniques

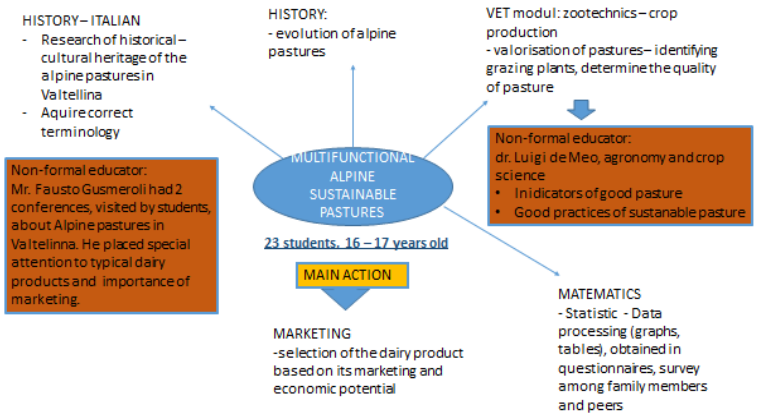
In the activities where students valorized the economic potential of a traditional dairy product, the following learner-centred methodologies were used: inquiry-based learning with the participative approach, jigsaw method and experiential learning

b. The table below demonstrates how specific phases of inquiry-based learning overlap with steps of the jigsaw method.

INQUIRY-BASED LEARNING WITH PARTICIPATIVE APPROACH:	JIGSAW METHOD:
- Preparation and introductin phase: Teacher, using the curriculum, defines the subject on which activities are based. Students lead the learning process. Non-formal educators are included when necessary.	
b. Learning phase and problem-solving phase I. phase: Collection of data and information - group work: - each group of students chooses a dairy product: BUTTER, RICOTTA, CASERA, TALEGGIO, MOZZARELLA, BITTO) - Researching the familiarity of their peers, elders and teachers with the product …: traditional recipes, modern technology, product characteristics and expectations (interviews, surveys, statistical analysis) - Create a marketing strategy for the chosen product	1. Divide the class into smaller groups 2. Smaller groups of students try to find solutions to the project and share their ideas/solution with others - cooperative learning
III. phase: Comparison of the chosen products: They have to: - Find common points in technologies, characteristics of chosen products - Choose among products and define one they will be prepared to invest money in. In this process, they develop their communication, negotiation and presentation competences.	2. Make new groups of students, where each member of a former group is sent to a different group.
IV. phase: We are a step closer to the final decision – work from the previous phase has been continued Heads of groups have to choose among products and define one, they will be prepared to invest money in, in line with budget, technology (ingredients, complexity and duration of technology, market survey). They try to optimize economic resources.	3. Heads of the previous groups make a new group - expert group. 4. After the expert groups finish the discussion, each of them returns to his/her home group and explain their assignment to the team. 5. Each expert group presents his/her discussion's outcome+
c. Presentation and evaluation: A video was constructed, where the whole process was documented. After watching the video closely they reevaluate their work step after step - self-evaluation. Comparison between theoretical knowledge and students' work and their decisions in the project. Visit farms /agricultural companies, where employees present the process of choosing and marketing a product + sampling of dairy products	

Cross-curricular strategies

Our project includes a variety of topics involving different school subjects (Chemistry, History, Italian language, Food processing and production, Livestock production and managing).

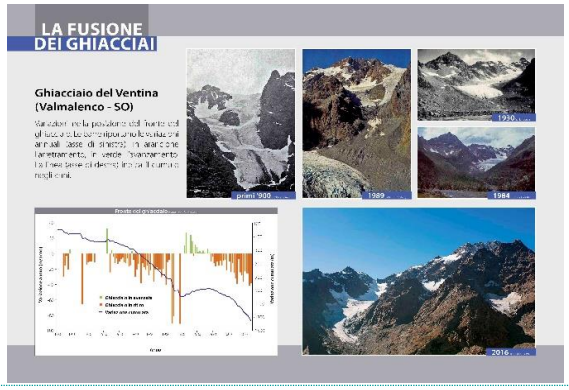


3.1.22. Young people raising awareness about climate change in the local community of Valtellina valley - **PS9**

ASM Pillar: Governance
Macro-issues: Participatory processes and local political perspectives
Key alpine SD Issue: Local cooperation

Young people raising awareness about climate change in the local community of Valtellina valley

Photo gallery



FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Istituto Comprensivo 2 Damiani di Morbegno
- Parco delle Orobie Valtellinesi (non-formal)

SD VALUES

- Universalism: to protect the environment, to see the beauty in the world;
- Self-direction: creativity, choosing your own goals, self-respect;
- Achievement: to be influential, new capabilities;
- Security: a healthy lifestyle, a sense of belonging;
- Tradition: respect for tradition, devotion;
- Conformity: politeness, self-discipline;
- Benevolence: responsibility;

- The sense of identity;
- Value and respect for diversity;
- Concern for environment and commitment to sustainable development;
- The belief that people can make a difference.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about climate change and their impacts on the economy, glaciers, architecture;
- Develop communication and presentation skills.

Integration of SD non-formal competences (knowledge, skills, attitudes):

- Anticipatory: Information and data about plausible local area future multiple scenarios - possible, probable and desirable; Analysis approaches; Timescales relevant to the problem and possible solutions; Create one's vision for the future;
- Strategic: Use learner-centred methods for designing, implementation and adapting SD actions in the local communities, and to deal with risks and changes; Be open to varying perspectives;
- Collaboration: How to use communication tools; How to use participative and cooperative methods; Collaborate with others and learn from others;
- System thinking: Alpine key sustainability issues, their causes and consequences; Action, interests and mandates of key stakeholders in the problem constellation; Think Global, Act Local.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic Methods	Materials	Location	Time For Activity
1.	Organization of exhibition, where students participate as students as well as presenters of their results on the topics of climate change	Active lesson Individual work Frontal lecture of the expert and students Practical work/Learning by doing	posters	Cloister of Sant Antonio in Morbegno	6h

Activity description

The pilot action was planned and implemented with the aim to raise awareness among students about climate change. Pilot action was planned out as the 4th phase of the other two pilot actions this pilot site carried out and its main purpose was dissemination and presentation of results. The interlacement of pilot actions contributes to the creation of a network of knowledge, skills and competencies.

The school organised a documentary exhibition financed by FAI (Italian Environment Fund) and SEV (Valtellina Economic Society) titled "Climate changes and possible scenarios for Valtellina Valley" at the cloister of Sant'Antonio in Morbegno from 08.03.2018 to 18.03.2018, and its purpose was for young people to raise awareness about climate change and the consequences in the local community of Valtellina valley.
Students gained knowledge during 4 conferences on Climate Change, which were enriched by lectures by climate change experts (the consequences of climate change in the local environment, the melting of the glaciers, the hydrological status and the economy).

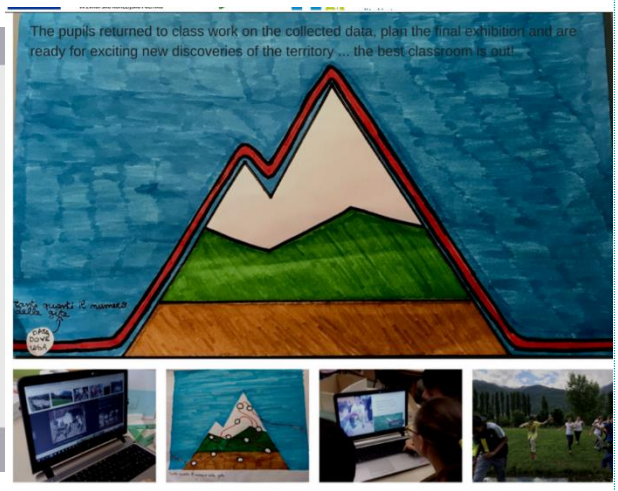
Students also presented their work and results. They prepared a map of the trails and marked locations, where QR codes were placed. The QR codes contain information about natural and cultural heritage in Italian and foreign language. Students guided visitors through the exhibition and therefore developed their communication and presentation skills.

Outdoor activities

- Outdoor activities were carried out within the framework of the action "The geomorphology of the Valtellina valley", and at the exhibition, they only presented the activity.

Tools and materials description

- Posters



Project STRATEGIES

Strategies, methods, techniques

Students collected information throughout the pilot action and then carried out an experiment, analysed and evaluated the data, which they presented with various posters - research work.
They have developed presentational skills with an emphasis on the self-evaluation of their work (am I satisfied with the knowledge gained or work done) ... Guiding through the exhibition is also a part of The guidance after the exhibition is also part of experiential learning.

Cross-curricular strategies

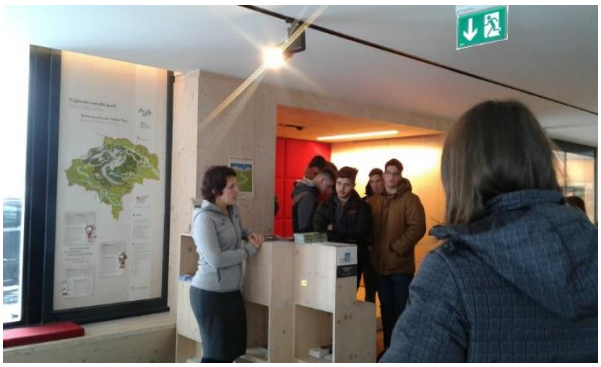
The activities were carried out using the cross-curricular approach: languages, geography, science, technology, art …

3.1.23. The challenges of managing protected areas on the example of the Triglav National Park - **PS14**

ASM Pillar: Governance
Macro-issues: Transnational cooperation and policymaking
Key alpine SD Issue: Policy making

The challenges of managing protected areas on the example of the Triglav National Park

Photo gallery



FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

- Biotechnical centre Naklo
- Triglav National Park
- Bohinj Tourist Association

SD VALUES

- Universalism: to protect the environment;
- Self-direction: freedom, curiosity, choosing your own goals;
- Stimulation: variety in life;
- Achievement: to be intelligent, to be influential;
- Security: a sense of belonging, a healthy lifestyle;
- Tradition: respect for tradition;

- Benevolence: responsibility;
- Empathy;
- Commitment to sustainable development;
- The belief that people can make difference.

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)

- Gain knowledge about Triglav national park (general information, the purpose of establishment, management of the protected area, nature conservation in the TNP (biodiversity, Natura 2000, the concept of ecological connectivity, knowledge of the regulations and problems arising from them in the field of agriculture, forestry, fishing, hunting, tourism);
- Is familiar with the Triglav National Park Act; advantages, disadvantages, opportunities and limitations deriving from it for different groups - tourists, local residents, employees, local authorities;
- Specify and clarify the legal regulation of spatial planning and regulation, water resources management (water as a public good and water management), forest management, waste management;
- Explain the basic principles of environmental protection (the principle of sustainable development, the principle of integrity, cooperation, prevention, admissibility of interventions in the area, etc.);
- Explain the importance of public participation in spatial interventions;
- Know the possibilities of a joint appearance on the market (students know the Bohinjsko trademark, the needs from which it was created and the conditions necessary for selling the product under a common brand name);
- Evaluate the importance of the application of particular nature protection legislation in certain situations and measures, and can also explain their evaluation and find sustainable solutions.

Integration of SD non-formal competences (knowledge, skills, attitudes)

- Anticipatory: Information and data about plausible local area multiple scenarios - possible, probable and desirable; Create one's own vision for the future; Possibly previously evaluate the consequences of actions and prevent undesirable ones;
- Normative: EU, national and regional regulations, opportunities for development; Gradually recognize the meaning and applicate norms and values underlying actions; Negotiate sustainability values, principles, goals and targets in a context of conflicts of interests;
- Strategic: Viability, feasibility, efficiency of systemic interventions; Use learner-centred methods for designing, implementing and adapting SD actions in the local communities; Be committed to integrity and ethics;
- Collaboration: Collaborate with others and learn from others; Understand and respect the needs, perspectives and actions of others (empathy);
- Systems Thinking: Alpine key sustainability issues, their causes and consequences; Actions, interests and mandates of key stakeholders in the problem constellation; Think global, act local;
- Self-Awareness: Be active in the environment;
- Integrated Problem-Solving: Think about a problem critically; Be open to varying perspectives.

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)

	Activity	Didactic methods	Materials	Location	Time for activity
1.	Study of the Triglav National Park Act, management issues and posing relevant questions	Frontal method, explanation and discussion method, search for resources, individual work	Triglav National Park Act, Internet Resources	classroom	9 + 2
2.	Presentation of the TNP, legal bases and problems	Presentation, frontal method, explanation and discussion method	Presentation	TNP info office	3
3.	Facing problems in the field (tourism, supervisor's work, landscape management)	Interview with nature protection supervisor, local people, tourists	/	Bohinj	3
4.	Getting to know the Bohinjsko trademark, which combines typical traditional products made by local residents of Bohinj	Presentation, interview with a representative of the tourist organization of Bohinj	Presentation	Bohinj	1
5.	Role-playing game	In-depth understanding of issues from different angles, expressing your opinion, finding a sustainable solution	a written example on which the roleplay will be based (students had to find the examples online on their own)	classroom	3

Activity description

The pilot action was prepared for VET module in Nature conservation program: Nature conservation legislation and ethics. Students were studying the Triglav National Park (TNP) Act and other legal bases in the class; they used practical examples to better understand specific items in the Act and familiarized themselves with the problem of managing a national park. It was planned that problematic of TNP would be presented in the field, but on the day of our field trip there was a massive snowstorm and activities were carried out in the headquarters of TNP. They discussed issues related to spatial management, agriculture, hunting, fishing and tourism. Later on, they had fieldwork where a ranger presented the topics discussed beforehand and his profession (which can potentially be their profession).

They also gained knowledge about the Bohinjsko trademark, which combines typical traditional products made by residents of Bohinj. Students learned the importance of a joint brand for the joint appearance in the market. They also gained insight into the importance of various homemade and crafts products.

After the field trip, students organized a role-playing game in class, where they highlight various aspects of the problem regarding management of the protected area and making compromises, challenges of the local economic development, and ensuring and providing a high quality of life for the local population.

Outdoor activities

- Students walked from Ukanc to Bohinj lake where a ranger made a presentation on the problematics present at the site connected to the management of the protected area (mass tourism, forest management, land use change) …

Tools and materials description

Various presentations (TNP, Bohinjsko trademark), students had to find various examples on the Internet to use for their arguments during the roundtable debate on the issues of the protected area.

Project STRATEGIES

Strategies, methods, techniques

Inquiry-based learning:

- introduction of the problem: The students were divided into smaller groups where each group discussed a different pressing issue relevant to the TNP
  Example: CHALLENGES OF MANAGING THE TNP PROTECTED AREA – Mountain biking by the Mountain biking association

- Students receive theoretical knowledge: The students examined the legal basis for managing the TNP, focusing on the issues of the individual group (within the VET module)

- Practical knowledge: The students at the TNP excursion received additional insight into the issues mentioned above - they learned about the issues from TNP managers (experts and rangers) point of view

To conclude this activity they used the pro and contra method to form views:
+ unexploited tourism potential
+ + economic impact
+ specific target group of guests
impact on the environment: impact on vegetation, soil (erosion, compaction of soil) and animals (endangered animals, peaceful zones)
the use of trails intended for mountaineers (already heavily populated in the summer months).

- Create possible solutions for the problem: The students took on different roles that contribute to the problematics and read up on the related information on the internet. They used that information during a simulation of a roundtable where discussed the issues and tried to find possible solutions:
  - how are these problems solved in other countries
  - tables are prepared for suitability analysis, vulnerabilities on certain paths
  - proposals: marking, driving ban in a given period, parallel paths ...
  - they have devised the rules of conduct on the paths that were prepared for this purpose

Cross-curricular strategies

The module Legislation and Ethics of the Nature conservation technician program is carried out in the 4th year, when students have already gained knowledge about ecosystems, spatial activities, analyses and environmental monitoring, protection of natural values and biodiversity, and have experience of nature guiding. In the module they are upgrading their expertise: the activity was carried out interdisciplinary, as the issues were focused on agriculture, forestry, tourism, exploitation of natural resources …

Annex 1 - THE PLAN and REPORT OF PILOT ACTIVITY

a. THE PLAN OF PILOT ACTIVITY

The formal educator	**Teacher's name & surname:**	**Teacher's expertise:**
The non-formal-educator	**Expert's name & surname:**	**Expert's expertise:**
The title of pilot activity: ***Secondary document 1a_ASM_SD Key Issues_topics and subtopics should be referenced in title**		
Pillars: Macro-issues: Key alpine SD Goals: Alpine SD topics for school subjects: ***Secondary document 1a_ASM_SD Key Issues_topics and subtopics should be referenced**		
Teaching goals: ***National curricula should be referenced**		

Date:	Place:	Age of students:	Educational program:
School subject/subjects:	Size of group/class:	- Theoretical no. of hours: - Practical no. of hours:	Will your students also learn at home? YES NO - No. of hours of student's individual work at home:
Will you include Alpine key SD related issues? YES NO Which? Please explain how you plan to implement this topic. ***Secondary document 1a_ASM_SD Key Issues_topics and subtopics should be referenced in title**			
Do you plan to include cross-curricular/interdisciplinary perspective? YES NO Please explain how you plan to implement cross curricular/interdisciplinary perspective.			
Tools and materials:			
Didactic methods used:			
Do you include learner – centred methodologies? YES NO *** Secondary document 5_ASMLearner centred methodologies and activities could be useful.** Which? Please explain in which part and how you plan to implement learner-centred methodologies?			
Do you plan to include theme governance into pilot action? YES NO If you choose YES, will you use methodological participative approach “Take care”? YES NO *** See Primary document ASM_ Guidelines, p. 18.** Please explain how, if you choose YES?			

LEARNING OUTCOMES – COMPETENCES		
	FORMAL COMPETENCES ***National curricula should be referenced. <u>Non-formal educators</u> often help students in the process of gaining/developing.**	SD COMPETENCES *** Secondary document 2_ASM_Set of SD competences should be referenced.**
Knowledge		
Skills		
Attitudes		

<u>A short description of individual components of a pilot activity according to the key elements of a pilot activity:</u>

	Activity	Didactic methods	Materials	Location	Time for activity
1.					
2.					
3.					
4.					
5.					
6.					
7.					

b. THE PILOT ACTIVITY IMPLEMENTATION REPORT

Did the implementation not go as planned? Please explain why.			
Could the activity be further improved, changed …?			
Choose from the above SD learning outcomes - competencies plan and determine the assessment level (circle the assed level).			
SD competence - knowledge and skills (just rewrite from a plan above each knowledge and skills and define them level of assessment) *** Secondary document 2_ASM_Set of SD competences should be referenced.**	BASIC	INTERMEDIATE	EXPERT
	***2a_ASM_Assesment of SD competences should be referenced.**		
	BASIC	INTERMEDIATE	EXPERT
	BASIC	INTERMEDIATE	EXPERT
	BASIC	INTERMEDIATE	EXPERT
	BASIC	INTERMEDIATE	EXPERT
	BASIC	INTERMEDIATE	EXPERT
Please add 15 photos of the pilot action either to this document or separately as a PowerPoint presentation. (Please make sure to get consent for publishing photos).			

Annex 2 - TEMPLATE FOR PRESENTATION OF CHOSEN PILOT ACTIONS

ASM Pillar
Macro-issues
Key alpine SD Issue

Title of the project

Photo gallery

FORMAL and NON-FORMAL organizations involved

List of involved schools and non-formal organization

SD VALUES

LEARNING GOAL/OUTCOMES

Formal competences (knowledge, skills, attitudes)
Integration of SD non-formal competences (knowledge, skills, attitudes)

DESCRIPTION

Unit of Learning structure (phases of the project/times/structure in activities)
Activity description
Outdoor activities
Tools and materials description

Project STRATEGIES

Strategies, methods, techniques
Cross-curricular strategies