Learning about Ecoremediations and Sustainability on the New Education Polygon in Modraže, Slovenia

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Abstract

Needs of learners have changed rapidly and teachers have difficulties to follow. New methods in learning are opening new options. In Geography where fieldwork with method of geographical enquiry is of great importance some fresh ideas of implementation were needed. In Modraže (Slovenia), new Education Polygon was made. Because the trends in education show poor result in organization of the fieldwork and lack of options where to go, the polygon with its freshness and variety of ecosystems offer a great opportunity for individual and group visitor's work. We offer fieldtrips, experimental work and sustainability learning through the methods of ecoremediations and ecosystem approach. Experimental work made by the visitors and actual practical work on the polygon gives the Educational Polygon the variety and innovativeness we needed.

1. Introduction

Learning trends in recent years has shown a variety of different methods and approaches for teaching. Regardless the multiple choices we have, only some of them proved to be useful enough to get into schools. The method of explorative research or enquiry based fieldworks had proven very demanding but nevertheless very rewarding, especially in the field of Geography and sustainability learning. Geography as the science that has a direct connection to the environment in which we live is of great importance for our wellbeing. We live in nature and our actions have consequences over everything we do. Geography as a school subject has a great role in education of environmental sciences and nature preservation. As Gough says:" Innovations in the field have increasingly moved environmental education away from being sub-set in geography and science syllabuses towards becoming a broader cross-curricular theme in schools" [7]. Today's geography is no longer counting and looking for the countries on the world map, nor learning the facts by heart. Today is "an up-to-date and well prepared geography teacher truly the crucial element in preparing the next generation of young people to find their way in this swiftly moving technological world" [6].
By trying to follow some of the recent trends, as well as making the opportunity to create and offer something new Education Polygon in municipality Poljčane in Slovenia has been established. The learners here explore and learn from firsthand experience and detain the qualitative knowledge as well they practice skills.

2. Learning Geography by doing

In the Prensky's remark that, "our students are no longer the people our educational system was designed to teach" [6], we find truth. The teacher is no longer the source of everything they know. Instead of, the teacher has to lead the troop of digital equipped teenagers and has to earn the respect. On the other hand, learners as well have to know a lot. They are bombarded with information, they are obliged to learn and remember if they want to pass the class. If we interpret the old English saying, that the best way to teach Geography is to do that from the souls of our feet, we can quickly get the basic notion of what we are trying to achieve. Researches about the quality of Geography lessons around the world show poor results. The inspection agency for England (OfSTED) in its annual reports has since mid-1990 consistently pointed that the Geography teaching of primary school children is "low quality" and regularly castigated as the worst taught subject [3]. The findings of various

researches show very similar results, which mostly support the Flanders' rule of two – thirds [3]. In his elaborate observation he noticed that:

- Two thirds of all lessons observed was talk;
- Two thirds of that talk was by the teacher;
- Two thirds of that teacher's talk was lecture;

Further international researches showed that lecturing, map reading, individual and group work are common, whereas games, simulations and experiments less so [2].
In Slovenia we cope with the similar problem. Until recently there has been no good curriculum, which would support the fieldworks in Geography. A few years ago, we got renewed Geography curriculum for primary and high school education which has at least theoretically changed the way our teachers do their work. We have minimum of 20 % obligatory fieldwork, which is also included in the final examination or graduation. New content in our curriculum is also the part where training for skills and abilities are exposed. By trying to implement these goals we have to take into consideration that skills mostly cannot be trained otherwise then with fieldwork. The goals written in our curriculum are coming a bit closer to what we wish, although implementation unfortunately mostly stays the same.
"Geography without fieldwork is like science without experiments the "field" is the geographic laboratory where young people experience at first hand landscapes, places, people and issues, and where they can learn and practice geographical skills in a real environment. Above all, fieldwork is enjoyable" [3].The meaning of fieldwork for Geography is of great value, since learners are able to achieve something by doing and learn along. The knowledge they get by individual, experiential work in real world is different according to the knowledge gained from textbooks. It is achieved by using the senses and learners' own work - that is why it stays longer and is deeper than the knowledge usually gained at lectures in classroom.
If we look up closer we realize that only going out doesn't mean we have done the fieldwork. Every fieldtrip should include some parts of individual investigational work. Very often used methodology for geographical fieldwork is the enquiry. "The geographical enquiry is an active process through which learners construct knowledge about the world" …it should be focused on real issues, on place and spaces that mean something to students and on real data of the kind that students are likely to encounter in the world outside the classroom"[1]. With enquiry the learners are able to gain knowledge through problem solving activities. They have to be able to make a plan, identify the problem and ask questions, collect evidence and select information, describe, explain and analyse the evidence and at the end critically evaluate the evidence with some further suggestions for enquiry improvements or transfers [1].

3. Ecoremediations and sustainability teaching

In the fast spinning world with the immense growth of the population we already face difficulties with the Earth's support. We cannot postpone the issues that should have been solved long ago. Our way of life has to become immensely different, and nature preservation instead of exploitation has to come into the consideration. One of the gentle ways to heal our nature is to live sustainably. "Sustainability is the development that meets the needs of a present without compromising the ability of future generations to meet their own needs" [4].Definition of sustainability, made at the world commission on environment and development tells us how little damage we should do to our nature. "Ecoremediations comprises methods of protection or restoration of the environment by means of natural processes existing in ecosystems [9]". They are efficient tool which has origins in those the nature has developed during thousands of years. Ecoremediation techniques (ERM tech.) include water resource management like the revitalizations and restorations of river streams and standing waters. Improvements have been made in the wetland constructions for water cleaning (springs, streams, ponds, channels, domestic, traffic and industrial waste waters, etc). By creating buffer zones like vegetation belts we make natural protection against dust and noise as this has become a huge problem in populated areas. Cleaning contaminated soils and sediments is within the ERM technologies possible with use of phytoremediation as well the reclamation of landfill sites is possible. Ecoremediations also deal with erosion, insurance and maintenance of the environmental flow, potable and ground water protection etc.[10].
In the International Center of Ecoremediation (ERM Center), which is located and works at the Faculty of Arts in Maribor, we try to intertwine the ideas of innovative technologies in teaching, sustainability

with ecoremediations and create new possibilities for learning Geography in schools. We try to bring the knowledge and science out of classroom and include it into the environment, where local people can be included into the teaching and development process with their knowledge, products and skills.

4. Education polygon in Modraže

Recent contribution to our work in sustainability and fieldwork practice education is the new Education polygon (polygon) in small municipality in Poljčane. Polygon is the result of EU, Slovenian Ministry for School and municipality Poljčane supported project. Polygon lies in the municipality Poljčane, in eastern Slovenia. It has extremely well preserved natural habitats with 49,05% of the municipality's area protected under the Natura 2000 programme [5] .

It lies in small village in Modraže in 8 ha big area. It is an ex farm in quite hilly part of municipality. It is appropriate for visitors of all ages from kindergarten children, up to adults. The polygon consists of many natural and anthropogenic ecosystems. It has the teaching center with space for approximately 30 people. There is a laboratory with the equipment for water and soil analyses; as well it has a kitchen, bathroom and sleeping facilities. All around the teaching area, we find many aids to assist the individual learner. The polygon has its own vegetable garden and compost, so no waste material is created. Around the teaching centre we find some models for education purposes, where learners can make experiments by themselves. Polygon has many various forms of ecosystems that offer a variety of options for fieldworks. There are three types of woods; coniferous, deciduous and swampy forest. Water is the most various in its forms on the polygon. There are some natural springs, channel, stream, puddle, pond, natural swamp, wet grassland, oxbow lake, drainage ditch, small waterfall and rapids. With the study of different water forms learners can learn and understand the importance of water for life. Other ecosystems are grassland, farm field, phytoremediation crop, nature friendly erosion solutions and protection, domestic animals' pasture, vegetation belts and constructed wetland for the teaching centre [8].

Learners who visit the education polygon do not just come, take a walk around and write down, but they actually come and help with the management of the polygon. They work in the garden, clean the puddle, make water or soil analysis, feed the animals, make some experiments with different models, etc.. Learners contribute to the look and function of polygon. They learn traditional and new techniques of nature preservation by understanding the meaning of everything what appears in the environment.

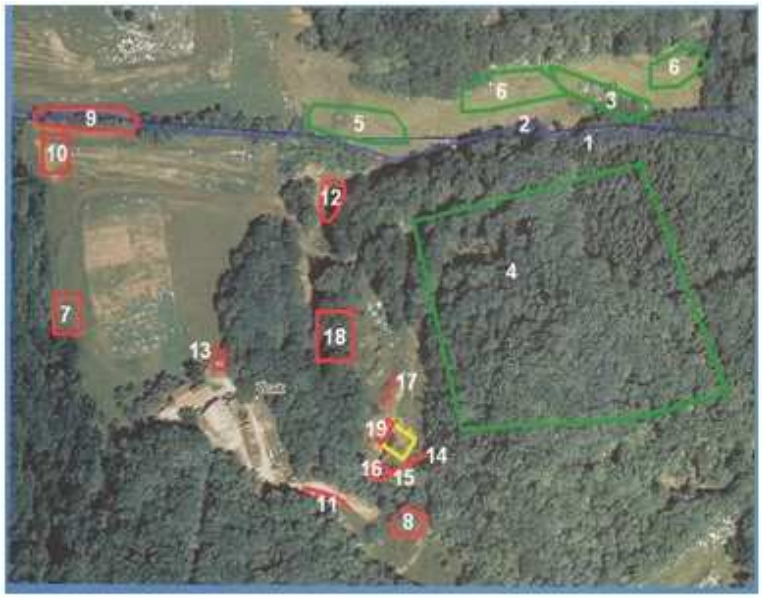

Figure 1: Education Polygon, Modraže;

5. Conclusion

Every day we see the consequences of our presence in the nature. We are aware of the things that should be done in order to obtain what we have. This can be done only by the precise and organized education. On the education polygon in Modraže, learners achieve knowledge and practice skills through enquiry and practical work. With the creation of the education polygon new trends in education got new meaning. Importance of practical, experimental work or fieldwork in the education of children or adults is of great importance and therefore necessary for the implementation. Geography, as a common school subject all over the world, has a great potential in education and implementation of fieldwork and sustainability training. Visitors of the polygon have to understand, that nothing there is in vain, although is just a little grass. With precise and specific use of ecoremediation techniques, the knowledge of nature preservation and sustainability can be gained, which is very important for the wellbeing of the future generations. With the knowledge people gain on the education polygon, they will be able to understand nature's needs and had the knowledge and skills to use this in their life. Visitors' assignment is to come, see, learn and transfer the knowledge they had gained into their surroundings.

6. References

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