YOUrALPS
Collection und analysis of existing mountain-oriented education (MoE) practices and approaches
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Acknowledgement
The authors of the report would like to thank all participating young beneficiaries, educators, stakeholders, project partners and observers for contributing to our work and ensuring such a comprehensive and multifaceted report.
Global developments such as the depletion of natural resources, accelerating global warming or rapid demographic changes will pose challenges for mankind and require societal transformations. With their unique ecological, economic, and cultural value, mountain environments represent the complex interrelatedness and are essential to the survival of the global ecosystem. Especially young people in mountain regions and lowlands will not only be longer and more intensively confronted with these challenges but will also play a crucial role as future decision makers in business, politics and science. Among many other competencies and attributes, environmental awareness and nature-connectedness are key prerequisites to sustainable lifestyles in mountain regions. However, experts acknowledge a „nature deficit disorder“ (Louv 2009), affecting also the young generations in the Alps. A lack of a relationship to the environment entails a loss of Alpine identity and know-how with a distorted perception of the mountains. Among Alpine youth, this may lead to the dying out of Alpine identity and mountain-related experiential knowledge.

In this context, mountain-oriented education (MoE) plays a key role to instill in young generations the sensibility and knowledge of Alpine cultural and natural heritage and highlight opportunities for their future. There is a need to raise youth’s environmental awareness on what the Alps can offer them also in terms of sustainable social and economic opportunities. MoE is a challenge for the Alps and needs to be better integrated in the formal education.

A stronger coordination between formal and non-formal education represents therefore a big potential for the sustainable valorization of the Alps. YOURALPS takes up the challenge to increase the sensibility and value of the Alpine heritage especially among youth by better integrating related topics into the educational curricula and practices. Extensive research involving multiple stakeholders has been undertaken in order to orientate future endeavors at the diverse needs of all key actors in MoE. The status quo analysis report 2.0 at hand includes main results and conclusions of the variety of surveys as well as a comprehensive collection of MoE practices throughout the Alps.

Thereby, the report does not only provide relevant scientific insights from multiple perspectives, it also showcases how MoE is currently implemented throughout the Alps. Building on the current state of research in the field of education for sustainable development (ESD) and on empirical results in the course of extensive social science research, the authors attempted to distill success factors and recommendations for the implementation of MoE in the Alpine space and beyond.

„In this context, mountain-oriented education (MoE) plays a key role to instill in young generations the sensibility and knowledge of Alpine cultural and natural heritage and highlight opportunities for their future.”
Methodology and approach

„An open and flexible approach to learning that is both lifelong and life-wide is claimed to be crucial in a constantly changing world which is characterised by new levels of complexity and contradiction. If education alone cannot solve current and future challenges, it can at least contribute to a new development model in a humanistic and holistic sense that enables all people to realise their potential for a sustainable future and a life of dignity” (UNESCO 2015).
Formal and non-formal education have to work hand in hand in order to fulfill the requirements of lifelong and life-wide learning. But how can these necessary objectives be achieved under the predominant circumstances and by respecting the needs of all stakeholders (students, teachers, institutions, policy makers, etc.)?

How can young people’s concepts, educators’ teaching principles and stakeholders’ educational tasks be integrated in order to lay the foundation for the transformation of education and society towards sustainability in the Alps?

1. To approach possible solutions to these questions, a first step consists of screening what is already established and undertaken in the field of MoE in the entire Alpine space. In doing so, analysis and evaluation of collected best practice examples of MoE in the Alps help stakeholders from both formal and non-formal education to better shape their future MoE activities and learning settings for each specific target group (Chapter A).

2. The second part of this comparative analysis report consists of an empirical study of three actor groups relevant for MoE:
   1. Young beneficiaries from 10–30 who are the main target group of already existing and future activities (Chapter B)
   2. Involved practitioners in both formal and non-formal education sectors (Chapter B.2)
   3. Responsible persons of NGOs, legacy, protected areas, etc. that are main decision-makers in the field (Chapter C)

This mixed-methods research design ensures a holistic approach to the object of investigation. Strictly speaking, data triangulation (Flick 2008) as performed here aims at deepening and widening one’s understanding of this object (Olsen 2004).

The results of all taken actions (surveys, interviews, collection of best practice examples, literature review) can be regarded as input factors for the development of a so-called Alpine School Model (ASM) in which all activities and measures of MoE are being bundled, theoretically underpinned and promoted for its future implementation in and extension to various learning settings throughout the Alps.
Chapter A:

Collection of best-practice examples of MOE

MAP OF BEST-PRACTICE EXAMPLES

01 Destination refuges
02 Understanding climate change: pedagogy in high mountain areas
03 En passant par la montagne
04 A shepherd in my school
05 Access to the mountains for people with handicaps
06 Monitoring water quality parameters of the Lake Garda
07 Refurbishment of an alpine refuge in Val Solano
08 ARCTOS
09 ALPS MEMORY
10 UNIMONT - Mountain University of Edolo
11 BIOBLITZ LOMBARDIA
12 Biotechnical Centre Naklo
13 Centre for School and Outdoor Education
14 Network of Forest Kindergartens and Schools of Slovenia
15 Nature Experience Centre Allgäu
16 Education Centre "House of the Mountains"
17 Berchtesgaden National Park children and youth groups
18 k.i.d.Z21 Austria: competent into the future
19 Agricultural Education Centre ABZ Saldamerget
20 Qualification – networking – advancement of Nature Park Schools
21 Nature Park Primary and Secondary School in Rechnitz
22 "risk’n’fun"
23 Youth at the Top
Best-practice examples

Comparative analysis report N 1

The Specifics of the best practice examples

France

No. 1: “Destination refuges”
Every year USEP 05 (Sportive Union of Primary Schools) organises the program “Destination refuges”, allowing 1,000 pupils a first experience of the mountains, spending 2 days (1 night) in a mountain hut.

No. 2: “Comprendre le changement climatique: pédagogie en altitude / Understanding climate change: pedagogy in high mountain areas!”
The National Park Entrèves and Lycée Aristide Briand à Gap together put up a scientific project to document climate change in high altitudes.

No. 3: “En passant par la montagne”
The project is targeted at young people and adults in difficult situations, like social exclusion, school failure, illness or disability and aims to encourage them to overcome their situation through stays in the mountains.

No. 4: “Un berger dans mon école / A shepherd in my school”
School children are to be acquaint-
ed with the world of alpine pastures through visits of shepherds in (primary) schools and – in return – visits of the pupils on alpine pastures.

No. 5: “Réseau Empreintes / Access to the mountains for people with handicaps”
Réseau Empreintes is an environmental education network focusing on the establishment of access to the mountains for people with handicaps. The network offers logistical and pedagogical support to people with disabilities who would like to stay in the mountains.

No. 6: “Monitoring water quality parameters of the Lake Garda”
Students of E. Fermi High School in the province of Brescia analyse water quality of Garda Lake every year.

No. 7: “Refugio Val Salarno / Refurbishment of an alpine refuge in Val Salarno”
The project provides high school students with the relevant competen-
cies to plan the rebuilding of an alpine refuge considering environmental char-
acteristics of the territory and technical specifications of the structure in Adamello Regional Park.

No. 8: “ARCTOS”
ARCTOS is a LIFE project in the alpine area of the provinces Sondrio, Lecco and Bergamo. Its aim is to preserve the Brown Bear from extinction and to demonstrate its importance by means of specific activities tailored to local people, students and children as well as the staff of mountain parks.

No. 9: “ALPS MEMORY”
The project of Secondary School Damiani in Morbegno, Sondrio aims to develop territorial sensitivity towards the enhancement and protection of the cultural and environmental heritage and promotes knowledge and respect of environmental values in the Alpine region.

No. 10: “UNIMONT - Mountain University of Edolo”
The Mountain University of Edolo is an innovative training and research centre specialised in the academic study and analysis of issues regarding mountain areas.

No. 11: “BIODIVERSITY LOMBARDIA”
In a two-day activity citizens and stu-
dents collect and report data about the presence of animal and plant species in the network of Lombardy Region’s Protected Areas. People are accompanied by experts who help detecting and recogn-
ising the most interesting species. Animals and plants are photographed and data entered in a web platform.

No. 12: “Réseau Empreintes”
The network provides logistic and pedagogical support to people with disabilities who would like to stay in the mountains.

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ising the most interesting species. Animals and plants are photographed and data entered in a web platform.

No. 12: “Biotechnical Centre Naklo”
The educational programs combine nature preservation, organic agriculture and food processing with technical as-
pects. The students learn to recognise the business opportunities offered by the local environment.

No. 13: “Centre for School and Outdoor Education”
The 23 facilities of the Centre for School and Outdoor Education offer curricula-compatible educational pro-
grams. They include accommodation, meals, equipment and are carried out by qualified teachers.

No. 14: “Network of Forest Kindergartens and Schools of Slovenia”
The main purpose of this network is to encourage schools and kindergartens to maximise the use of the local natural environment for educational purposes.

The project contributes signiﬁcantly to the exchange of knowledge, good prac-
tice examples and the development of pedagogical approaches.

No. 17 of the initiatives explicitly aim to integrate formal (e.g. schools) and non-formal education
Germany

No. 15: Nature Experience Centre Allgäu
The Nature Experience Centre Allgäu is building up networks between environmental-educational actors and people responsible for tourism in order to strengthen nature tourism. It offers environmental education in the entire area of Allgäu. With only 1.5 permanent jobs and the support of voluntary workers about 700 environmental-education offers can be generated every year.

No. 16: Education Centre "House of the Mountains", Berchtesgaden
The triad of exhibition, education centre and outdoor area is unique. The four main living spaces water, forest, alps/meadows as well as rock in all seasons are the focus of the exhibition "Vertical Wilderness".

Motto: "Inspire not instruct"

No. 17: Berchtesgaden National Park children and youth groups
The USP here is: Long-term thinking! Some children spend more than 10 years in these groups – over these years, a solid relationship to the National Park can be established and a sustainable education can take place.

Austria

No. 18: k.i.d.Z.21 – Austria: competent into the future
Topic: Discovering and experiencing climate change from different perspectives. Educational potential: learning-on-site, learning to understand climate change in the alpine mountains. Cooperation between science and society is strengthened. The integration into everyday school life is a central part of the concept.

No. 19: Agrarian Education Centre ABZ Salzkammergut
Close cooperation within the frame of the Austrian ‘Nature Park Schools’ offered at a vocational school focusing on agriculture together with a Nature Park (at the moment Austria’s only secondary level Nature Park School).

No. 20: Qualification – Networking – Advancement of Nature Park Schools in Burgenland
On this platform school authorities, the college for education (school for teachers), Nature Parks, Nature Park Schools and the communities, work together in qualification, networking and advancements of the Burgenland Nature Parks. This constellation is unique in Austria.

No. 21: Nature-Park Primary and Secondary School in Rechnitz
- The concept of the school and the educational objectives are especially matched with the characteristics of the Nature Park.
- The principals are members of the Nature Park executive committee.
- The students can also participate in voluntary care-services outside of school hours in the Nature Park as "junior rangers".

No. 22: "risk’n’fun"
Trainings for free riders and climbers intended to transfer alpine-technical knowhow and –equally important – the basics for individual strategies of risk optimisation. "risk’n’fun" is organised by the Austrian Alpine Club Youth.

8 examples address explicitly high school students, most projects to various age groups.
They differ in their organizational framework: the providers are protected areas or organizations specialised in mountain orientated education or environmental education.

Alps as a whole region

No. 23: "Youth at the Top"

"Youth at the Top" is an international project, a form of collective action simultaneously organised in six alpine countries (Austria, France, Germany, Italy, Slovenia and Switzerland). "Youth at the Top" aims to create links between the different countries and symbolically go beyond administrative and language barriers by considering the Alps as an entity.
LEARNING BY DOING

"Learning with the head, heart and hands" [H. Pestalozzi]
Chapter B: Survey among young beneficiaries

Data collection & sample
The survey started April 2017 and lasted until the end of October 2017. Invalid cases were deleted and obtained data checked with regard to irregularities and degree of completeness of open-ended items. From the overall 609 completed questionnaires, 567 can be regarded as valid because they meet the predefined minimum criteria (age 10-30; residency of one of the territorial Alpine states which are at the same time member of the EU).

Descriptive analysis
299 female and 258 male respondents make up the sample, while ten neither checked on of the options. For further analysis purposes the 569 cases were classified into four age groups (10-14, 15-19, 20-24 and 25-30). Students from Slovenia and France make up more than 2/3 of the sample (table 1). Due to the heterogeneity of school systems in the Alpine countries and designation of their own school by those surveyed, sound distinction between types of school can only be made in terms of lower or higher secondary level. The group with the label Higher secondary/Vocational/Technical high school is an aggregation of all students who attend either a grammar school with a specialisation on nature sciences or a form of vocational school that combines general education and professional training. 36 persons are not attending any course of formal education currently and are, thusly, employed, self-employed or unemployed. With a total of 450 young people from 10-19, one of the two main target groups (6-9 and 10-19) of planned activities in the field of MoE is well represented in the sample. Consequently, the sample allows for valid statements about the age groups 10-14, 14-19 and 20-24 and tendencies about the age group 25-30. Due to high response rates, valid statements can be made about Slovenia and France, tendencies about the other participating countries as well as for the sub-set which is currently not in educational training (n=36, table 2).

University and college students make up another 101 students and therefore allow for group comparisons between pupils and students. Another sub-set which enables cross-comparison between different groups are people who indicate being apprentices (n=73).

Survey – Quality of Life

TABLE 1

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>N=567</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>299</td>
<td>52,7</td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>258</td>
<td>45,5</td>
<td></td>
</tr>
<tr>
<td>n.a.</td>
<td>10</td>
<td>1,8</td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-14</td>
<td>137</td>
<td>24,2</td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>313</td>
<td>55,2</td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td>92</td>
<td>16,2</td>
<td></td>
</tr>
<tr>
<td>25-30</td>
<td>25</td>
<td>4,4</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>42</td>
<td>7,4</td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>50</td>
<td>8,8</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>31</td>
<td>5,5</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>195</td>
<td>34,4</td>
<td></td>
</tr>
<tr>
<td>Slovenia</td>
<td>229</td>
<td>40,4</td>
<td></td>
</tr>
</tbody>
</table>

Socio-demographic properties of respondents (source: own research).

TABLE 2

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>N=567</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower secondary school</td>
<td>105</td>
<td>18,7</td>
<td></td>
</tr>
<tr>
<td>Higher secondary school</td>
<td>324</td>
<td>57,1</td>
<td></td>
</tr>
<tr>
<td>University/College</td>
<td>101</td>
<td>17,8</td>
<td></td>
</tr>
<tr>
<td>Comp. not in ed. training</td>
<td>36</td>
<td>6,3</td>
<td></td>
</tr>
<tr>
<td>Highest level of education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Still in education</td>
<td>373</td>
<td>65,8</td>
<td></td>
</tr>
<tr>
<td>Finished w/o qualification</td>
<td>3</td>
<td>0,5</td>
<td></td>
</tr>
<tr>
<td>Comp. school leaving certificate</td>
<td>33</td>
<td>5,8</td>
<td></td>
</tr>
<tr>
<td>High school degree</td>
<td>50</td>
<td>8,8</td>
<td></td>
</tr>
<tr>
<td>University/College</td>
<td>69</td>
<td>12,2</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>39</td>
<td>6,9</td>
<td></td>
</tr>
</tbody>
</table>

Showcase of attended type of school and highest completed level of education among respondents (own results).
Intergenerational justice as well as future orientation are key principles in education for sustainable development. Hence we want to examine young people’s orientation towards the future, implying optimism and potential deviation depending on the dimension they are asked for. Unsurprisingly, they generally regard their own future brighter than they do the one of the earth. Regarding the latter, the mode can be found in the class signified as rather negative, whereas it lies in the highest class (“positive”) in terms of their own personal future. Regarding the Alpine space, the vast majority of those surveyed envisions its future as positive or rather positive. This overall positive connotation with the Alpine space is though highly contrasted by general findings that the warming in the greater Alpine region will be twice as large as the global trend (Brunetti et al. 2009) with its undoubted increasing consequences for both bio- and anthrophosphere (BMU 2007).

For interpretation of these findings, it is important to take into account the different concepts of young generation concerning the Alpine space. Only then sound conclusions can be drawn from these results. Results show a close match between young people’s concepts of a protected area and the Alpine space in almost all queried domains except from one: Clearly more people consider a protected area such as national or nature parks as a place where learning takes place. One can conclude that the expression ‘Alpine’ in the term Alpine space might directly refer to the mountains as a perceived wild and remote territory and less to mountain regions which also includes the inhabited valley floors, Alpine foreland and settlements. The above mentioned outcomes concerning the prospects of the Alpine space together with these possible explanations hold substantial significance for implementation for the planned activities and measures during testing phase of pilot sites:

\[ \text{a) To stress the human-nature-interaction. This makes the Alpine space a perfect test tube because wide areas with a visible human impact are in vicinity of rather pristine zones.} \]

\[ \text{b) To tackle the rather idealised concept of the Alpine space as a safe haven in comparison to the doomed planet earth. This implies that the effects of global change will be less noticeable in the Alpine space according to the students’ comprehension.} \]

Differing results by country of residence

First results show a statistically highly significant relation (p<0.01) between country of residence and future prospects of the earth as well as regarding the Alpine space. While respondents from Slovenia envision the future of the earth (\( \overline{x} = 2.75, \sigma = 0.851 \)) as well as the one of the Alpine space (\( \overline{x} = 3.40, \sigma = 0.697 \)) predominantly positive, the vast majority of young people from the other Alpine countries reports a more negative outlook for the planet and the Alps (e.g. France: \( \overline{x} = 2.03 \) or rather 3.00; \( \sigma = 0.796 \) or rather 0.831). For these findings, several explanations seem plausible: either the information policy in the “old” EU Alpine states (excluding Slovenia) is very biased towards a rather pessimistic prospect of the earth which might stem from not solely environment-related information provided by mainstream media, but also from the general content of teaching in compulsory schooling; or the general atmosphere in the relative young state of Slovenia is rather positive and so is the future outlook. In accordance with findings from other studies that reveal the importance of positive framing of climate change related topics and dismiss so-called ‘alarmism’ (Riede et al. 2016), educational activities in the sense of MoE always ought to be solution-ori-
Male respondents agree to a higher extend to the statement that future challenges of society can be met mainly with technical progress.

Respondents from France and Germany have the tendency to rather consider with the proposition that future challenges of society can be met with active involvement (x: 3.56, s: 0.637) or rather x: 3.66, s:0.530 in comparison to survey participants from Slovenia (x: 3.28, s:0.890).

Finally, statistically highly significant (p<0.01) or significant (p=0.05) results could be also detected regarding the tendencies of respondents with different residency concerning the following attributes:

- Regarding the queried item 'I don’t feel comfortable in nature at all', German respondents rather tend to agree (x: 2.95, s:0.852), while at the same time German respondents are less conclusive (x: 2.51, s:0.731). Considering the statement according to which more knowledge is required to meet future challenges as a society, to which Slovenian (x: 2.95, s:0.858) and Austrian (x: 2.86, s:0.955) students have the tendency for lower approval compared to students in the residual Alpine states.

- Women from France have a relative higher tendency in agreeing to the statement that ‘Human beings are part of nature’.

Differing results by age group

Because of lower numbers of respondents in the sample belonging to the age group 25-30, the following analyses refer to group comparison of students aged 10-14, 15-19 and 20-23. Regarding the future prospects of both the earth and the Alpine space, the cohort of 15-19 exhibit the lowest mean values (x: 2.21, s:0.867 or rather x: 3.05, s:0.0697) compared to the respondents aged 10-14 and those 20-23, respectively. The central tendency towards a more positive outlook on the Alpine space, however, is depicted in all cohorts included in this research. This finding is consistent with cross-border comparisons that NGOs have the obligation to stand up for environmental protection.

Female students rather agree that NGOs have the obligation to stand up for environmental protection.

Expectation of stay

in protected area n=567

<table>
<thead>
<tr>
<th>Percentage Distribution</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoy untouched nature</td>
<td>433</td>
</tr>
<tr>
<td>Gain knowledge</td>
<td>224</td>
</tr>
<tr>
<td>Try out new techniques</td>
<td>190</td>
</tr>
<tr>
<td>Make contact with locals</td>
<td>76</td>
</tr>
<tr>
<td>Watch wild animals</td>
<td>305</td>
</tr>
<tr>
<td>Spend time with family/ friends</td>
<td>159</td>
</tr>
<tr>
<td>Work out</td>
<td>136</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
</tr>
</tbody>
</table>

Survey Comparative analysis report N 1

Male respondents agree to a higher extend to the statement that future challenges of society can be met mainly with technical progress.

Respondents from France and Germany have the tendency to rather consider with the proposition that future challenges of society can be met with active involvement (x: 3.56, s: 0.637) or rather x: 3.66, s:0.530 in comparison to survey participants from Slovenia (x: 3.28, s:0.890).

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Comparative analysis report N 1

In that respect, the interme-
tion of special human behaviour as a need is portrayed in too negative a way and help is literally at hand.

As against the younger the respond-
ents are, the less they disagree with 
the statement that…

- I’m not interested in nature at all
- I don’t feel comfortable in nature at all
- Nature is something unknown for me

Therefore, it can be concluded that 
odler students value to a higher extent 
the natural landscape which is in the 
field of mountain-oriented education 
put on a level with the natural her-
itage of the Alps. When criticising a 
potential lack of connectedness with 
nature, especially among youth, one 
should not forget that i) interests can 
change again with time and that ill 
young people often equate ‘pristine’ 
nature with boredom and absences of 
opportunities (e.g. transport, entertain-
ment facilities etc.), which are, among 
others, vitally important at a certain 
life stage. Although a certain level of 
sensitisation is crucial for behav-
iour change regarding consumer and 
transport behaviour among youth, 
there is potentially a real risk that a 
wrong dose of inherently “right” topics 
and interventions could be eventually 
counterproductive when, for instance, 
special human behaviour as a need 
is portrayed in too negative a way and 
help is literally at hand.

Differing results by gender

Interesting gender differences con-
cerning several enquired parameters 
can be reported, although most of 
them only confirm already well-known 
gender-specific characteristics towards 
human’s duty. The assertion that humans have the right 
to transform nature to their benefit (r = 3,39, s: 0,793) 
and that future grand challenges cannot be 
met mainly with technical progress (r = 3,58, s: 0,726). Besides that, they show a lower 
level of disagreement with the 
assertion that humans have the right 
to transform nature to their benefit (r = 3,13 s: 0,726). On the other hand, female 
respondents show a higher degree of 
consent of feeling personally respon-
sible for preserving nature (r = 3,58, s: 0,668) can be reported, but at the same 
time female students think that a 
single person can only contribute to a 
small extent environment protection (r = 3,35, s: 0,922). In this respect, it 
doesn’t seem astonishing that female 
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Expectation and carried out 
activities in protected areas

The next question is then what young 
people expect when they are about to 
visit a protected area. Therefore, a set 
of possible expectations was provided 
as multiple selection with the option 
to add any missing item. The two most 
often checked options among the 
respondents are, as expected, to enjoy 
untouched nature as well as to watch 
wild animals. Less often but neverthe-
less considerable is the frequency of 
mention of both to gain knowledge 
and to spend time with family/friends. 
The underrepresented options are more 
related to activities in nature parks 
which involve getting in touch with the 
local population as well as trying out 
new techniques or practices that are 
part of the cultural heritage of a certain 
area. Despite the apparent lower impor-
tance among the consulted students, 
these activities in direct contact with 
the local community and their crafts-
manship can be regarded as added. 
Value of merging formal and non-formal 
education compared with conventional 
in-class teaching in many schools.

What did the visitors eventually do 
when they have been to a protected 
area last? Of the 567 students aged 
10-30, the ones who haven’t been to 
a protected area within the last 12 
months are subtracted which reduces 
the sample in this regard to 567 cases. 
Among these, most respondents hiked 
on a nature trail or took a guided tour.

Survey

Source of 
knowledge 
about 
nature

N=567

<table>
<thead>
<tr>
<th>Source of knowledge</th>
<th>Number</th>
</tr>
</thead>
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<tr>
<td>Parents</td>
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<tr>
<td>Experts</td>
<td>345</td>
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<td>Friends</td>
<td>256</td>
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<tr>
<td>Kindergarten</td>
<td>143</td>
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<tr>
<td>School</td>
<td>286</td>
</tr>
<tr>
<td>Other</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 1: Source of knowledge about nature

But which implications for didactical 
and pedagogical measures do arise 
from these findings? In formal educa-
tion, topics are regularly covered start-
ing from a certain point of view which is 
determined by a subject’s specific 
epistemic interest. When one assumes 
that future grand challenges cannot be 
limited to single spheres, thinking and 
teaching in school should address 
consequently no suitable approach 
for finding neither the right questions 
nor the potential answers to the most 
urgent problems of our era.

In line with these findings are detected 
differences concerning the item ‘Nature 
protection as every human’s duty’. The 
age group of secondary school I (10-14) 
agrees to a lesser extent to this claim 
(r = 3,35, s:0,863) in comparison with 
the other examined age groups (15-19: 
r = 3,60, s:0,659; 20-24: r = 3,73, s:0,576).

With regard to the consent to the 
assertion that human beings are part of 
nature, less conclusive bias can be 
reported in relation to the age of those 
queried. In that respect, the interme-
tion of special human behaviour as a need is portrayed in too negative a way and help is literally at hand.

As against the younger the respond-
ents are, the less they disagree with 
the statement that…

- Nature is an essential ingredient of 
  life
- Being in nature makes me happy
- I feel a close connection to the natu-
  ral landscape in my region
- I’m trying to spend as much time as 
  possible in nature
- I have a preference for unpolluted 
  nature

Therefore, it can be concluded that 
odler students value to a higher extent 
the natural landscape which is in the 
field of mountain-oriented education 
put on a level with the natural her-
itage of the Alps. When criticising a 
potential lack of connectedness with 
nature, especially among youth, one 
should not forget that i) interests can 
change again with time and that ill 
young people often equate ‘pristine’ 
nature with boredom and absences of 
opportunities (e.g. transport, entertain-
ment facilities etc.), which are, among 
others, vitally important at a certain 
life stage. Although a certain level of 
sensitisation is crucial for behav-
iour change regarding consumer and 
transport behaviour among youth, 
there is potentially a real risk that a 
wrong dose of inherently “right” topics 
and interventions could be eventually 
counterproductive when, for instance, 
special human behaviour as a need 
is portrayed in too negative a way and 
help is literally at hand.

Differing results by gender

Interesting gender differences con-
cerning several enquired parameters 
can be reported, although most of 
them only confirm already well-known 
gender-specific characteristics towards 
human’s duty. The assertion that humans have the right 
to transform nature to their benefit (r = 3,39, s: 0,793) 
and that future grand challenges cannot be 
met mainly with technical progress (r = 3,58, s: 0,726). Besides that, they show a lower 
level of disagreement with the 
assertion that humans have the right 
to transform nature to their benefit (r = 3,13 s: 0,726). On the other hand, female 
respondents show a higher degree of 
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Among these, most respondents hiked 
on a nature trail or took a guided tour.
Those activities can be regarded as the classic forms of non-formal environmental education interventions in the context of protected areas. The high number of persons who checked the final option indicated that they have either done any kind of work-out (e.g. hiking), have been working or have been living there at the time when the survey was completed. All of the mentioned activities though are either teacher (or guide)-centered, whereas pupil-centered hands-on activities and methods such as explorative or research-oriented learning still seem to be underrepresented among (educational) activities offered and thus performed in protected areas. Moreover, the mismatch between appreciation of nature on the one hand and real action on the other hand as already mentioned above can be regarded as an important indicator for hands-on experience when planning outdoor activities or formats which focus the integration of formal and non-formal environmental education activities.

**Stays and activities in protected area (PA)**

More than 90% of the respondents from 10-30 have been at least once to a protected area during the last 12 months. Within those who visited, a relative majority (32%) indicates only one or two stays in e.g. a nature park. Surprisingly, almost 30% (= 367 personal) in total say that they have been to a conservation area 3-10 times, the same number has been there even more frequently. Among the latter (~2% (=77 personal) are permanent residents or working in a protected area and are therefore regularly in protected areas.

When planning educational measures and activities in the running school year, interviews with involved educators in the field of non-formal mountain-oriented education reveal the importance of more frequent visits or multi-day stays in protected areas as single interventions probably won’t have the desirable effects on youth's awareness and action towards a more sustainable lifestyle. These assumptions are underpinned by other findings related with the frequency of stays in a protected area. The more often young people have been to protected areas during the last 12 months, the more they feel personally responsible to act in an environmental friendly way (3x in a PA: $3.95 \pm 0.680$, never in a PA: $3.20 \pm 0.790$) and show higher self-belief regarding their contribution to environment protection ($> 10x$ in PA: $3.93, \alpha = 0.016$; $1-2x$ in PA: $3.29 \pm 0.751$). Consequently, frequent visitors or residents think that future challenges of society can be met mainly with active involvement of each individual (PA: $3.46, \alpha = 0.831$). They even say that they want to spend as much time as possible in nature (PA: $3.95, \alpha = 0.718$).

For interpretation purposes and subsequent conclusions for didactical implementation of these results, it is crucial to bear in mind that in various approaches in environmental psychology, the sense of self-efficacy is seen as a fundamental driver for action taking. When aspects of environmental conservation are addressed to young people, these findings underline the importance of delimited and feasible projects for students that neither surpass their capabilities nor remain a theoretical construct.

On the contrary, but not surprisingly, the less often people have been to protected areas lastly, the less interest they show in nature in general ($1.79, \alpha = 0.016$), the more uncomfortable they feel in nature ($1.59, \alpha = 1.190$), and, the less they disagree with the statement nature is something unknown to me ($1.60, \alpha = 0.817$).

Sources of knowledge about nature

For pedagogical concerns in connection with non-formal education, it is important to find out what youth think which are their main sources of knowledge about nature.

It is very interesting that more young people select the option from my own observations rather than from my parents or from school when it comes to sources of knowledge about nature. Experts and peer groups (friends) as sources of nature-related knowledge are selected by 53.1% or 25.2% of the respondents, respectively. Although informal learning in families or peer groups cannot be treated as single interventions probably won’t have the desirable effects on youth’s awareness and action towards a more sustainable lifestyle, these results hold though substantial implications for the design of learning settings related with formal-non-formal education partnerships as are pilot sites in our project. Moreover, intended MoL-related educational measures should be guided by principles of educational methods and concepts such as inquiry-based or explorative learning, assisted by a facilitator who does not automatically need to have an education background. “Inquiry-based learning includes problem-based learning, and is generally used in small scale investigations and projects [... ]” (University of Manchester 2017).

In line with the findings presented above, it can be concluded that the majority of key competencies that educators think will prepare students for future grand challenges are more effectively developed due to educationally concept which centre students life-world and pre-conceptions compared to traditional pedagogical approaches (see Stötter et al. 2016).
Conclusions and recommendations for implementation

CHAPTER A: GOOD-PRACTICE EXAMPLES

- Extensive collection of good-practice examples of mountain oriented education collected in this paper covers the whole Alps. In total you can find 23 examples: 5 from France, 6 from Italy, 3 from Slovenia, 3 from Germany, 5 from Austria and 1 which addresses the Alps as an entire region.

- Diverse approaches to the subject: The examples show a wide variety of different approaches to the subject.

- Diverse organisational frameworks: The providers are protected areas or organisations specialized in mountain oriented education or environmental education. They cooperate with one specific school (17 examples) or provide a wider range of schools or specific target groups with their offers.

- Diverse age groups are addressed: 5 examples address explicitly to high school students, most projects to various age groups.

- Integration of formal and informal education: 65% explicitly aim to integrate formal (e.g. schools) and non-formal education.

- Variety of stakeholders involved: Also 2/5 integrate more than one external stakeholder: e.g. tourist organisations, protected areas or other organisations.

- Integration of cultural and natural heritage: 17 of the initiatives aim to integrate the natural and cultural heritage of their region.

- Diverse target groups: 57% focus on one target group: e.g. pupils, 43% offer education for diverse target groups.

- High action-orientation: Most of them – 80% - are action-oriented.

- Only little self-determination: Most of the educational programs cannot be adopted by the participants. Approximately one third offer self-determination i.e. content, methods, and process to the participants.

CHAPTER B.1: YOUNG BENEFICIARIES

- Age structure: The sample allows for valid statements about the age group 13-18 years, tendencies about the age group 19-25 years and no valid statements about young people from 26-30 years.

- Participating countries: Valid statements about Slovenia, tendencies about Austria and Italy. In France and Germany, the sample sizes are far too low to allow for any conclusions.

- Current occupation: By far most young beneficiaries are students at high schools or vocational schools.

- Lack of contact to natural sphere: We cannot report such a deficit regarding the awareness of problems accompanying global change, at least among the majority of the respondents included in this count. The older the students, they were more connected to nature.

- Sources of knowledge about nature: Personal observations are the most important source of knowledge about nature: “Enjoying untouched nature”, “seeing wild animals” as well as “gaining knowledge” and “spending time with family/friends” are the most common activities in protected areas.

- Activities in protected areas: “Walking on nature trails” and “taking guided tours” are the most popular activities in protected areas.

- Ascription of responsibility: Responsibility for nature conservation is predominantly ascribed to businesses, NGOs and politicians – not so much to scientists.

- Tackling present & future challenges: Acquiring more knowledge and getting actively involved are regarded more important to tackle present & future challenges than technical (adaptation) solutions or the return to traditional values, techniques and practices.

- Environmental responsibility: While humans are seen as part of nature by most young people (80%), they are not seen as having the right to make use of nature. Nature conservation is commonly regarded as human obligation and in many cases seen as personal responsibility.
Bibliography


University of Manchester: What is Enquiry-Based Learning (EBL)? Online resource: http://www.ceebl.manchester.ac.uk/ebl/; last check on 07-07-2017.

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