

## RWL Case-Study

**Country:** Czech Republic

**Name of the program :**

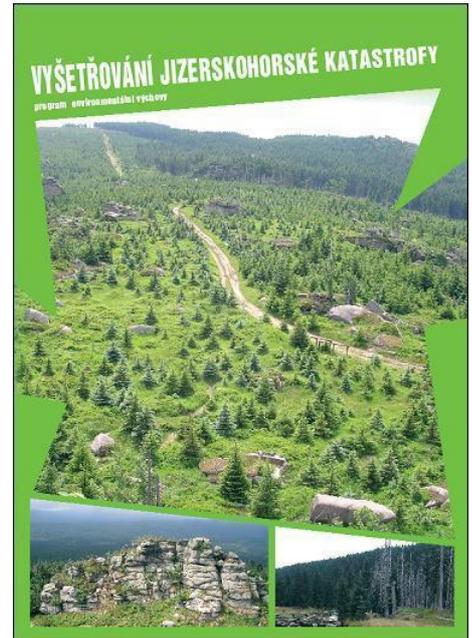
Investigation of disaster in Jizera Mountains (Vyšetřování Jizerskohorské katastrofy)

**Age of the children involved:**

Two versions – I. from 9 to 12 years old and II. from 12 to 15 years old.

**Teaser/Short Introduction**

3-day (or 5day) long program, in which students learn about issues of forest management - by way of "investigating a criminal case" in the form of ecological disaster in the forests in the Jizera Mountains in the last third of the 20th century. The program aims to develop pupils' attitudes towards nature, and leads to an understanding of the function of forest ecosystems.



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**What is the frame?**

Learning from the past helps us to shape our positive future.

**What are the goals of the program:**

The overarching goal is to shape pupil's attitude to nature in Jizera Mountains and lead them to an understanding of the causes of the current state of the local forests.

Using the example of environmental disaster in the forests of the Jizera Mountains in the last third of the 20th century, pupils can understand some basic ecosystem relationships and interactions between nature and humans.

The specific goal is that pupils, on the basis of information and experiences, will collectively come up with measures to prevent such a disaster in the future.

**What values are promoted in the programme?**

According to the hand model: respect for nature and care for the state of our planet, respect for future generations

According to PIRC: Protecting the Environment, Unity With Nature, Curiosity, Responsibility

**Which competences are promoted that empower learners to shape a sustainable future?**

The program (in versions for both ages) develops environmental sensitivity and an understanding of ecological principles. In the version for older children research skills and some environmental problems and conflicts are also considered.

According to the hand model, the program touches on all the competencies, but mainly:

- To enable learners to cooperate, participate, take responsibility and learn in a self-directed way.
- To enable learners to be reflective and critical thinkers –considering different perspectives to reach informed opinions and decisions.
- To allow learners to take ownership of their learning and reflect on what and how they have learned.
- To enable learners to become conscious of interconnectedness - you, me and the world around us.



### **Which of the specific scientific concepts does the program relate to?**

Stability: students explore the mechanisms how the positive feedbacks increased the problem of deforestation caused by the acid rains, interdependence and also the cause-effect mechanisms are highlighted during the whole residential course.

Change: students explore also the lower resilience ability of the spruce monoculture in comparison to the original mixed forests.

Cycles: mainly the particles of sulphur and nitrogen and their cycles are being explored within the programme.

### **Which ecological problems are involved, if any, and how?**

Land system change and Biodiversity loss (students are getting familiar with the problem of replacing the original mixed forests by spruce monoculture, they are leading their own studies documenting the habitat change and they are presenting their findings at the end of the course).

Chemical pollution and Aerosol loading (essentially students explore the sources and process mechanisms of acid rains, which have been caused by emissions of sulphur oxides and nitrogen oxides from brown coal power plants in Germany and Poland) – and through these processes it also partially covers the P-N cycle issue.

### **Transferability: Which different areas of learning are included and how?**

- related to the learners themselves;

Children attending the program are mostly from the local area. The children can therefore reflect on the experience of spending time in local natural areas, and how they are connected to these local environments.

- related to the natural environment;
- related to the non-natural environment;

The whole program takes place in the countryside of the Jizera mountains and children therefore can explore the surrounding environment

- related to learners communities;

All the activities lead to the preparation of a poster explaining the causes of deforestation in Jizera (with proposals for future actions) and enable children to think also about the place where they live and the relationship between humans and nature in recent years.

- encourage active transfer during and after the experience

At the end of the program Pupils present ideas of how to avoid future recurrence of similar disasters of forests in Jizera Mountains or in other comparable locations.



### **What educational strategies are used in the program?**

The program applies a mixture of educational strategies. Its prevailing approach was inspired by the model called **extended case study**, designed in the 80's by American educators Harold Hungerford and Trudi L. Volk (pupils develop their inquiry-based skills and then apply them on investigation of a local environmental issue). Additionally, further strategies were used. To promote environmental sensitivity, earth walks activities designed originally for earth education program are used. In some elements, the program applies basic constructivist principles (program starts with linking pupils experience and knowledge about Jizera Mountains, then new conceptual knowledge is based with the help of active methods of learning, and finally reflective activities are used to help pupils formulate and apply their new understanding).



### How is the program evaluated:

The program was evaluated in the years 2010 - 2012. The particular methods used were pre test /post test, structured interviews with teachers, a questionnaire, 'Evidence activities' for teachers about work with worksheets, and also observation of the residential part of the program. A detailed description can be found on the website ([www. projizerky.cz](http://www.projizerky.cz) – SEV-Jizerka– Evaluace program), which can be translated if necessary. Generally, the mixture of results was obtained. We found positive impacts of the program on selected inquiry skills and problem awareness. Pupils and teachers were satisfied with the program. However, the original version for the older pupils was too difficult for teachers; because of this, the first part of the program had to be modified and simplified. (Teachers tended to skip the activities when pupils had to prepare their research design that they were supposed to apply in the outdoor part.) We did not find an impact of the program on pupils' environmental attitudes, or attractiveness of Jizera Mountains (mainly because we realized that this region was already attractive for pupils before the program).

### Description of the program:

Program consists of two parts:

**The Introduction part, which takes place at school,** is managed by the classroom teacher during between 5 and 7 lessons. In addition to the sets of worksheets, the package for teachers also includes a teacher's guide, a CD with narrated presentations about the history in Jizera of forests and Jizerskohorský boulevard (a fictional magazine with articles about the problems of the Jizera Mountains - every article highlights the 1 foot (cause) disasters text and spoken presentations).

**The residential part** lasts between 3 and 5 days in eco-center Jizerka and is entirely in the hands of tutors of eco-center. The teacher's role in this section is only observation. Part of the stay includes a presentation from a forester from the Administrations of PLAs Jizera Mountains, who presents a disaster from a professional point of view (but does not advise the children on possible solutions).

### Version for children from 9 to 12 years:

#### 1. introduction part (at school with a teacher)

- initial framing of the project.
- introduction to the nature of the Jizera Mountains.
- information processing about forest disaster, estimate causes of the disaster.
- preparation for tasks at Jizerka.
- Practice presentations - only the sixth class.

#### 2.residential part (in the eco-center Jizerka with tutors)

- Introduction to the environment, and Magical place, Earth walks.
- conceptual paths, linking concepts with selected problems.
- lecture from expert (forester of Administrations of Jizera Mountains).
- The expedition around the area.
- preparation of presentation.
- presentation of the conclusions.



### MOTIVATIONAL FRAMING:

The program is framed by a fictitious conversation between Susan and Dejev on Facebook. Susan globetrotter appeals to Dejev, eco-center employee in Jizerka via facebook. She has found the website with information about the Jizera Mountains and would like some more information. In particular, she does not understand how and why the mountains were deforested - it seems like a disaster.



The aim of this framing is to motivate students to undertake the program activities which do have a bias, but at the same time allow them to think about the issues from a different perspective.

## LOGICAL MODEL OF THE PROGRAM

### Activities:

- pupils work in school with worksheets.
- pupils spend three to five day in the eco-center Jizerka (The length of stay being negotiable)

### Learning:

- Pupils explain concepts using particular examples; the natural composition of forests, adaptability, and the process of deforestation and ecosystem regeneration in Jizera Mountains in the last 30 years.
- Pupils give examples of interesting places in the Jizera Mountains.
- Using their own words or images pupils reflect on the experience of their contact with the nature of Jizera.
- Based on their own work and materials they have created over their stay pupils create a poster explaining the causes of deforestation in Jizera (and some proposals for future actions).



### Behaviour:

- Pupils assess whether Jizera mountains as an attractive place to spend your free time and visit them
- While visiting Jizera Mountains the children should behave in such a way that does not harm the environment and understand why this is important.

## Version for children from 12 to 15 years

### 1. introduction part (at school with a teacher)

- Initial framing of the project.
- Introduction to the nature of the Jizera Mountains.
- Introduction to the history of the local forests and the forestry disaster in the Jizera Mountains (historical texts, presentations on CD).
- Analysis of secondary information (work with newspaper articles prior to 1990 and now - in the worksheet)
- Preparation of a presentation.

### 2.residential part (in the eco-center Jizerka with tutors)

- Introduction to the environment, the Magical place, Earth walks.
- Conceptual paths, linking concepts with selected problems.
- Lecture from expert (forester of Administrations of Jizera Mountains).
- Preparation of research, the selection of indicators for research agenda.
- The expedition around the area.
- Preparation of the presentations.
- Presentation of the conclusions.



**MOTIVATIONAL FRAMING:**

The same as in the version for younger children.

**LOGICAL MODEL OF THE PROGRAM****Activities:**

- pupils work in school with worksheets.
- pupils spend three to five day in eco-center Jizerka (The length of stay being negotiable).

**Learning:**

- Pupils consider at least 3 different human activities that affect the environment in the Jizera Mountains, for each one explaining their causes and how to mitigate the threats. Compare the degree of influence of human activity on the environment in Jizera Mountains before 1990 and the present.
- Analyze current and historical newspaper articles, select from them relevant information and answers to the questions which have been formulated separately.
- Select the correct indicators of a healthy forest and prepare a plan to search for these in the field.
- Based on measurements taken, assess the state of the environment according to the relevant indicators, for specific environmental problems. The results are then collectively presented.
- Design a plan of how to avoid a future recurrence of similar disasters of the forests in the Jizera Mountains or in other comparable locations.

**Behaviour:**

- Pupils assess whether Jizera mountains as an attractive place to spend your free time and visit them
- While visiting Jizera Mountains the children should behave in such a way that does not harm the environment and understand why this is important.

**Resources:** SEV Jizerka ([www.projizerky.cz](http://www.projizerky.cz))

*Společnost pro Jizerské hory, o.p.s.(Society for the Jizera Mountains, o.p.s.) has been operating since 1999 in the region of Jizera Mountains, where they try to restore the natural and landscape values. It implements practical actions - avenue planting, establishment of visitor infrastructure and operates the Centre for Environmental Education in Jizerka (SEV Jizerka). This centre is visited annually by over 1,000 children from all over the Czech Republic, who have the opportunity to learn more about the Jizera Mountains and the beautiful surroundings of Jizera, and strengthen their relationship to nature.*