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GOOD PRACTICES IN THE FIELD OF CLIMATE CHANGE EDUCATION IN SCHOOLS IN THE ALPS

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Good practices in the field of climate change education in schools in the Alps

There are many examples of good practices
related to environmental education in the Alps.
The Slovenian Presidency of the Alpine Convention
gathered some of these models in this document to
provide an insight into some of the important work being
done to further climate change education in schools in the Alps.

Foreword

Environmental education focused on climate change is one of the three priority topics of the Slovenian Presidency of the Alpine Convention for the period 2023-2024. The topic builds on the thematic discussion on environmental education held by the Permanent Committee under the Swiss Presidency, as well as the UNESCO Education Sector's call to integrate sustainability issues into all kinds of learning. Environmental education is especially relevant for the Alpine region which is extremely vulnerable to the consequences of climate change.

Three main activities were carried out in this field under the Slovenian Presidency: a discussion at policy level (Permanent Committee meeting in June 2023), a discussion at expert level (*Schools for climate action in the Alps conference* in September 2023), and a collection of good practices. The final goal of all three activities was to prepare recommendations on the importance of climate change education, to be adopted by the XVIII Alpine Conference.

Good practice examples on climate change education in school didactics were collected from kindergarten to the end of secondary school, i.e. the age group from 5 to 19 years old. They consist of examples of formal and/or informal climate change education, in classrooms or outside in nature, carried out through school curricula, projects or individual activities involving schools. Seventeen cases were contributed, originating from most Alpine countries.

The examples gathered highlight some similar characteristics (added value to existing methods, cooperation among different stakeholders) as well as some notable differences (actors, funding). This lack of a unified approach to how schools in the Alps practice climate education could be seen as a challenge. At the same time, the complexity and diversity of life in the Alps has historically been a driving force for innovation, so climate challenges should also be understood as an opportunity to revive and further develop tradition and customary ways of problem-solving. This collection presents options for the future and hope for the youth in the Alps as well as for the general public that the Alps and their unique features can be preserved – despite the challenges of climate change and to secure a good quality of life for all.

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Alpine Convention 2023-2024

Contents[1]

[1] The inputs are listed alphabetically first by Contracting Party then by organisation in each Contracting Party.

1 THE DEPLOYMENT OF CLIMATE EDUCATORS AT EXTRACURRICULAR LEARNING LOCATIONS

AUTHORS

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ABSTRACT

An essential component of the KlimaAlps project is the development of an educational programme for climate educators.

Upon completing the training, participants not only acquire necessary expertise on various aspects of climate change, but also familiarise themselves with didactic concepts and methods of climate change education. This equips them to later impart the subject to diverse target groups. Guided excursions to specially developed ClimateSites, focussed on research-based learning.

KEYWORDS

Climate change education, extracurricular, indoor, outdoor

COUNTRY

Austria

Introduction

KlimaAlps aims to awaken and harness the potential for climate protection in each individual, striving to raise awareness about climate change at the regional level. We seek to prompt widespread reflection and action for climate protection within the general population, especially among pupils. It is essential for us to build upon well-founded research findings and establish a sustainable knowledge transfer from research to education. The project region encompasses Tyrol, Upper Austria, and the Bavarian Oberland. It was developed as part of an Interreg project (Bavaria-Austria). In the project, training for Climate Educators was developed, enabling them to convey the topic to various target groups using their acquired expertise and pedagogical skills.

ClimateSites showcase climate change in the landscape, complemented by scientifically tailored information for specific target groups. In the project, ClimateSites were established at seven locations in Austria and Bavaria, covering the following thematic areas: High Mountains, Bogs, Rivers and Lakes,

Human Settlements, Mountain Forests, and Agriculture.

Methods and results

The project primarily targets individuals involved in education, with a focus on developing Climate Educators. These educators, upon completing the training, possess both expertise in various aspects of climate change and the ability to convey this knowledge to diverse target groups.

The activity is conducted as part of an educational program, specifically designed to develop Climate Educators. The participants engage in structured training to enhance their understanding of climate change and acquire effective didactic concepts for subsequent communication.

The educational approach is comprehensive, covering both theoretical knowledge and practical application. The training programme includes didactic concepts and methods for climate change education. Inquiry-based learning, open-ended questions, and a variety of materials and methods are used.

The activities involve both indoor and outdoor components, aligning with the project's goal of making climate change visible in the landscape. The creation of ClimateSites at different locations illustrates an outdoor, experiential learning aspect. The educational activities aim to facilitate transformative learning by providing participants with the skills to effectively communicate climate change issues.

The Climate Educators undergo a certification interview as part of their training, during which their feedback is gathered.

Positive outcomes include the development of a cadre of trained Climate Educators equipped with both knowledge and effective teaching methods. The project emphasises a holistic approach to climate change education, fostering transformative learning. The positive outcomes extend beyond traditional education, contributing to broader goals such as sustainable development and increased awareness of climate change-related issues in the Alpine region.

Discussion and conclusions

A significant challenge is breaking down this complex topic to make it understandable for 4th year pupils. At the same time, they are often more receptive to a playful approach in inquiry-based learning. External learning environments and experts from outside, such as Climate Educators, play a crucial role in informal learning. Initial experiences have demonstrated that this topic also resonates with children in leisure programmes, indicating that we are on the right track

2 BIODIVERSITY AND ADAPTATION TO CLIMATE CHANGE?! WINNERS AND LOSERS OF CLIMATE CHANGE IN OUR REGION!

AUTHOR

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ABSTRACT

In the project, around 130 children deal with important issues of our time – climate change, climate change adaptation, and biodiversity.

Particular emphasis is placed on the regional relevance and the effects in the immediate surroundings.

A holistic, pedagogically valuable approach is pursued with theoretical units at school and practical excursions into nature. The results are presented to a wide audience as well as politicians and key stakeholders at a public closing event.

KEYWORDS

Climate schools, KLAR! Region, Naturepark Ötscher-Tormäuer

COUNTRY

Austria

Introduction

The project 'Biodiversity and adaptation to climate change?! Winners and losers of climate change in our Region!' involves working with children from four primary schools in the Nature Park 'Ötscher Tormäuer' in Austria's northern Alps. Its principal aim is to educate children on climate change and its impact on local Alpine wildlife, while also producing results which can be presented to a wider audience and raise general awareness among parents and other members of the public about the impact of climate change in the region. The nature park is also KLAR! (climate change adaptation model region) and this project is being implemented within this framework. It is therefore funded by the Austrian Climate and Energy Fund.

Methods and results

Participants in the project are 136 primary school pupils from four schools between six and ten years of age. About half of the pupils are taught in multi-age classrooms and the other half in single-age classrooms. Multiple activities take place as part of school education over the course of the school year, starting with an introductory two-hour class talking about climate change, climate change adaptation, and energy use. This

workshop makes use of group exercises, worksheets, and practical exercises to educate the children.

Climate detectives

The Project Management creates a climate change adaptation diary and the energy rally for the schools. In addition, the teachers are trained on the topics of climate change adaptation in schools and energy at a networking meeting. At the launch workshop in the autumn, these teaching materials are presented in all participating classes, and some of them are developed together.

In the following months pupils learn more about these topics with their teachers with the help of provided books and worksheets, and every class focuses on two species of native animals, one of which benefits from climate change, and one which loses out.

Biodiversity and climate change adaptation

At the starting workshop, the Project Management provides basic information on climate change adaptation in general and the effects of climate change specifically for our region with the help of the climate data sheet developed by the Central Institute for Meteorology of Austria. This is carried out didactically in an age-appropriate manner in the form of an interdisciplinary project lesson (three teaching units).

Each class chooses organisms that either benefit from climate change (e.g. signal crayfish, oaks, etc.) or are among the losers (stone crayfish, ring ouzel, Alpine flora). The schools are then provided with an expert on the respective topics, or an excursion is organised. The main focus here is on the habitat of their chosen species. Advantages and disadvantages and the causes of these for the respective species are worked out and collected. This makes it clear that climate change plays a decisive role in habitat loss and thus the decline in biodiversity. A lack of snow cover can mean a lack of camouflage for a black grouse in winter and thus certain death. In addition, humans are also treated as a species. This is to illustrate that we also suffer from climate change and have to change or adapt our lifestyles.

The selection of animals also creates a link to different habitats, which in turn, in addition to the biodiversity activity field, are also clearly linked to other areas of the Austrian strategy for adapting to climate change - the agriculture activity field (insects), the forestry activity field (Alpine longhorn beetle, spruce bark beetle, wild boar), and the water management activity field (stone and signal crayfish). The entire process is documented via photos and video and is made into a short film.

Final event

The final event takes place as part of the annual "Biodiversity Day" organised by the Austrian Nature Parks. This has been organised in the nature park for several years and brings all four schools and all children together for a day. Various topics are developed and dealt with in a station operation. The results of the climate and energy detectives are presented on boards. The children can

view all the boards in an open exhibition. There are also short presentations by the children.

A separate station focuses on the problems of the individual animal species. It shows that different species suffer from the same or similar problems. The children should recognise that climate change has a major impact on biodiversity. Among other things, the children learn why the existing biodiversity is so important for us and our planet and what role climate change adaptation plays in this. Parents and community representatives are also involved in a station about "People in climate change" and asked for their opinions.

At a further station, a short film is shown that provides a review of the entire climate school's project. Individual short video sequences from the individual schools and the various workshops and excursions also intend to give parents and community representatives a good insight. The parents' associations of the various schools are also involved in the on-site catering on the final day. Summary:

- 136 primary school pupils, years 1-4, Naturparkschulen Annaberg, Gaming, Mitterbach, Puchenstuben
- Part of the educational programme
- 'Traditional' learning in class with the help of worksheets, posters, pictures/trips to visit wildlife habitats, trips to learn about green jobs
- Documentation/film
- Greater awareness of the effects of climate change, especially on animals in the region. Education on sustainability.

Discussion and conclusions

The challenges are always to keep the motivation of the pupils high and to organise many different programme points. The nature park, the KLAR region, and the nature park schools have been working together on projects for years. This makes it possible to organise a project of this size in the first place. Attention is also paid to the participation of all stakeholders, so the teachers, pupils, and nature park employees have a say in many programme points. This also ensures a higher level of commitment.

Goals of the climate detectives

The children at the four nature park schools should recognise energy-saving potentials and know about energy-saving options in the school building. They focus their attention on saving energy and recognise why this should play a role. They are also reminded daily of the measures they themselves have developed through drawings they have made. The climate change adaptation diary has given them an insight into which places in the school building are warmest or coolest at which time of year. They can make use of this in their everyday school life. From this, the children should also be able to deduce the differences between climate protection and climate change adaptation.

Goals focus on biodiversity

By studying the habitats of selected animals, the children should become aware of the effects of climate change in our region. They should understand that the world is changing and that this has drastic effects on biodiversity and thus on the resilience of the overall system and ecosystem services and ultimately also has a major influence on the living environment and quality of life for us humans. Since one class deals with humans in climate change, the connection between biodiversity, climate change, and humans will be worked out even more clearly and the relationship to climate change adaptation will also be clearly presented.

3 YOUTH AT THE TOP

AUTHOR

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ABSTRACT

Youth at the Top (YAT) is an international project which offers young people the opportunity to simultaneously spend a day and night exploring nature and the world of the mountains in different places in the Alps and the Carpathians. YAT is open for all protected areas in the Alps and in the Carpathians, as well as to various providers of youth education, such as Alpine clubs or associations of municipalities. All events organised by local actors aim to help young people (re)discover nature, connect to their mountain heritage and to raise their awareness of the protection and preservation of the mountain environment. YAT aims to promote values such as solidarity and participation through concrete actions and give young people from 6-25 the opportunity to experience them in a playful way and to express them artistically. This cross-Alps-Carpathian initiative sensitises young people for international cooperation to tackle the challenges of tomorrow.

KEYWORDS

Outdoor, Alpine Protected Areas, Education, Interactive, Alps and Carpathians; https://youth-at-the-top.org/en/, Youth at the - Top Video Contest 2023, Youth at the Top - Best of 2020, Youth at the Top Testimonials, https://alparc.org/

COUNTRY

France/Alpine-wide

Introduction

Youth at the Top is an annual event that takes place all over the Alps as well as in the Carpathian mountains. The project grew out of an initiative of the ALPARC Working Group on Education for Sustainable Development in the Alps. From France to Romania events are organised by protected areas and local organisations to let young people experience the beauty and value of mountain nature.

Besides allowing the participants to experience the Alpine environment together, the project's main goals are to raise awareness about biodiversity and different ecosystems and their functions and services, but also factors that threaten them like climate change.

It is essential to show the young generation in particular the challenges and negative effects of climate change, but also the extent to which intact Alpine ecosystems can mitigate the rise in temperature. They are the future generation of decision-makers, so it is important to provide them with the necessary knowledge and resources from a young age.

ALPARC, together with external funds from Germany and Monaco, financially supports the local events.

Methods and results

Youth at the Top is aimed at young people from 6-25 who are interested in nature, want to learn more about Alpine

wildlife and ecosystems, and enjoy spending time outdoors. Neither a particular educational level nor prior knowledge of a topic are necessary.

The aim is to provide all young people, regardless of whether they are visiting the mountains for the first time or already have a lot of knowledge about the Alpine environment, with (more) knowledge about Alpine biodiversity, ecosystems and their value, and services in a playful and interactive way. The activity is not performed as part of an educational programme or schoolwork.

ALPARC initiates the annual event and develops a specific theme for each event. As each local event is organised and carried out individually by the participating parks and organisations, the theme is also implemented and integrated in different ways.

For example, two editions focused specifically on climate change and its effects on the Alps. This was not only discussed in theory but could also be experienced directly in practice at some events: activities included the comparison of old and current photographs of glaciers. These direct observations make it easier for the young participants to access the topic and enable a better and more comprehensive understanding.

This is why Youth at the Top also pursues the approach that experiencing and learning together outdoors directly in nature are key elements. Other topics have included *Water in all its forms* or *Forest – the Almighty*. Even if these topics did not explicitly mention 'climate change' in their title, it is always addressed – for example, by discussing the importance of the Alps as Europe's 'water castle' as well as future scenarios, or by discussing the possibilities, advantages, and disadvantages of generating energy from wood (instead of fossil fuels).

Each year, the event is concluded with a creative activity. The children are encouraged to express what they have discussed and learnt in an artistic way, to take photos or to record important messages in a video. This playful activity enables a more in-depth and longstanding understanding of the topics covered and a new perspective on them.

Discussion and conclusions

The testimonials of YAT participants show that the event achieves its objective: young people experiencing nature together and discovering the diversity and value of the Alpine environment (see the link for the Youth at the Top Testimonials).

The number of participants over the years (see Table 1) and the fact that the event will take place for the 10th time in 2024 are great developments and show that the concept of the initiative is successful.

Nevertheless, something that can hardly be avoided for outdoor activities is that unfortunately, individual parks or organisations have on occasion been unable to hold their planned events due to local weather conditions.

One attempt to solve this problem was the decision to hold the upcoming event

in 2024 on a central day, but to provide the entire week around the actual date as alternative days in case of bad weather. This should enable as many parks and organisations as possible to hold their event as planned and allow the participants to experience the variety and richness of Alpine biodiversity and landscapes.

Table 1: Numbers of local events and young people participating in Youth at the Top

Year	Number of local events	Number of young participants
2023	29	450
2022	32	450
2021	36	450
2020	28	250
2019	40	500
2018	44	450
2017	48	600
2016	41	550
2015	27	370

4 C'EST CHAUD POUR LES ALPES (IT'S HOT FOR THE ALPS) – CLIMATE CHANGE IN THE ALPS

AUTHOR

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ABSTRACT

The Alps are very impacted by the effects of climate change: tourism, agriculture and forestry are economic activities affected by climate change. In addition to economic activities, bio-diversity and the services it provides, landscapes and access to water re-sources are also key concerns.

The Parc du Vercors is at the heart of these issues and is working to help local players implement mitigation and adaptation solutions. For this reason, a call for thematic school projects is launched in the spring of the school year N-1 for the following school year. Since 2022, this has included the theme of climate change from the third cycle (10 years old) to high school (17 years old).

KEYWORDS

External, schoolchildren, support for change, training

COUNTRY

France

Introduction

The aim of this school project is to support classes from cycle 3 to Terminale - by adapting to each level and addressing climate change issues around the following themes: agri-culture, forestry, biodiversity, water, tourism, mobility, and landscapes.

The aim is to equip pupils with the tools they need and to raise awareness of the causes, effects, and solutions for adapting to or mitigating climate change in the Alps, particularly at local level, by linking them to the actions undertaken by the Park and its partners. An immersion day during the project enables the pupils to take part in carrying out a concrete action in order to make their contribution to the project. This can involve measuring biomass as part of the 'Alpages sentinelles' scheme or helping improve access to water resources on a mountain pasture; taking part in species counts or carrying out any other action they can think of.

We work on the assumption that taking part in a concrete action will anchor the change in the pupils' behaviour. This helps to make them active players in their area and their lives and gives them the capacity to act (empowerment).

This project is financed by the Fonds National d'Aménagement et de

Développement des Territoires as part of the Espace Valléen Vercors scheme (co-funded by the European Union/ERDF, the Region Auvergne-Rhône-Alpes and the French State/ ANCT-FNADT-CIMA).

Methods and results

This project is based on supporting 10 classes per year from 2022, from cycle 3 to Lycée. We tailor our contributions to the age and school cycle of the pupils. The project is in line with primary and secondary school curricula (environmental and citizenship education). Activities take place in the classroom and/or outdoors. Active and participative methods are used. We take the pupils' perceptions as a starting point, so that our interventions are better adapted to their needs. Pupils are involved in their project.

A project launch day bringing together all the educational teams (teachers, environmental educators, Park staff) is organised before the project begins, to build a common culture around the theme of climate change and to learn how to work together. These days are one of the keys to the success of the project, as they help to lay the foundations (content) and the way of working together (common tools).

Every two years, the Parc du Vercors and the Educ'Alpes network offer a two-day training course to the various people involved in school projects to update their scientific knowledge about climate change in the Alps and to enhance their skills, particularly in terms of teaching tools. This enables the environmental educators to be better equipped for their classroom work.

At the very start of the project, there is a presentation on what a Parc naturel régional is. This is followed by several visits with an environmental educator over the course of the school year. A day trip to the Vercors is planned to raise pupils' awareness of climate change in a mountainous region. At the end of the project, the other classes/teachers/ parents share the knowledge acquired by the pupils and the concrete action taken.

At the end of the school year, we carry out an assessment with the teachers to measure the impact of the project on the class group and, on a wider scale, on other teachers, the school and the local area. This assessment enables us to improve our practices for future projects.

It is difficult to measure the real impact of these projects (the pupils change classes, we do not necessarily see them again at the end of the projects, it is only the second year of the project), however, we note that several teachers have reapplied for the same theme, which seems to be indicative of the quality of the projects.

Discussion and conclusions

We are having difficulty getting teachers to take part in the launch day. It is not yet recognised by the French Ministry of Education and cannot be included in the training courses officially offered to teachers.

Furthermore, the proposal to carry out a concrete action needs to be accompanied, or even initiated, by the Parc naturel régional du Vercors, as

teachers are not sufficiently equipped (in terms of time and knowledge) to carry it out on their own.

To conclude, even if funding does exist to date, the implementation of these projects remains fragile due to the lack of diversity of funders, even though the issue of education about climate change is recognised at the level of the Alpine arc.

5 THE MOUNTAIN FRESK

AUTHOR

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ABSTRACT

The Mountain Fresk is an educational workshop to raise public awareness of climate change in the Alps and threats to biodiversity.

It fosters an understanding of the functions of several stakeholders in mountain territories and helps to imagine the future of theses territories. The objective is to help participants to take action.

KEYWORDS

High school, indoor activity

COUNTRY

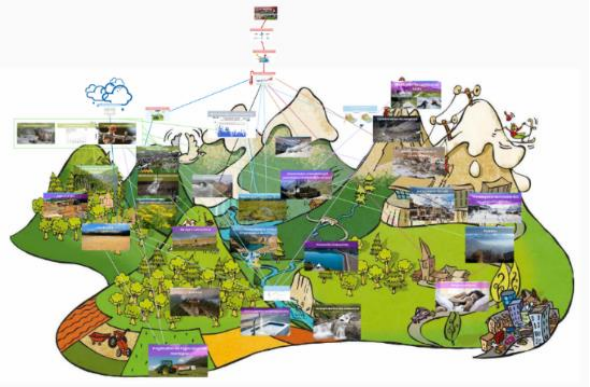
France

Introduction

In just a few years, the Climate Fresk has become a huge success (over 1.000.000 participants and 5,.000 volunteers) and has inspired the creation of many other fresks on different topics (biodiversity, water, ecological transition, etc.). The Mountain Fresk is based on the principle of the Climate Fresk. Its aim is to tackle climate change from the perspective of mountain areas.

This tool has been developed by a consortium of volunteers: environmental educators, protected areas, mountain professionals, citizens… More than 30 people took part in the project between 2021 and 2023.

The first version of the Mountain Fresk was developed for the French Alps by Educ'alpes with the help of a working group and with the financial support of a diverse range of public partners (ANCT Alpes, Régions, DREAL, DRAJES PACA and ARA) and private foundations (Petzl, Snowleader).



Methods and results

The Mountain Fresk is open to all from 16 years of age (high school). It could be used as part of the educational programme for climate change education. It is a playful, collaborative workshop based on collective intelligence to better understand the causes and consequences of climate change in the Alps and to project itself into mountain areas in 2050. It lasts two-and-a-half hours and is divided into two parts.

During the first part, the workshop makes it possible to address the basics of climate change in mountains and its impacts. Participants are invited to place cards on a mountain landscape and to make causal links between phenomena. Topics are discussed through the division of the cards into thematic batches: changes in the landscape, the physics of climate change, the consequences on water resources, biodiversity, natural hazards or the life and economy of mountain areas. During the second part, participants are divided into small groups and play the role of various mountain stakeholders with four large families: civil society, elected representatives and decision-makers, mountain socio-professionals, and non-human in the mountains. They have to imagine their character's life in 2050, and then plan the actions and changes needed to do it. Tools required are a poster of a drawing of a mountain landscape (designed for the Mountain Fresk), game cards, paper, and pencils. It is rather an indoor activity, but it can be done outdoors with a little bit of organisation.

For the participants, the Mountain Fresk allows a better comprehension of the challenges to taking action. The workshop was tested in 2023, and this first draft is going to be developed in 2024. Although the workshop was a success during testing, feedback to improve the workshop is still welcome!

Discussion and conclusions

The workshop is in fact only adapted for adult or young adult audiences (from high school). There is a need to adjust the workshop to younger people considering technical information. For those unfamiliar with the scientific approach, the first part of the workshop (causes and consequences of climate change in the Alps) can also be laborious, and it is not easy for the workshop facilitator to not give too much information and adapt the technical level to be understandable by everybody.

The Mountain Fresk was developed for the French Alps (all data and examples used in the cards are related to the French Alps) and is only available in French for the moment. Declinations for the other mountains ranges may be considered subsequently, with several versions adapted to various ranges. The approach is easily transferable.

6 A THEMATIC NETWORK TO SUPPORT, TRAIN, AND EMPOWER STAKEHOLDERS ON CLIMATE CHANGE IN THE ALPS

AUTHOR

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ABSTRACT

Since 2010, Educ'alpes has coordinated a thematic network for mountain and education professionals focused on climate change in the Alps. The objective is to create strong links between Alpine stakeholders involved in climate change awareness and to develop information, education, and training on climate change in the French Alps. The main activities carried out are information monitoring on climate change in the Alps and climate change education (newsletter, website), the creation of pedagogical media and tools to animate participants about climate change through outdoor activities, and the organisation of training sessions for mountain and education professionals. Efforts are still needed to enrich the pedagogical toolkit on climate change in the Alps. The main challenge for educators seems to be dealing with young people's eco-anxiety when trying to empower them.

KEYWORDS

Extracurricular activities, network, outdoor activities, teacher training, toolkit

COUNTRY

France

Introduction

Mountains visualise the impacts of climate change and can thus be used as support to raise awareness among young people. Since 2010, Educ'alpes (the mountain education network in the French Alps) has coordinated a thematic network focused on climate change in the Alps, with more than 300 organisations and professionals following the work.

Pupils, young professionals, and teachers are part of this network. The network operates with a permanent coordination by Educ'alpes staff, with the financial support of a diverse range of public partners (ANCT Alpes, Régions, DREAL, DRAJES PACA, and ARA).

The objective is to support, train, and empower mountain and education professionals and to develop joint projects about climate change education in the Alps.

Methods and results

A diverse range of people participate in Educ'alpes' climate network: associations, mountain and education professionals, local authorities and public administrations, researchers, pupils, engineering offices… Educ'alpes has gradually implemented several actions to improve information, develop pedagogical media, and develop skills on climate change in the Alps:

- *Poster 'It's getting hot for the Alps!'* (2014, 2018): an attractive publication, which gives an overall picture of the effects of climate change in the Alps and is adapted for the general public as well as for high school pupils. For example, the poster was used:
  - By teachers as an information media for school projects on climate change in the Alps (11 to 18-year-old pupils)
  - As an illustration in several geography schoolbooks (for 12 year-old-pupils)
- *Information monitoring on climate change in the Alps and education, distribution of a newsletter (since 2015), and online resource portal 'It's getting hot for the Alps'* (since 2019) for educators.
- *Toolkit to animate on climate change in the Alps* (since 2016). Once ready, tools are available on the website 'It's getting hot for the Alps'.

For example: photo expressions, landscape readings, emotion carriers…

- *Training sessions 'Raising awareness on climate change in the Alps' for mountain and education professionals* (since 2013), organised in partnership with local territorial structures like nature parks or municipality communities (one annual session taking place over two days in a mountain range of the French Alps). The objectives are:
  - To bring recent knowledge on climate change in the Alps
  - To go from knowledge to pedagogy by experimenting with different pedagogical approaches
  - To provide a field toolkit to animate on climate change in the Alps

  For several nature parks, the objective was to create new educational activities for primary schools and to develop educational outings and fieldtrips on climate change for high school students. Here is the testimony of one participant of a training session: *'The training confirmed the behavioural changes that I undertook several years ago. Since then, I have*

certainly stepped up my speech in this direction. I also set up a climate change awareness outing. I have changed certain routes according to the sensitivity of the environment.' Jocelyne, mountain guide.

Educ'alpes' tools are used by a wide range of mountain and education professionals. Some teachers are part of them, and they use these tools to carry out activities as part of their Sustainable Development Education programme. Mountain professionals often take part in this programme, especially to organise fieldtrips and outdoor activities for pupils.

Discussion and conclusions

For educators of mountain territories, there are several difficulties in working with pupils on climate change in the Alps:

- *A lack of information and knowledge* because it is a complex topic for professionals who are not necessarily experts and because it is difficult to access the information (dispersed, often very technical or difficult to assess reliability for popularised information).
- *Few educational media and tools focusing on climate change in the Alps*, which means that an educator who wants to run an activity on this topic has to build their own tools, which requires a lot of investment.
- *A general need to be accompanied* and to know how to talk about such an alarming matter especially with young people.

Educ'alpes Climate Network activities are supposed to meet these needs from knowledge to pedagogy. Even if climate change is a major issue which is increasingly taken into account by mountain territories (municipalities, local authorities, nature parks…), it remains difficult for teachers to deal with, because this topic is not related to one subject and implies cross-disciplinary projects and is not always easy to implement in terms of time and external resources needed (environmental educators, finance…). It also remains difficult to deal with this alarming matter and with eco-anxiety, a widespread emotion among young people. Teachers and environmental educators are rarely trained to deal with this issue, and it is actually quite a challenge for environmental health education.

7 UNDERSTANDING CLIMATE CHANGE AND TAKING ACTION TOGETHER – CONSISTENTLY FROM KNOWLEDGE TO ACTION

AUTHORS

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ABSTRACT

In Bavaria, when it comes to climate change and climate protection, professional and practical competence build on each other. The scientific tool 'LMU Klimakoffer' (= Climate Kit) aims to make climate change and its effects understandable. Expanding on this, the project, 'Klimaschule Bayern' (= Climate School Bavaria) conveys climate protection skills by implementing concrete climate protection measures in this regard. The 'Climate Kit' was developed by a team from the Ludwig-Maximilians-Universität München led by Dr. Cecilia Scorza and Prof. Dr. Harald Lesch with the participation of Bavarian teachers. It contains 12 experiments and activities to help pupils understand the scientific principles of climate change. It includes all the necessary materials as well as didactically prepared teaching materials. Thanks to a cooperation with the 'Bayerische Sparkassenstiftung', almost all secondary schools in Bavaria can receive the 'LMU Climate Kit' free of charge. The 'Climate School' programme ties in with the knowledge acquired and pursues three goals: 1. to reduce greenhouse gas emissions at schools. 2. to gain competence in climate protection. 3. to have schools act as role models for climate protection in their region. Schools can apply for certification in three levels. A state-funded prize money acknowledges participation.

COUNTRY

Germany

Introduction

'Understanding climate change and taking action' is a project initiated by the Ludwig-Maximilians-Universität in Munich (LMU) under the direction of Dr. Cecilia Scorza and is being further developed in cooperation with schools and teachers. The 'LMU Klimakoffer' (= Climate Kit) emerged from this project. Thanks to financial support from the 'Bayerische Sparkassenstiftung', secondary schools in Bavaria can receive the kit free of charge. After two teachers at the same school have completed a state training course on how to utilise the 'Climate Kit', they are provided with it. They multiply the knowledge of how to use it at their respective school.

'Klimaschule Bayern' (= Climate School Bavaria) is a joint programme of the Bavarian Department for Environment and the Department for Education. This division is also reflected in the coordination of the programme: a teacher serves as the state coordinator while an environmental scientist from the Bavarian State Office for the Environment primarily provides support with specialist questions on climate protection. In addition, a working group of teachers and external partners from energy agencies is

involved in conceptual work. With the beginning of the current school year, a statewide advisory body called 'BNE-Team Bayern' (= Education for Sustainable Development Team Bavaria) was deployed, which, among other responsibilities, provides support for inquiries related to the 'Klimaschule Bayern'.

Methods and results

The target group for the 'LMU Climate Kit' includes pupils from various secondary school types like the 'Mittelschule' (middle school), 'Realschule', and 'Gymnasium' (grammar school). All these school types incorporate relevant connections to the issue in their curricula.

The experiments cover the scientific fundamentals necessary for understanding climate change. Based on the position of planet Earth in the solar system, topics such as the greenhouse effect and the radiative equilibrium, as well as feedback processes and tipping points in our climate system, are dealt with. A suitable manual has been developed to accompany the experiments, and additional modules along with supplementary teaching materials are available online[2].

The Climate School programme is aimed at pupils of all school years and school types. To achieve Climate School status, the entire school community is encouraged to develop and implement measures to reduce CO_2 emissions, following the calculation of the school's carbon footprint. There are therefore two essential components on the way to becoming a Climate School: with the help of the CO_2 calculator, the school's greenhouse gas balance is determined, and based on this, a climate action plan is drawn up to reduce CO_2 emissions with suitable measures. These, in turn, are assigned to eight fields of action: waste, procurement, nutrition, communication, mobility, offsetting and carbon sequestration, electricity and heating.

A key focus is the age-appropriate involvement of pupils. They are encouraged to develop their own problem-solving strategies and actively participate in their implementation. In this way, pupils gain practical skills in climate protection and, ultimately, a sense of self-efficacy.

Registered schools receive support directly through the website (www.klimaschule.bayern.de). There, they will find contact information for the state coordinator for Climate Schools, as well as for the 'BNE-Team Bayern', established at the beginning of the school year 2023/2024. On the website, schools also have access to detailed informational material, a community platform, offerings for training sessions, individual consultation hours as well as the specially developed CO_2 calculator for schools, which facilitates the calculation of the greenhouse gas balance.

[2] https://klimawandel-schule.de/de

The greenhouse gas balance, the climate action plan, and the implementation of measures serve as the basis for the certification. A jury composed of experienced teachers and representatives from the involved ministries makes this decision. Depending on the number of action fields in which the school is actively engaged, certification can be awarded at the bronze, silver, or gold level.

The project has been launched successfully; at the project's outset, there were eleven certified Climate Schools, and in the second year, the number has increased to 74, with approximately 100 more schools registered. Notably, neighbouring schools are registering, inspired by certified Climate Schools, which they view as role models and help them find motivation to embark on a similar path. The Alpine regions, especially the 'Allgäu', demonstrate particularly active engagement in Climate School initiatives. The first three gold-certified Climate Schools all originate from this region. Accordingly, these schools consider specific opportunities of the Alpine region in their climate protection measures, such as the protection of moors through bush clearing or establishing and maintaining mountain forests in collaboration, for instance, with the Bavarian State Forests.

Discussion and conclusions

The programme 'Die Blaue Perle'[3] (= the Pale Blue Dot) for elementary school was initiated by the Ludwig-Maximilians-Universität under the direction of Dr. Cecilia Scorza and developed in collaboration with Christine Freiheit. The goal of the Pale Blue Dot programme is to promote the development of scientific thinking in children and to awaken a global sense of belonging and responsibility for the environment. The programme consists of three modules:

1. Our wonderful blue planet Earth
2. The history of the Earth and life,
3. Climate change and climate protection.

Fascinating images of the Earth and space are used throughout. Important connections are conveyed through stories, numerous experiments, models, and digital formats.

The programme is based on the three dimensions of learning: cognitive, socio-emotional, and behavioural. These dimensions enable children to follow a path that empowers them to understand the significant challenges of the world, respond positively to them, and utilize their knowledge and skills to make the world a better place for everyone.

Thanks to the collaboration with the 'Bayerische Sparkassenstiftung', teachers at the ILF in Gars am Inn can receive further training in the

[3] https://bayerische-sparkassenstiftung.de/philmint/Phil-MINT-Projekte/Die-blaue-PerleProjekte/Die-blaue-Perle

mentioned programme. The aim of the departments involved is for as many schools as possible to become Climate Schools. Scaling up the programme requires not only a corresponding interest in schools but also the growth of advisory and certification structures. In addition, schools should be given the opportunity to be recertified, in order to make the programme more sustainable. Alongside the further development of climate protection measures, this approach can also place a greater emphasis on school and curriculum development.

8 EXTRACURRICULAR EDUCATIONAL OFFERS BY THE GERMAN ALPINE YOUTH CLUB

AUTHORS

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ABSTRACT

The youth organisation of the German Alpine Club (JDAV) offers a wide range of extracurricular activities to implement its principles and educational goals: 'The sustainable organisation of all our activities is of fundamental importance. This means that they take place as little as possible at the expense of our nature, environment, present and future generations." (Principles and educational goals of JDAV, 2019)

To this end, a) the Alpine Club offers year-round youth courses for young people throughout Germany b) our extracurricular youth education centre offers, for example, experiential education programmes for school classes c) we offer further training for youth leaders so that they can qualify as youth leaders and carry out good educational and professional youth work.

KEYWORDS

Method box, Alpine experience week, nature construction site, climate-neutral educational institution

COUNTRY

Germany

Introduction

Our extracurricular youth education centre (Jubi) is certified climate neutral since December 2020. We understand sustainability to mean the use of ecological, social, and economic resources within the scope of their regenerative capacity. The JDAV youth education centre takes our responsibility for nature, the climate, and future generations seriously. In order to create transparency and encourage others, the concrete measures at Jubi are made visible and sustainability is further anchored in our educational programmes.

What does climate neutrality mean?

A central component is the compensation of CO_2 emissions, which is based on the principle of a global climate balance. Greenhouse gases produced by us are saved by climate protection measures elsewhere and thus offset. By financing offsetting projects, we do not want to buy our way out of our responsibility, but we see them as an additional opportunity to make another important contribution to development. We offset our

remaining emissions in 2020 as a founding partner in the Climate Neutral Allgäu 2030 alliance by promoting international Gold Standard projects and by paying into the Allgäu Climate Fund to promote regional sustainability projects.

Balancing: how many emissions were generated in Jubi operations

The first step was to calculate our emissions for 2019. The carbon footprint was calculated in accordance with the Greenhouse Gas Protocol. In total, the Jubi generated 117 tons of CO_2, almost half of which was caused by food. The results of the balance serve to identify sources of emissions and estimate their level and development.

Reducing emissions

Our entire **energy** supply is already very well thought out (e.g. solar thermal system, 100% green electricity, modern LED lamps and intelligent lighting, heat recovery, low room temperature, general renovation, and insulation), we are already at a low emission level. Our goal would be to have our own PV system so that we can produce our own electricity instead of buying green electricity. In the area of **mobility**, we are working intensively on an overall concept to create incentives for guests and employees to travel to and from the hotel by bike, public transport or carpooling. To start, Jubi held a cycling competition in 2020 (12 employees cycled 4.830 km in 3 months, saving 886 kg of CO_2 compared to traveling by car!). Our entire **diet** is currently being closely scrutinised and gradually changed. Measures such as vegetarian breakfasts and a reduction in meat dishes, more home-made products, palm oil free bars, and increasing the proportion of regional food from organic farming are just a few examples.

Living sustainability

We are taking into account emissions that are not recorded in the annual balance sheet, e.g. reducing packaging waste, purchasing Fairtrade products, supporting regional businesses and social initiatives, etc. and are living and communicating nature, environmental, and climate protection.

Firmly anchored in educational programmes

Nature-compatible, environmentally and climate-friendly behaviour should be more firmly anchored as part of all our educational offerings.

To make the topic of sustainability tangible for young people, we are working together with others on a collection of methods for multipliers in youth work. Find more information on our website (German) https://www.jubi-hindelang.de/die-jubi/nachhaltigkeit/schritt-fuer-schritt-zu-immer-mehr-nachhaltigkeit_aid_37369.html, https://www.jubi-hindelang.de/die-jubi/nachhaltigkeit/unsere-jubi-ist-klimaneutral_aid_35929.html

Experiential education programme for school classes: 'Erlebnis Alpenwoche'

This programme is all about experiencing nature and education for sustainable development in the mountains. Find more information and pictures on our website (German):

https://www.jubi-hindelang.de/schulklassen/erlebnis-alpenwoche_aid_30408.html

Umweltbaustellen

Youth course for 16- to 26-year-olds with an affinity for nature who enjoy a "productive vacation" together. The focus is on caring for the Alpine meadows in order to preserve biodiversity and cultural asset, for example Moor renaturation.

Find more information and pictures on our website (German): https://www.jdav.de/jugendkurse/umwelt/rueckblick-umweltbaustelle-jugend_aid_36778.html and https://www.jubi-hindelang.de/die-jubi/nachhaltigkeit/jdav-umweltbaustellen-rund-um-die-jubi_aid_35552.html

Educational materials

Designed to encourage low-threshold engagement with sustainability, climate change, and climate protection, whether at school or outside. These have only just been developed, so there are still few to no photos or evaluations available.

Green Aid Kid

Many ideas and suggestions for working on topics relating to a more sustainable lifestyle in children's and youth groups. You can implement all the tips and suggested methods on the topics of nutrition, mobility, and consumption in group lessons with the help of Padlet and videos. Find more information and a video on our website (German): (https://jdav-bayern.de/themen/green-aid-kid/)

JDAV Klimakiste/Climate box

Collection of materials for youth leaders to use in youth work. Exciting action ideas, methods, and practical checklists that can help you deal with the topics of climate protection and sustainability in group lessons and excursions and thus bring them closer to your group's children. Find more information on our website (German): https://www.jdav.de/wissen/nachhaltigkeit/klimakiste/die-klimakiste-der-jdav_aid_39635.html .

N-Box – Learning sustainability:

A range of interactive methods, background information, documents, links and more that you can use as multipliers. Topics: care, repair, upcycling of outdoor equipment, environmentally friendly behaviour, economy for the common good and sustainable management. Find more information and pictures on the website (German): https://academy.vaude.com/methodenbox-nachhaltigkeit/.

9 TRANSFORMATIVE LEARNING FOR CLIMATE ACTION: THE KLIMA-CAMPUS EXPERIENCE

AUTHORS

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ABSTRACT

The Klima-Campus is a digital learning platform that aggregates open educational resources for natural climate protection. It serves as a source of motivation and activation for individuals to engage in natural climate protection efforts, both individually and collectively. Additionally, it equips educators and facilitators with the tools to inspire learners about this crucial topic. The goal is to spread the acceptance of natural climate protection throughout society, thereby reducing greenhouse gas emissions in the medium and long-term through changes in behaviour and structural modifications. It employs innovative elements of transformative learning within its digital learning environment, including interactive tasks. Furthermore, it integrates tools for tracking learning progress, certifications, and qualifications in the form of Open Badges. This approach increases motivation and makes competency acquisition visible and transparent.

KEYWORDS

Climate education, ecosystems, digital learning platform, transformative learning, natural climate protectors, interactive tasks, Open Badges, Open Education Resources

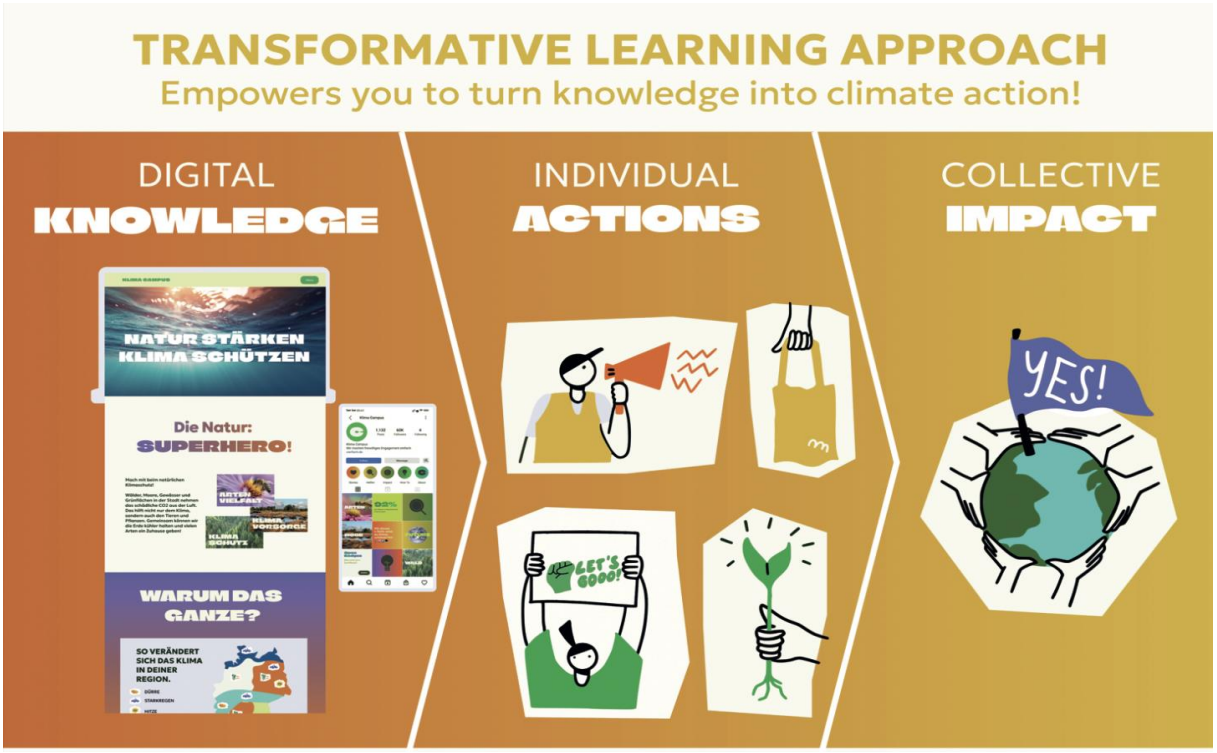
COUNTRY

Germany

Introduction

The mission of Klima-Campus is twofold: first, to inspire and motivate society at large to build a comprehensive understanding of natural climate protection and take proactive steps toward it, and second, to pioneer an interactive learning approach that enhances individual engagement and intrinsic motivation.

The Klima-Campus incorporates elements of transformative learning, a pedagogical approach that has gained recognition for its effectiveness in driving meaningful change. Transformative learning emphasises critical reflection, active engagement with real-world challenges, and the integration of learning into one's personal and societal context. The topic of nature conservation in the Alpine region is important as this area is particularly vulnerable to the effects of climate change. By addressing climate issues in this context, the Klima-Campus links its activities directly to the pressing concerns of the region, making the learning experience more relevant and impactful. Financially, the Klima-Campus is supported by the German



Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV). This funding not only ensures the platform's accessibility but also allows for the continuous development of innovative tools and resources for learners.

Methods and results

Target group description

The Klima-Campus is designed for a diverse target group aged 16 to 26. These individuals are digitally proficient and encompass a range of educational backgrounds. They are the driving force behind the platform, both as self-learners and co-creators. The second target group is teachers or multipliers who can integrate the platform's contents into their educational initiatives.

The Klima-Campus recognises the importance of tailoring content to suit the diverse needs and competencies of this age group.

Educational approach and tools

The Klima-Campus employs a multifaceted approach to education. It utilises a spiral curriculum, aligning with experiential learning principles, to activate learners and support their motivation while aligning with their existing competencies. The learning process is designed to be actionable, playful, holistic, open, connected, competency-based, and transparent. This approach encourages learners to not only acquire knowledge but also develop practical skills for climate protection.

Educational activities and transformation

The platform offers a wide range of educational activities that are engaging and interactive. Learners are encouraged to take real-world actions,

such as reducing plastic waste or promoting wetland restoration, and develop practical solutions. The outcomes of these activities are documented using a portfolio-based approach, allowing learners to track their progress and reflect on their achievements.

Methodology for documentation

To assess the effectiveness of the Klima-Campus, we employ a comprehensive evaluation approach. This includes the use of questionnaires and qualitative feedback to gauge the impact of the learning experiences. Learner progress is tracked using Open Badges, providing a transparent and motivating way for individuals to visualise their competency acquisition.

Positive outcomes identified

The Klima-Campus aims to achieve several positive outcomes, including enhanced education for sustainable development, transformative learning experiences, holistic understanding of climate-related issues, and greater engagement in climate change action. By providing a dynamic learning environment and transparent competency development tracking, it empowers learners to take meaningful steps toward climate protection.

Discussion and conclusions

While the Klima-Campus demonstrates a successful approach to climate education, challenges exist. Ensuring sustained engagement and motivation among learners remains a concern. Additionally, the integration of transformative learning elements and Open Badges requires ongoing refinement and adaptation.

To combat these challenges, it is recommended that the Klima-Campus continues to evolve its formal educational programmes and extracurricular activities. Collaborations with educational institutions, both formal and informal, can provide additional support and resources for learners. Emphasis should also be placed on expanding the platform's reach to a broader audience.

In conclusion, the Klima-Campus exemplifies a transformative learning experience for climate action. By addressing the unique challenges of the Alpine region and integrating innovative tools, it empowers individuals to become advocates for natural climate protection. With ongoing support and adaptation, it can play a pivotal role in building a sustainable and climate-resilient future.

10 CULTURE AS A MEANS TO INVOLVE YOUNG PUPILS

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ABSTRACT

Some possible concrete actions may succeed in involving the next generations in the themes and problems of the mountains. The objective is to involve these new generations on issues such as quality of life and climate change in the hope that they will become more aware of these problems and play an important role in raising awareness among the institutions. It is important to meet school managers, teachers, and pupils in order to involve pupils in a second step by inviting them to participate to a literary prize that allows the Alpine mountain to be the undisputed protagonist, suggesting some themes to be addressed. The participating pupils, through written texts and images, can express different and profound thoughts; in the past editions of the literary prize, it has emerged that some pupils are more interested in these topics than one might think and love sharing their opinions and their feelings when they are involved in this type of project.

KEYWORDS

Culture, images/videos, secondary school, tales

COUNTRY

Italy

Introduction

The good practice is called the Reading Mountain Infopoint Award, and it consists in finding a way of approaching and involving pupils and young generations in some issues that concern the future of the Alpine territories in which they live, thus making them aware of the main problems.

The project is based in Verbano Cusio Ossola Province, in the northwestern part of the Piedmont Region, an Alpine area with all the typical problems of the mountain areas such as depopulation, few job opportunities, poor services and lack of public transport.

It uses its own financial resources, and from banking foundations, as well as from the Permanent Secretariat of the Alpine Convention.

Methods and results

Target group description

The target group are young pupils aged 13-18 from all the schools in Verbano Cusio Ossola county. The project takes place outside the educational school programme. Indoor activities, organising meetings but also online activities such as webinars or presentations are part of it.

Educational activities and others

The initiative consists of a contest dedicated to middle school and secondary school pupils. In order to participate, pupils have to submit a short essay, a poem or a post, which may also include a meaningful picture. The first step is to present the project to the school principals and teachers. Each participating class designates a teacher to collect and submit essays via e-mail.

A jury composed of local artists, mountain researchers and teachers evaluates the works. Winners participate in an 'Educational' session that includes a one or two-day stay in a mountain location. During this experience, the pupils engage in various mountain-related activities and lectures; visiting local businesses is also a possibility.

The programme culminates in a 'Final Work' done by participants. It summarises their experience while maintaining the focus on concrete actions and guidelines for the Alps' territory. It could be beneficial to host a public event in order to show these works and the whole experience (maybe with a video recap), spreading the message and the common goals of the Alpine Convention.

From a broader perspective, this approach can help pupils to nourish their 'natural' bond with mountains, which could be pivotal in promoting a sense of belonging and discouraging depopulation in the Alps. This, in turn, could lead to an improvement in local economies and the overall quality of life.

Outcomes

Transformative learning, literary books, meetings with students, citizens and institutions, videos.

Discussion and conclusions

Some difficulties are certainly foreseeable when starting the project. It is necessary to start working on contacts and relationships with teachers and pupils; in the first edition of the award, we received 20 entries, while in this sixth edition we received 200.

Potential solutions consist in starting a careful initial selection of schools, entering the classes to illustrate what the Alpine Convention is. This can be useful to raise awareness among teachers; it is important to provide some support through stakeholder management action. For example, to enter a school it is advisable to have a prior contact with the provincial school office, so as to involve the higher level.

It is very important to create, maintain, and develop a network of contacts, as well as to find the correct way to broaden the project, partially involving other subjects with their own projects. The sum of multiple projects makes this one and its related actions more widespread and stronger; it is equally important to start with a specific action and then try to implement it step by step with further activities.

For example: the initiative related to the Infopoint prize involving the establishment of a network of contacts was included in a project of the school office called DIARIO AMICO; the winning

stories were included in the diary which was distributed to all primary school pupils in Verbano Cusio Ossola, more than 5.000 copies.

A related outcome of the activities described above is available at the following link: https://www.youtube.com/watch?v=riuj9zbCnaY (subtitled video).

11 ALPINE SCHOOLS AS MOUNTAIN-ORIENTED EDUCATION OPTIONS FOR FORMAL SCHOOL CURRICULA

AUTHORS

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ABSTRACT

A former Interreg Alpine Space project YOUrALPS (2016-2019) aimed at assessing the feasibility of a joint mountain-oriented education for schools in the Alps, fostering sustainable development oriented education including educational activities focused on climate change, both in formal and non-formal education systems, to raise awareness among youth about what attitudes, knowledge, and skills are required for their professional and private lives, to promote necessary change in a sustainable way in the Alpine area. The Alpine School Model (ASM) is one of the main outputs of the project. Some examples from the project's pilot sites, and an overview of the ASM toolkit are included. The YOUrALPS project provided recommendations and procedures addressed to schools and non-formal education groups in Alpine protected areas to be certified as Alpine schools and Alpine school partners. Moreover, the project focused on the realisation of an Alpine school app to support schools and non-formal educational groups in realising their pathways autonomously.

KEYWORDS

Curricular, extra-curricular, indoor, outdoor, teacher training

COUNTRY

Italy; Alpine-wide

Introduction

There is limited awareness among younger generations of the values and opportunities offered by the natural and cultural heritage of the Alps and there is therefore an urgent need to better inform youth and make them more aware of their Alpine heritage, which has a lot to offer in terms of economic and social opportunities.

The former Interreg Alpine Space project YOUrALPS (Educating youth for the Alps: (re)connecting Youth and Mountain heritage for an inspiring future in the Alps) (https://www.alpineschool.org/en, https://www.alpinespace.eu/project/youralps/) took on the challenge of reconciling young people with the Alps, providing the setting of a transnational cooperation structure dedicated to mountain-oriented education, gathering schools and universities together with specialists from non-formal education and youth, providing resources, offers, and contacts. Thirteen project partners from six Alpine countries worked together from 2016 to 2019 to give structure to the field of mountain-oriented education and more fully incorporate the values and knowledge of mountains and the Alps in

practices, also in educational curricula. Thanks to exchanges, training, workshops, and trials in pilot sites, the project partner created an "Alpine school model" whose FLA was the main extensor. The project aimed at creating new opportunities for youth, increasing their empowerment and engagement in the Alpine territory, to better shape their future, providing them with opportunities to develop their knowledge and sensibility of the Alpine natural and cultural heritage. Partners' pupils were also involved in the model development, actively participating in the project actions and transalpine workshops.

Methods and results

The Alpine School Model aims to raise awareness about Alpine natural and cultural values by designing an innovative educational approach based on more interconnected, formal, and non-formal territorial educational systems.

Climate change and its foreseeable effects on the environment, biodiversity, and the living conditions of its inhabitants, is having a greater impact on Alpine territories. Temperatures here are rising twice as fast as the average in the northern hemisphere. Promoting a carbon neutral economy and lifestyles through mitigation and adaptation actions will help drive sustainable development, generating added economic value, innovation, and boosting employment.

The Alpine School Model consists in an extensive and detailed document introducing the scientific basis on which the model is based; in particular, the principles of Education for Sustainable Development as adapted to the Alpine context. The Alpine School Model is also intended to be a practical, simple to use, synthetic tool to explain the structural criteria that schools are supposed to implement to become Alpine Schools.

The Alpine School Model is ultimately intended to engage different target groups in improving some important competences under the frame of Education for Sustainable Development (ESD) and climate change mitigation and adaptation focused educational activities.

The Alpine School Model (ASM) is designed for schools and non-formal educational organisations and its targets are all educational actors (learners, teachers, educators), providing specific suggestions to enhance their mutual collaboration in organising high-quality educational paths within their living territories and communities, especially toward more aware behaviours to combat climate change.

The indicators of ASMs are inspired by UNESCO Education for Sustainable Development (ESD) principles and based on the past decades of best practices and lessons learned from the most authoritative international environmental education and global citizenship networks. As much as ASM could be used in a very simple way as a handbook to set educational activities (for example, used to organise a day visit to a mountain protected area), the

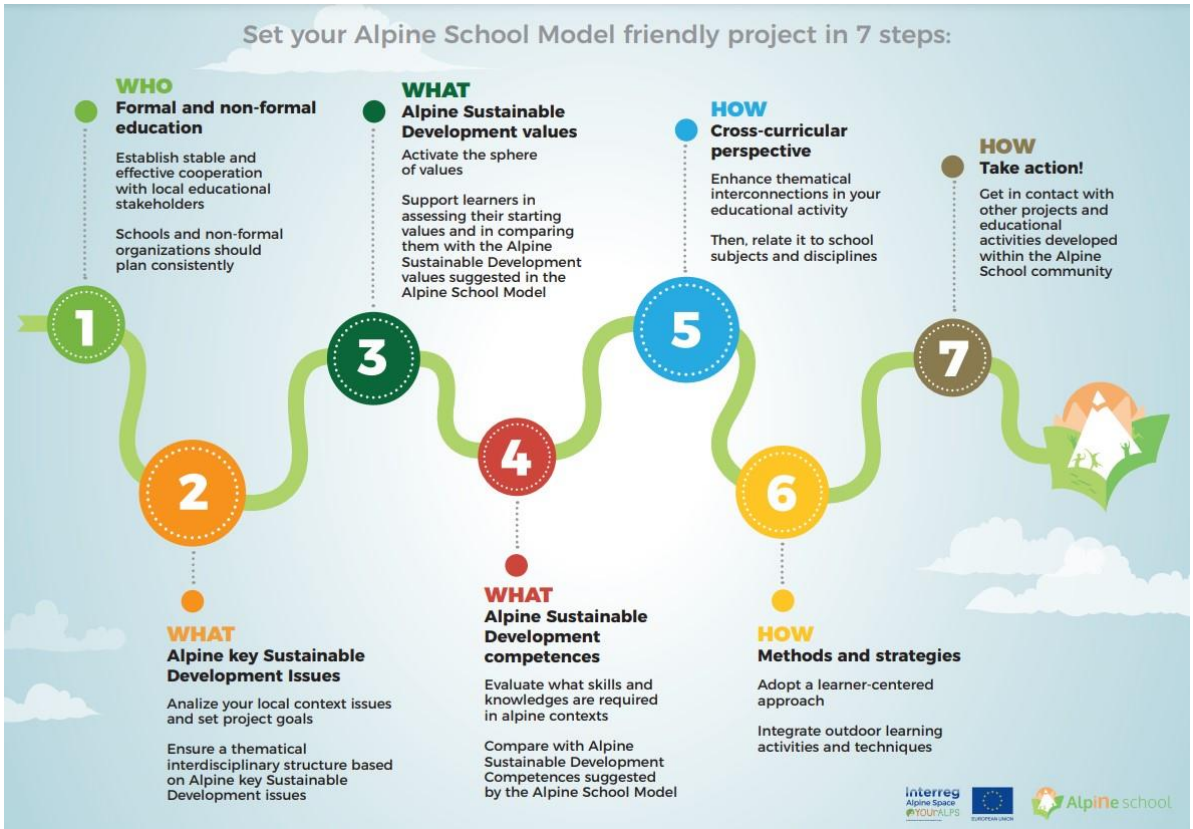
preferable solution is represented by the track for continuous ASM related projects in a school's curricula, with school lessons alternating with visits/outdoor experiences, and most of all with the possibility to structure a school curriculum applying the Alpine Schools certification.

The Alpine School Model is organised as a pedagogical tool based on a panel of eight criteria, in accordance with the key Alpine area specificities: these criteria sum up the steps to structure an ASM-friendly project. In the graphic below, a scheme shows a vision of the whole model, with a synthesis of components consistency and their functional relations.

The development of the Alpine School Model implies a joint international approach based on a theoretical model of mountain-oriented education (MoE) and its practical application by 14 pilot sites. Hence, the definition of the pedagogical approaches, contents and methodological tools represented a solid basis for the project YOUrALPS pilot experiences led by schools and protected areas to test the theoretical indications in practice.

Moreover, within a participatory approach based on information, consultation and co-designing activities were conducted to involve several local, regional, and national stakeholders. In this way, the theoretical framework was tested, elaborated, and improved throughout the duration of the project. In the graphic below, the steps suggested to schools to implement the Alpine schools' pathways are illustrated.

An interactive app, the *Alpine school app* (*https://www.alpine-school.org/en/alpine-school-app-other-tools*) was created to allow learners and educators to directly observe nature, describe, and



upload mountain-oriented educational activities carried out all over the Alps.

This serves as the perfect complement to in-class lessons to explore the issues related to Alpine sustainable development.

It also favours exchanges among the users who can share their experiences and observations.

Tips and supports by the Alpine School Model

1. Create a local network and partnership with the involvement of your local or regional protected area and connected organizations.
Find good examples on Alpine School Model document Annex 4

2. In planning activities
- Support yourself with the local institution's sustainable development action plans and advice
- Use the Unity of learning form suggested in Alpine School Model document - Annex 6
- Be sure to adopt a thematical structure based on environment, society, economy, governance

Alpine Sustainable Development issues - Find the Alpine key sustainable development issues, in Alpine School Model document Annex 1 and in Chapter. 2, par. 3

3. What values are needed for sustainable development actions in the Alps? see the ones presented in Alpine School Model document Chapter 2 par. 5
Cohesive and cooperative communities: (Benevolence, security, conformity, Universalism, equality, helpful, self-discipline)
- Preservation of traditional heritage: (Tradition, wisdom, security)
- Protection of natural landscapes and cycles: (protection of nature, security)
- Sustainable economy, innovation and social-entrepreneurship: (achievement, power, universalism)

4. Schools and educational organization are both asked to plan consistently their activities identifying valuable Alpine Sustainable Development competencies provided in Alpine School Model Chapter 2, par. 4 splitting them in their components (skills, knowledge, and attitudes) and using the planning flexibility provided by your national curriculum
Alpine School Model provides tips for the evaluation of the Alpine Sustainable Development competences developed by students during the educational activities

5. Build your didactical activity within cross-curricular formal lessons, using the alpine key Sustainable Development issues translated in school subjects and disciplines; Help yourself with the Alpine School Model Annex 2 (and the examples of interdisciplinary non-formal interventions provided in Annex 4)

6. To allow the acquisition of Alpine Sustainable Development competences, the integration of physical, emotional and mental dimensions is needed: methods based on a learner-centered approach and Outdoor educational techniques ensure the emotional involvement, physical performance and are suggested in the Alpine Schol Model document Ch.2, par. 7 and Annex 3

7. Transfer the acquired information, knowledge and skills in a real context and community,
   1) Encourage Youth in participating to a decision-making process
   2) Use role games simulating real conditions and testing youth acquired skills in a protected way and controlled way
   3) Promote the active transposition in real life

Alpine School Model

Alpine school APP

Alpine School App

Alpine School App is an app that can be used by computer devices, or by phone by a whole class and the groups of learners. And the purpose is to provide practical experiences related to key alpine sustainable development Issues of the ASM (such are the naturalistic, cultural/socio-economical and governance issues)
Environmental: providing practical governance experiences in improving, activities such are citizen science approach such are the phenological observations
Governance: communication and information representing a communication tool for users to create wider transnational community of practices, in which to exchange information about educational opportunity in order to establish twinning or visits experiences across the alpine countries (a sort of atlas of best practices).
Socio-economic: to enhance in youth alpine sustainable consumption skills

Alpine School Certification

Certificate your school as an Alpine School or your organization as an Alpine School Partner!
If you are a school you should designate a single class, a group, or the whole school and create a local partnership and at the end of the certification process even if just one part of it followed the project, the whole scholastic institution and its partner will receive the accreditation of the certification with the possibility to use the logos for communication purposes.

Follow the ASM requirements and the certification procedures.

12 EDUCATIONAL CONTENT ON CLIMATE GOALS AND THEMES FOR PRIMARY AND SECONDARY SCHOOLS

AUTHORS

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ABSTRACT

In cooperation with NGOs, we prepared various educational contents on climate goals and themes for primary and secondary schools, which we piloted at the mass event in 2022, the National Scout Jamboree in Slovenia. The contents were aimed at introducing young people aged between 14 and 18 to topics such as climate change, sustainable development, the impacts of consumerism on climate change, and adapting to the effects of climate change. Through 4 thematic strands, organised in the form of interactive workshops, we tackled the problems of consumerism and climate change and thought about solutions such as adaptation to climate change, changing consumption habits, circular economy, sustainable development, etc. The workshops were attended by young people from Slovenia and abroad. The event took place on the ski centre, located in Alpine region.

KEYWORDS

Extracurricular, outdoor, primary school, secondary school

COUNTRY

Slovenia

Introduction

The practice of collaborating with NGOs to develop and implement educational content on climate goals and themes for young people, as demonstrated in the National Scout Jamboree in Slovenia, is considered a good practice for several reasons.

Firstly, the choice of location, specifically a ski centre in the Alpine region, is strategic. The Alps are particularly sensitive to the impacts of climate change, such as melting glaciers and changes in precipitation patterns. By situating the educational event in this region, participants are immersed in an environment directly affected by climate change. This aligns with the principles of place-based education, emphasising the importance of connecting learning experiences to local contexts. Scholars advocate for such approaches, asserting that learning about environmental issues in the context where they occur can enhance understanding and foster a sense of responsibility.

Additionally, the collaboration with NGOs adds value to the initiative. Engaging with non-governmental organisations brings diverse

expertise and perspectives to the development of educational content. The involvement of NGOs aligns with the principles of participatory education, emphasising the importance of involving various stakeholders in the educational process. This approach fosters a more comprehensive and holistic understanding of climate-related issues.

In conclusion, the practice of developing and implementing educational content on climate goals in collaboration with NGOs, situated in the Alpine region with financial support from national projects, is considered a good practice. It aligns with principles of place-based education, draws on international literature emphasising financial support for environmental education, and incorporates the participatory approach advocated.

Methods and results

Target group description

The target group for the workshop includes young people, particularly those aged 14 to 18, who are likely in secondary education. The focus is on individuals influenced by appearance and identity, emphasising the importance of reaching young consumers. The educational level aligns with the secondary school level.

Activity performance

The activity is not explicitly stated to be part of the formal educational programme or schoolwork. It is an extracurricular or workshop-style initiative aimed at supplementing traditional education with hands-on, experiential learning.

Educational approach and tools

The educational approach is interactive and experiential, incorporating group work, guided discussions, worksheets, model-making, and group presentations. The use of didactic aids such as worksheets, labels on clothing, and model materials (both waste and natural) demands a combination of indoor and outdoor activities. Mentors play a crucial role in guiding participants through reflections and discussions.

Educational activities and transformation

The activities are designed to facilitate transformative learning by addressing environmental awareness, sustainable development, and climate change. Participants are encouraged to critically assess their consumption habits, understand the environmental impact of their choices, and actively contribute to sustainable solutions. The emphasis on group work, discussions, and creative projects fosters a holistic approach to learning, integrating environmental, economic, and social dimensions.

Documentation method

The methods used to document the good practice inquiries included, surveys and questionnaires, and interviews (to gather participant perspectives and insights).

Positive outcomes identified

Positive outcomes include education for sustainable development,

transformative learning experiences, a holistic understanding of climate change-related challenges, and the promotion of environmentally conscious behaviours. The programme aims to instil a sense of responsibility and proactive problem-solving in young participants, aligning with the broader goals of sustainable development as defined by the World Commission on Environment and Development in 1987. Participants are encouraged to actively seek solutions for present and future challenges, fostering a mindset geared towards meeting current needs without compromising future generations' needs.

Discussion and conclusions

The initiative identified several challenges and potential solutions for promoting sustainable fashion among young people.

Another challenge is the gap between awareness and action, which may prevent the workshop participants from applying the sustainable practices in their daily lives.

Moreover, the initiative highlighted the institutional barriers that young people face, such as the absence of sustainability education in formal curricula and the lack of involvement in decision-making processes.

We propose the following recommendations for the future:

Integrate sustainability education into formal curricula, covering topics such as environmental impact, consumerism, and sustainable development.
Use project-based learning and practical applications to enhance real-world understanding.
Promote extracurricular activities and workshops for hands-on, experiential learning.
Establish sustainable development clubs within schools for sustained interest and engagement.
Integrate indoor and outdoor learning experiences for a holistic understanding of environmental issues.
Encourage field trips, outdoor workshops, and practical activities to connect theoretical knowledge with real-world scenarios.
Develop programmes empowering young people with skills and knowledge for active participation in decision-making.
Facilitate collaboration between schools, NGOs, and local communities for a comprehensive support system in sustainable education.
Foster networks to share best practices and resources, enhancing the effectiveness of sustainability initiatives.

By addressing these challenges and implementing the suggested solutions, we can foster long-term behavioural change, embed sustainability in education, and empower young people to contribute meaningfully to a more sustainable future.

13 WE SHAPE THE SPACE AND THE SPACE SHAPES US

AUTHOR

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KEYWORDS

Architecture, learning by doing, creativity, children's workshops, education for teachers

COUNTRY

Slovenia

"Tell me and I will forget, show me and I may remember; involve me and I will understand."

– Confucius

Introduction

The vision in education programmes with learning by doing is to engage pupils in hands-on activities that enhance their knowledge and, in our organisation, enables them to experience the importance of architecture and design, and of the importance of sustainability. The workshop usually contains an interactive presentation of theoretical background, followed by an activity from practice.

The programme encompasses a range of activities in Slovenia and internationally, task-oriented workshops for children in educational institutions, training programmes for teachers, an annual competition to celebrate World Habitat Day, and the production of teaching materials and handbooks. In 10 years, we have playfully shared our knowledge with children through more than 250 workshops and lectures on architecture. Slovenia is a mostly pre-Alpine country, located on the brink of the southeastern Alps with part of the country covered by the Julian Alps, and it has a rich history of Alpine vernacular architecture and cultural heritage. It is very important to include the context of this specific space in the understanding of climate changes and the necessary measures that need to be taken. The project works in the public interest with the strong

willpower of colleagues sharing the same vision.

Methods and results

Over the last 15 years we have included children in kindergartens (aged 4-5), primary schools (pupils aged 6-14 years old), and, rarely, some high schools (pupils from 15-19 years old). Activities are designed for every age and level of education, tailored specifically to their level of understanding (1st, 2nd, 3rd year etc.), including for children with special needs. Primary school teachers in all Slovenian schools can apply for terms in the form of cultural and technical activities within curriculum of their school year. Also, any organisation or person can individually apply for workshops as an extracurricular activity for a moderate price that covers a professional mentor and basic materials.

Our mentors come to schools fully equipped with picture materials and keywords for sharing the theoretical knowledge through portable mediums and materials to execute the workshop. The materials provided are all reusable (numerous activities in schools are carried out with the same set) or at least recyclable (the models pupils create are made from materials that were already recycled/reused or can be recycled in the future: wood, paper, natural elements like sand and stones and so on).

The knowledge is shared through the website (https://igrivarhitektura.org/, https://www.centerarhitekture.org/) but sharing the vision started on printed mediums. The team behind Centre for Architecture Slovenia has designed a number of teaching tools, booklets, brochures, and handbooks. In 2012, it was at our initiative that the Didakta publishing house brought out 'Arhitekturni detektiv' (Architectural Detective), a Slovenian translation of the architecture toolkit created by Playce, an international association of architecture education. By arousing curiosity and the desire to explore architecture and the built environment, the toolkit inspires a different perception of space, especially by working with all the senses. This was done in collaboration with the Institute of the Republic of Slovenia for Vocational Education and Training under the title (MATERIAL + HAND = EXPERIENCE, A handbook for experiential learning about occupations).

The organisation of events and lectures, the implementation of projects, the production of articles, and the creation of handbooks – these are the layers of Playful Architecture intended to address the widest audience and speak about our mission. And as the content featured in our activities is always directly or indirectly related to the significance of quality architecture, design, space, and heritage, our mission invariably goes beyond the targets of educational institutions.

The Centre for Architecture Slovenia managed to fuse specific programme strands and subjects in order to raise the awareness of the importance of space while opening new prospective ways of doing so.

The importance of Playful Architecture has been recognised by the President of the Republic of Slovenia, Mr Borut Pahor, who has been its honorary patron since 2017.

In early 2019, the Slovenian Ministry of the Environment and Spatial Planning granted the Centre for Architecture Slovenia the status of an NGO operating in the public interest in the field of space.

Discussion and conclusions

Countries with a high living standard and general wellbeing of their citizens have very well-designed public spaces where people have a strong sense of safety, tidiness, beauty, and freedom. The key to this is the general high culture and awareness of the importance of quality and sustainable design, architecture, and urbanism among the country's population.

The long-term objective that the Centre for architecture Slovenia is aiming for with Playful architecture is including the programme of education in the field of architecture, space design – urbanism, land design – and landscape architecture through the lens of sustainability in a school curriculum. That would enable every person to have the basic knowledge about the importance of the space we live in through their formal education in primary school. Strong awareness in this field and a distinction between good and bad practices are key to raising whole generations into good decision-making individuals.

14 IN THE LAND OF LAUFARIJA – ACTIVE HOLIDAYS

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ABSTRACT

The programme offers an immersive experience delving into the intriguing world of Laufarija and its carnival masks, unveiling captivating stories. Participants explore the culture, traditions, and the natural environment of Laufarija, with a focus on understanding human impacts on nature and addressing climate change. Experiential learning is the primary approach, engaging participants in hands-on tasks and activities to foster holistic skill development.

The programme ensures a blend of learning, enjoyment, and socialisation, incorporating sports, parties, and games. Emphasis is placed on climate goals and sustainable development, guiding participants on harmonious living with nature. The goal is to provide memorable experiences, fostering knowledge, skills, and a positive attitude towards Laufarija's nature, culture, and traditions while enjoying various activities.

KEYWORDS

Extracurricular, outdoor, primary school

COUNTRY

Slovenia

Introduction

The programme's emphasis on local sourcing, nature codes (carnival traditions in the Alpine region), and connections with the local community aligns with the principles of sustainable practices advocated in regions with delicate ecosystems. Promoting environmental responsibility and appreciation for local environments resonates with the ethos of preserving natural resources in Alpine regions.

A good practice in this experience is to integrate sustainability and environmental awareness into the programme design and delivery. This can be supported by the theory of experiential learning, which suggests that learners construct knowledge and meaning from direct experiences (Kolb, 1984). The programme used various activities to engage the participants in learning about the natural environment and their impact on it. For example, the meals were prepared with local ingredients to minimise the carbon impact, the Visiting Nature Code taught the participants how to behave responsibly in nature, and the activities covered different disciplines to provide a comprehensive learning experience. The programme also used feedback and conversations to tailor the programme to the participants' interests and needs, and to encourage them to reflect on their expectations and achievements. These

practices enhanced the quality and relevance of the programme and fostered a positive attitude towards sustainability and environmental awareness among the participants.

Methods and results

Target group description

The target group for this programme encompasses participants involved in experiential learning programmes, likely ranging from primary school age (nine to eleven years). These participants are at a formative stage, where holistic educational experiences can significantly shape their perspectives and behaviours.

Activity performance

The activity is performed as part of an extracurricular educational programme or active holidays rather than formal schoolwork. It involves a hands-on and immersive approach, promoting practical knowledge and skills outside the traditional classroom setting.

Educational approach and tools

The educational approach employed is experiential and participant-centric. Tools include outdoor activities, dialogue, feedback sessions, and the integration of various disciplines (science, social science, and art). Didactic aids may include local environments, materials for creating, and discussions.

Educational activities and transformation

The activities aim to transform participants by instilling values of sustainability, environmental responsibility, and active participation. The integration of cross-curricular elements and active participant roles fosters a holistic understanding, contributing to transformative learning experiences. The emphasis on locally sourced meals and the Visiting Nature Code further reinforces responsible behaviour and connects learners with their surroundings.

Documentation method

The good practices are documented through daily evaluations, feedback sessions, and the analysis of participant responses. This approach involves qualitative methods such as inquiry, conversations, and notes, allowing for a nuanced understanding of the learning process.

Positive outcomes identified

The practices align with the principles of ESD by imparting knowledge, skills, and values for a sustainable future. The participant-centric approach, feedback mechanisms, and active involvement contribute to transformative learning experiences. The integration of various disciplines and activities ensures a holistic educational experience, addressing cognitive, affective, and behavioural domains. Practices such as sustainable meals and environmental responsibility directly address climate change concerns. The practices resonate with the ethos of preserving natural resources and sustainable practices, aligning well with the delicate Alpine environment.

Discussion and conclusions

One of the challenges we face in our programme is how to collect meaningful feedback from the young age group we serve, as they may not be able to articulate their preferences and interests clearly. Another challenge is how to maintain effective communication and trust with the participants when we have different content providers delivering different sessions. To address these challenges, we propose two solutions: first, to train our educators to use creative and suitable techniques to elicit valuable feedback from the young participants, such as games, surveys, or stories. Second, to implement strategies to ensure communication consistency among our content providers, such as having a common introduction, a shared agenda, and a regular debriefing.

The programme can improve its outcomes by adopting a variety of educational methods that suit different learners and preferences. It can train its educators to collect useful feedback from the young participants and use it to make improvements. It can also increase the involvement of content providers throughout the programme to build stronger relationships and trust with the participants. The programme can also balance indoor and outdoor activities to link theoretical knowledge with real-world situations. The programme can design specific activities that foster trust between the programme providers and participants, creating a positive and safe learning environment.

The programme can advocate for the inclusion of sustainable development topics in formal education, ensuring a systematic and consistent focus on these important areas.

By addressing these challenges and implementing these solutions, the programme can increase its effectiveness, ensuring a positive and impactful learning experience for participants.

15 GREEN PENGUIN PROJECT

AUTHORS

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ABSTRACT

Our daily activities and our lifestyle contribute to a huge use of energy, which is in short supply. Today, more than 70% of CO_2 emissions are generated in cities. Our CO_2 emissions must be reduced by 55% by 2030, and we must become CO_2 neutral by 2050. The Green Penguin is a *didactic digital tool* that educates and encourages citizens and supports cities to become carbon neutral. Green Penguin is a digital tool that teaches children, students, parents, and cities how to reduce their emissions by using less energy and other resources. It uses smart digital technologies, gamification, and quantification to achieve environmental literacy and consequently *reduce CO_2 emissions*. With the project, we want to prove that, with sufficient knowledge and information, almost everyone can have an impact on the environment. This is precisely the reason we wish to introduce the Green Penguin to the *younger population*, as they will embrace a sustainable lifestyle from an early age and share their knowledge with their society and others who are not involved in our project. This will lower the amount of energy and resources consumed, which will lower expenses and emissions as well. Emissions reductions will contribute to environmental preservation.

KEYWORDS

Didactic digital tool, decarbonisation, environmental awareness, gamification, primary school

COUNTRY

Slovenia

Introduction

Using the Green Penguin platform, pupils will be able to gain new practical knowledge on how to reduce the impact of CO_2 in their daily lives. The Green Penguin platform displays the school's current CO_2 emissions and provides teachers and pupils with a catalogue of possible CO_2 reduction activities in a fun, interactive way. The collected data is combined with data on energy and resource consumption in schools. This gives an objective picture of the carbon footprint, which is converted into the number of preserved trees, saved penguins, and size of the icebergs that can be easily understand even for children.

The project is not limited to a single location as it can be implemented in different environments. It is currently being implemented in two countries, Norway and Slovenia. As it has an impact on climate change, it is also related to the Alps. By reducing CO_2, we can influence the biodiversity of the Alps and reduce air pollution and the number of melting glaciers.

The Green Penguin project is financially supported by Norway Grants and the Ministry of Cohesion and Regional Development of the Republic of Slovenia with a total amount of EUR 764,281.54. The

project partners are Iskraemeco, d.d. (lead partner), City of Kranj, City of Ljubljana, the Assocciation DOVES-FEE Slovenia, and FEE Norway, which implement the international Eco school programme.

Methods and results

In the Green Penguin project, seven pilot primary schools are included that are testing the app: Hinko Smrekar Primary School, Šmartno pod Šmarno goro Primary School, Jože Moškrič Primary School, Predoslje Primary School, Stane Žagar Primary School, France Prešeren Primary School, and Kristiansand International School. Through surveys, meetings, interviews, etc. the pilot schools are providing us with invaluable feedback and possible further improvements. This is crucial as the platform is meant for usage by primary schools, which is why it needs to be modified for them.

This educational and didactic tool is targeted at children between the ages of 10-15. It is designed for phones, tablets, and computers. Pupils can learn how to be more sustainable through simple tasks, solving quizzes, seeing demonstrations of the impact of everyday activities, sharing ideas and competitions with their peers. This is the way to achieve our main goal, which is to reduce our carbon footprint, encourage cities to become carbon neutral, and preserve our planet.

The Green Penguin idea has received several awards:

- Winner of the Climathon Ljubljana 2020 challenge.
- Named one of the top three transformative ideas of 2020 in the Global Climathon programme: out of 107 competing ideas, the project received the most votes from the public in the Global Climathon 2020 programme.
- The Green Penguin is one of the top three finalists in the Nordic Smart City Challenge 2021.
- Winner of the EEPA Award in Slovenia and Europe 2021.
- Regional Gold Innovation Award for Green Penguin 2022.
- Innovation Challenge Award for Green Penguin 2022.

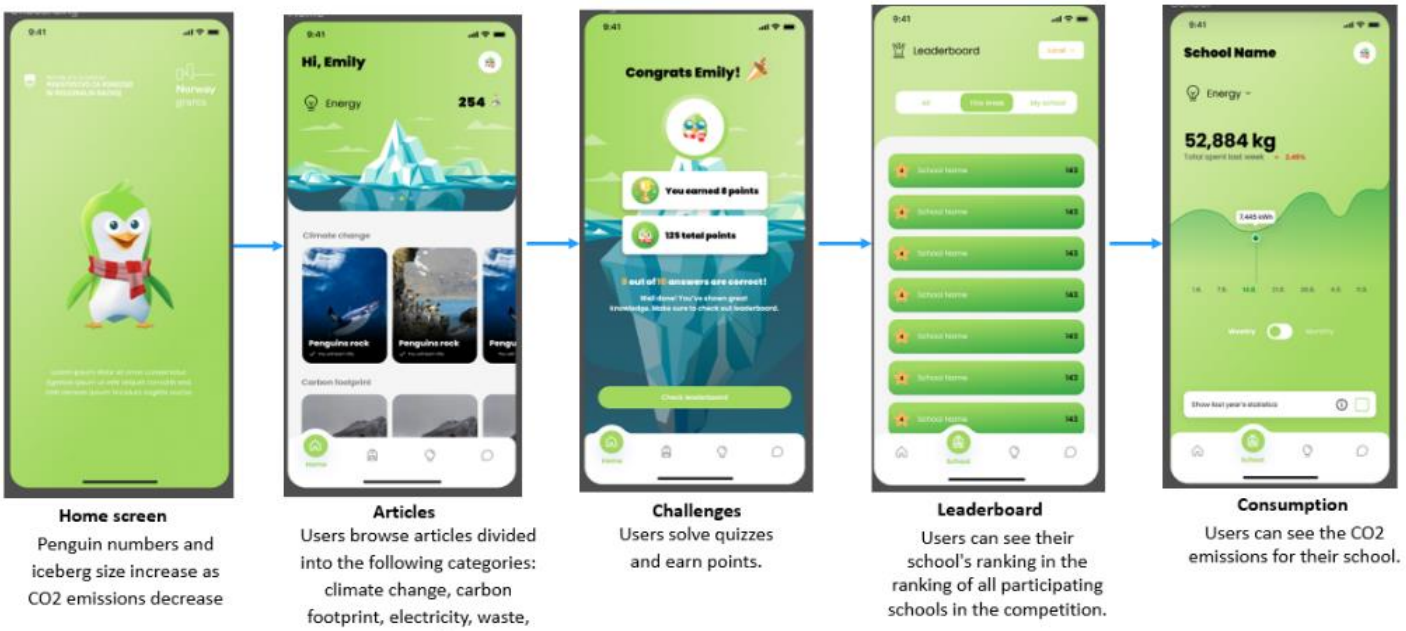
Discussion and conclusions

Although Project Green Penguin is working on topical issues of environmental governance, it faces several *difficulties*. Most often problems arise when calculating CO_2 for a specific activity. The fact that this area is not yet researched at national level has made it difficult to obtain accurate results of CO_2 emissions for certain activities. A possible solution could be a change in policy at local and national level in the direction of promoting more environmental projects.

Primarily, the Green Penguin platform is focused on schdools, but it can also be implemented for other public infrastructure. In the *future*, this way of motivating individuals to adopt sustainable lifestyles can also be implemented in other institutions and sectors. We would like to see the Green Penguin platform used in most schools, as it would be integrated into the school

curriculum or after-school activities. But to get to the possibility of changing the curriculum in schools, we need the support of the Ministry of Education. We hope that the Green Penguin platform will be valuable proof that by introducing just a small change in schools, it is possible to change the habits of pupils, who will have a huge impact on our planet in the future.

Tabs from the Green Penguin digital platform:



Home screen
Penguin numbers and iceberg size increase as CO2 emissions decrease

Articles
Users browse articles divided into the following categories: climate change, carbon footprint, electricity, waste, transport and water.

Challenges
Users solve quizzes and earn points.

Leaderboard
Users can see their school's ranking in the ranking of all participating schools in the competition.

Consumption
Users can see the CO2 emissions for their school.

16 EDUCATING THE YOUNG – BRINGING TOGETHER THE FUTURE LEADERS OF DEVELOPMENT AND MANAGEMENT *(Community of Schools of the Biosphere Reserve Julian Alps)*

AUTHOR

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ABSTRACT

The Community of Schools initiative, comprising 44 primary schools and the Triglav National Park, in the area of the UNESCO Man and the Biosphere reserve Julian Alps, emphasises environmental education, offering extracurricular programmes such as digital content, on-site activities, tools for local food production, exhibitions, and publications to learn about the environment in which they live, its outstanding qualities, and the threats posed by modern lifestyles. The aim is to nurture future leaders committed to sustainable management, fostering a sense of belonging and responsibility toward the protected area. The Community of Schools acts as a vital stakeholder, collaborating to address challenges like climate change, ensuring the preservation of natural and cultural heritage while shaping a more sustainable future.

KEYWORDS

Community of Schools, educational tools, primary school, protected areas

COUNTRY

Slovenia

Introduction

On 10 July 2003 the UNESCO office in Paris adopted a Decision to include the Julian Alps (JA), Triglav National Park (TNP), and part of the Karavanke mountains (Slovenia) into the international network of UNESCO Man and the Biosphere (MAB) reserves, managed by the TNP authority. The Julian Alps thus became part of a global network of model regions of sustainable development where education is key to achieve the long-term goals of MAB.

The area is characterised by outstanding biodiversity, natural attractions, landscape features, rich cultural heritage, research challenges, and depopulation issues. The management model – a single administrative authority to manage both the protected area and biosphere reserve – has several advantages, since it ensures that nature protection and sustainability measures are coordinated throughout the planning and execution process. A unified management model

with an emphasis on research and education was crucial for establishing the Community of Schools of the Biosphere Reserve Julian Alps (Community of Schools). It is an education model for raising responsible future leaders of development and sustainable management with a sense of belonging to the protected area and its surroundings. Educational activities are focused on providing nature experience since this is a precondition for understanding the complexity of interwoven factors and processes such as climate changes.

Environmental education of children and youths has been a constant focus of TNP since it was established. The designation of MAB Julian Alps enabled educational activities to be included in systematic educational programmes for primary school children, which were conducted on-site (in the natural environment), at schools, and at TNP's information centres in Bled, Bohinj, and Trenta. The Community of Schools was founded in 2018 and is the first association of primary schools and a protected area managing authority on such a large scale and in areas of such importance as MAB Julian Alps. The Community of Schools is made up of 44 primary schools and brings together over 7.000 pupils and their teachers.

The Community of Schools coordinator is the Triglav National Park authority. Its

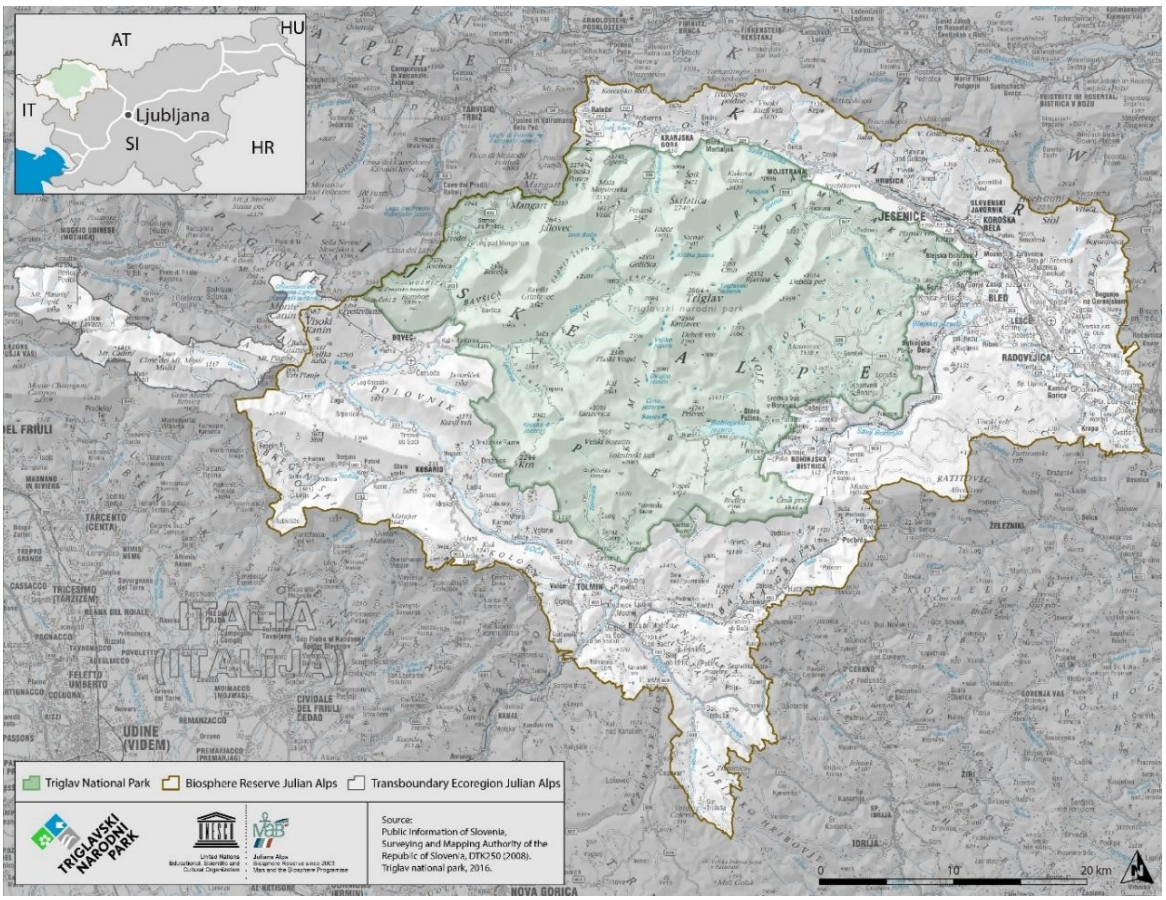

Figure 1: MAB Julian Alps. Surface area: 195.723 ha (11% of Slovenia's territory), population 83.517 (2019). Community of schools of MAB Julian Alps

long-term goal is to connect the managing authority with the young generation as the leaders of the future for the purpose of developing MAB Julian Alps. The priority objectives are to raise awareness in the community about the importance of MAB and the achievement of the goals of the UNESCO network of schools, which are to strive for openness and the promotion of cultural and linguistic coexistence, encourage environmentally friendly practices, discover and learn about biodiversity and the cultural landscape. The activities of the Community of Schools take place as an annual cooperation with schools based on an innovative and attractive approach:

Digital learning content: The Triglav Treasury (Triglavska zakladnica – www.triglavskazakladnica.si) is an online classroom that offers contents related to the TNP, MAB Julian Alps, fauna, flora, cultural heritage, sustainable development, etc. A special section is dedicated to learning content connected to climate change theory and practical guidelines. The contents are intended for teachers, pupils, and their parents (more than 50.000 visits in the first year of operation) and are available free of charge to Slovenia's entire primary school population.

On-site activities – camps and workshops: Nature science camps are held during the summer months presenting different topics related to biodiversity and climate change. Nature science camps are not only held for learning purposes; they are also intended for socialising and building the National Park and UNESCO MAB identity. Beside nature science camps, the TNP provides free workshops in classrooms for members of the Community of Schools. Each schools receives at least one nature science visit per school year.

Didactic tools: each member of the Community of Schools (44 members) received a raised bed with young plants and a sampling of a plum tree to encourage the production of locally grown food.

Figure 2 – Community of Schools of MAB Julian Alps – Nature Day in the Kranjska Gora region (Mojca Odar)

Figure 3 – Community of Schools of MAB Julian Alps – Nature Day in the Bohinj region (Mojca Odar)

Figure 4 – Community of Schools of MAB Julian Alps – Raised beds to encourage the production of locally grown food (Mojca Odar)

Mobile interactive exhibition: 'Together for the Alps' was made to help children understand that sustainable living in the Alps is about making choices that are harder in the short term but can help to mitigate climate change in the long term, i.e. taking a bus and not driving by car. The exhibition was also the basis for the board game 'Travelling the Alps'.

Publication: twice a year every pupil receives the newsletter of the Community of Schools. This allows the message to be spread among the pupils' parents and an extremely wide audience. The 2020 edition was dedicated to climate change with practical advice for children and families on how to make small changes in everyday life which will contribute to combat climate change.

Discussion and conclusions

With the threat of climate change occurring even faster in the Alps than elsewhere in Europe, raising awareness among pupils is of the utmost importance. For the MAB manager, the Community of Schools is a tool to ensure that future stakeholders in the area are made aware of the threats posed by unsustainable development and the destruction of the natural environment and cultural heritage. Through educational content aimed at finding concrete solutions to environmental problems, we empower teachers and raise awareness among pupils with the aim of making them ambassadors of good practices in climate change adaptation and mitigation. By uniting under the common goal of environmental stewardship, the Community of Schools becomes a potent force in shaping a more sustainable future.

Figure 5 – Newsletter of the Community of Schools (Mojca Odar)

Figure 6 – Triglav National Park – MAB Julian Alps (Archive TNP)

17 JOURNÉE DU DÉVELOPPEMENT DURABLE (SUSTAINABLE DEVELOPMENT DAY)

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ABSTRACT

The purpose of the 'Sustainable Development Day' was to provide pupils a full day to think about the overall climate change thematic and also about the field of actions they could take in different aspects of their lives. It lasted a whole day, and the pupils brought their own picnics.

The principal results of this good practice are some new skills and measures that the pupils can implement at school and at home with their parents. As a conclusion, we can say that the third edition of the day (out of four) was a success; it involved 200 pupils and their families and brought about concrete actions and changes in daily life to limit global warming.

KEYWORDS

Secondary school, sustainability, teenagers

COUNTRY

Switzerland

Introduction

The sustainability day was organised over several months by the teachers and the director of the Ecole secondaire de Malleray in order to sensitise and teach about sustainability. The overall objective was: "Being aware of the problem, master the basic notions (carbon cycle, CO_2, greenhouse effect, global warming, sustainability), think about possible actions".

It is a good practice in the sense that it enables pupils to dedicate a whole day to develop their ability to think about their own capacities to act upon this subject.

The activity took place in the Ecole secondaire de Malleray, which is situated in the perimeter of the Alpine space. The subjects were not directly related to the Alps, but inhabitants from Malleray have a more or less close relationship with the Alps, since they are not far away from them.

Methods and results

The project was designed for all pupils at this secondary school, aged 12-16. This activity, which lasts for one day, is a part of a long-term programme for 2023-2026 that aims to raise more awareness about climate change and environmental problems.

Several educational approaches and tools were used:

- Brainstorming by groups of teachers to create lists of activities that could be carried out during sustainable development day.
- Discussions in groups and with teachers about the thematic.
- Visualisation of several videos and one film.
- Use of the actual schoolbook from the 10th year to explain the carbon cycle.
- PowerPoint presentation to explain the carbon cycle.
- Distribution and explanation of a questionnaire designed for the pupils and their families to fill in until January 2024: 'Calculation of your family's ecological footprint'.
- Brainstorming at the end of the morning and presentation of several sustainability measures to use at school and at home.
- Group projects: thinking about those measures.
- Picnic by class: weighing of waste generated by an individual picnic (photo, poster, weight, and volume of waste; group analysis on a Chromebook) – recognise the quantity of waste produced by large-scale food distribution.
- Distribution of the prize to the class which obtained the lowest value of rubbish.

Results

All pupils participated. The day led to two concrete actions in June: exchanging of different objects and planting of seed balls. All families responded to the survey and all pupils made a personal commitment ('I will reduce…').

Discussion and conclusions

The day passed without difficulties. Educational videos made it possible to illustrate the concepts discussed, which facilitated the understanding of the various phenomena. The film 'Tomorrow' was a little too complicated and too long for young audiences and required numerous explanations from teachers. Organised exchanges turned out to be too complicated in the intended form; this will be modified next year. The time planned for the seed bomb activity was incorrectly estimated; next year we will integrate this activity into two challenges. It has been decided that we will continue the activity in 2024 with a new day (indoor extracurricular activity) and two new actions (clothing swap – indoor informal activity; and sustainable development course during the sports day – outdoor formal educational programme). A sustainable development charter for the whole school will be developed.

Watch the videos and the title of the film shown during this day:

- https://www.youtube.com/watch?v=1lhXbu_9qOM
- https://www.youtube.com/watch?v=n7UJAD8-9gM
- https://www.youtube.com/watch?v=OxLZ-LVJ02Y

- https://www.youtube.com/watch?v=UqqBlsAUwfk
- https://www.youtube.com/watch?v=evjGT35-4LU
- https://www.youtube.com/watch?v=VAPfpaTwp_A
- Film: *Tomorrow*, directed by Cyril Dion and Mélanie Laurent, 2015.

The Swiss school system

It is important to understand that the Swiss school system is not national but rather cantonal (from the cantons) and municipal. Indeed, in theory every Swiss canton has its own school programme. For this exercise, we looked at the French-speaking part of the canton of Bern. This part of the canton has the same school programme as the other French-speaking cantons. In the table below you can see the different themes and subjects per themes the pupils of these cantons learn during secondary school (12-16 years – last part of the obligatory school).

The previously described activity is from a 'municipal', or school-specific initiative, since each school is free to organise such activities on their own, in addition to the actual programme (table).

As a result, we could say that in theory there could be as many good practices as schools in Switzerland. As it is a relatively huge ambition to collect every event (good practice), we first focused only on this one, but if it would be useful, we would be happy to search for more.

Table: Themes and subjects per theme

What is a climate?	Difference between climate and weather. Types of climates from the world scale. Why are there many climates? Learning to read a climate diagram. The natural variability of a climate. How to collect climate data? (Core drilling).
Does humankind influence the greenhouse effect?	Introduction to the atmosphere. Explanation of the greenhouse effect and greenhouse gases. How does it work, what is it for, where does it come from? The carbon cycle. Links between the CO_2 concentration and the earth's temperature. IPCC. Climate debates (climate sceptic).
How to predict climate?	Weather and climate risks. Climate models. Heatwaves. The climate system. Ocean current circulation. Albedo.

	Climate scenarios. The precautionary principle.
Adapt or leave?	Solutions to adapt to ecosystems' modifications. Hazards and vulnerability. Cases study in Peru to understand the question adapt or leave? Peru is a country particularly vulnerable to the effects of climate change. El Nino.
Are there any benefits to global warming?	Opportunities due to climate change. Opening of new sea routes. Permafrost melting: consequences.
What destiny for hot regions?	Hot or intertropical zones. Cyclones, typhoons, hurricanes. Drought and desertification.
Will some island be wiped off the map?	Seashores and oceans are particularly vulnerable to climate change. Land will be submerged. Climate refugees. Coral reefs. Rising waters threaten the internet.
Will heatwaves and droughts become the norm?	Extreme weather hazards. Thunderstorms and lighting. The economic impact of extreme weather events
From global to local, what can we do?	Ecological footprint. Overshoot day. Mitigation measures. International and national actions. The Kyoto Protocol and the carbon exchange. IPCC Special Report 2018.