

Getting known with derelict areas in the local environment and researching changes in space - project work of Domžale Secondary School pupils

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Summary:

In this paper, we present the experience with the project work of pupils of Domžale High School, who actively participate in the research of derelict areas in their local environment. They get acquainted with various methods of research work, get to know the spatial processes in their municipality, especially research the consequences of unsustainable spatial development and look for solutions for the revival of functional derelict space. We have already presented part of the results of our research abroad, and all project activities will be completed in the first half of 2021.

Key words:

derelict areas, sustainable development, space, environment, skills development, fieldwork, application, municipality of Domžale

Introduction

At the Domžale Secondary School, within the international ERASMUS + project "Brownfield sites and Sustainable Development - How a school can affect the local environment", we tested different methods of work with pupils, developed various skills, with the greatest emphasis on learning about the home landscape, derelict areas and understanding sustainable spatial development. We started the project work in the winter of 2019 and will finish it in 2020. The ERASMUS + project, run by Domžale High School, runs from 2018 to February 2021 (the project was extended due to the pandemic), so it was a framework and incentive for development concrete geographical project with pupils in the local environment, only the project idea, the course and partial results of our activities are given below. Geographical research is also a central contribution to our international cooperation, which includes five countries, in addition to Slovenia (leading partner), schools from Iceland, the Czech Republic, Estonia and Sweden also participate.



Figure 1: Logo of the international ERASMUS + project "Brownfield Sites and Sustainable Development".

We approached the ERASMUS + project (Brownfield Sites and Sustainable Development - how the school should affect the local environment) interdisciplinary - teachers of Geography, Chemistry, Biology, ICT, English, Citizenship Education and Sociology are participating. The content of the project was not narrowly defined in the application itself, so each partner school defined the contents of the research according to the capabilities and identified problems (related to derelict areas) in each country. The essence of the project is networking and connecting, and transferring different experiences between teachers and pupils. The emphasis is on joint international meetings, where various thematic workshops take place, and at the same time, each partner presents their national research activities and results. So far, 20 pupils (from 1st, 2nd and 3rd year) have participated in the Domžale Secondary School within the project, and the wider issue of space management and its degradation was presented in more detail (with an invited lecture by an expert) to the entire generation of pupils of the 3rd year.

When reviewing websites, other sources and literature, we found in the preparation of concrete project activities for pupils that the design of our school project could be based on a national survey on derelict areas in Slovenia. Namely, in 2017, the first record of functional derelict areas was established in Slovenia (Lampič, Kušar, Zavodnik Lamovšek, 2017). The record was established under the guidance of researchers from the Department of Geography, Faculty of Arts, University of Ljubljana, and other disciplines and institutions participated. In order to pass on current information to our pupils and find research opportunities for the high school level, the geography teacher contacted the head of the national project. Thus, we obtained relevant information about the project itself directly from the facilitators of the database and those familiar with the issue of derelict space. In the following, we jointly sought opportunities for cooperation and professional support from the Department of Geography, and defined such research goals and activities that are appropriate and feasible for pupils.

Pupils participate in the project of researching derelict areas in the municipality of Domžale voluntarily, according to their interest and desire for additional activities. An additional motivation is, of course, the European project, which also includes visits abroad. Pupils who actively participate in national

project activities are entitled to one visit or exchange abroad. In addition to the introductory visit of partner countries to Slovenia, we have already made three visits abroad (Czech Republic (February 2019), Estonia (May 2019) and Iceland (October 2019)), within which we have already presented partial results of the geographical research of the derelict area in the municipality of Domžale.

Presentation of the school (geographical) project

We had to incorporate our "national school project" into the contents of the international project of all five countries. In the field of Geography, which in terms of content most connects the activities in dealing with derelict areas, we have set the following broader goals:

- get to know the local environment where pupils live or go to school every day;
- get to know and use different research methods, from classroom methods (knowledge of computer programs, work with resources, data entry into the application, data analysis with simple tools,...) to field work methods (mapping, photography, interview);
- identify and explain the various processes that lead to the devaluation of space;
- identify different forms of degradation of space;
- to propose solutions for the revitalization of individual areas - to restore the function of the abandoned space.

We had to consider some restrictions when organizing work with pupils. Involvement in the ERASMUS+ project conditioned that we always include new pupils in the research during the project, as the project required us to bring a different group of pupils to international visits each time. Our starting point was that pupils should "earn" a visit abroad by participating in a national survey, but at the same time, we wanted them to be better acquainted with the topic. Due to the cooperation of different schools, where pupils were usually slightly younger than in Slovenia, we had to prioritize lower grade pupils. Extensive fieldwork was coordinated with the weather, pupils' schedules and their other obligations. Despite the fieldwork in the home municipality, we did part of the field in quite remote locations, so we also used a school van for these field visits.

The pupils' project work was focused on getting to know the home landscape, different uses of space, perception and recognition of different forms of degradation in space. At the same time, due to the use of different methods of work, we strengthened the skills of pupils for different classroom and field forms of work. The project activity also required additional work for the teacher. In the following, we present those activities of teachers and pupils that were crucial for the success of the project and the achievement of the set goals.

Performed activities of teachers

- Due to the new topic, we have established a connection with geographers, producers of the national database of functional derelict areas. As we were familiar with the research activities and results in the field of derelict space of our professional colleagues in the Department of Geography of the Faculty of Arts of the University of Ljubljana (who also carry out various formal trainings for teachers), we asked them for help and guidance. We agreed on professional support for the geography teacher, technical support with the preparation of the application and data, and education for pupils. In the first phase, the project manager of establishing a national database of derelict areas in Slovenia in January 2019

presented a generation of third-year pupils with a long lecture on space (Responsible to space - space as a non-renewable natural resource), the situation in Slovenia - all in connection with sustainable development. Special emphasis was placed on concrete cases of derelict areas (selected cases from European countries, Slovenia and in the municipality of Domžale). We also presented some of the main findings and data on the bulletin boards at the school and thus presented the research topic to the entire team and all pupils. If the project content is new, it is sensible and necessary for the teacher to connect with the relevant discipline or institution.

- Selection of interested pupils for the school geographical project. We invited all pupils and included those interested in the project. The project group of pupils was heterogeneous, from different classes and years, some pupils did not know each other. Due to the intensive activities, this did not pose any problems in the end.

- For all participating pupils, we prepared a presentation of natural geographical and socio-geographical characteristics of the municipality of Domžale. Given the content of the research (derelict space) and the characteristics of the economic and spatial development of the municipality of Domžale, special emphasis was placed on the past industrial development and the collapse of many factories. As part of the "introductory education" to work on the project, pupils were introduced to the concept of functional derelict area and the criteria for their definition and a broader understanding of the concept of sustainable development. It should be pointed out that it is necessary to emphasize the contents and characteristics that are characteristic of an individual area - municipality.

- Obtaining relevant data, materials and preparing materials for pupils. The teacher must first be acquainted with the situation in the area of his municipality. We obtained all the data on the existing functional derelict areas of the municipality (Department of Geography, Faculty of Arts), and we partially supplemented them ourselves for the needs of understanding the pupils (especially the history of activities in an individual area). We have prepared descriptions of each area and corresponding displays. The latter was taken from the publicly accessible database of derelict areas (http://crp.gis.si/bf_map).

- Adaptation of the census form for fieldwork. To monitor changes in derelict areas, we adjusted the census sheet used in recording functional derelict areas. We simplified it in part, but added a few categories. Preparation of e.g. census form or instructions for fieldwork allows the teacher, quite free hands and depends e.g. from the age of the pupils as from the time dynamics of the fieldwork.

- Preparation for the field in the classroom. Together with the pupils, we reviewed the materials and got acquainted with all the derelict areas in the municipality. We then checked the census sheet together, reviewed the criteria for defining a functional derelict area, and reviewed the typology of derelict areas. We helped each other with the article from the published article in *Geography at School* (Lampič, Kikec, 2019).

- Before conducting the field with pupils, it is highly recommended that the teacher familiarizes himself with the areas. Therefore, we conducted preliminary field visits, where we obtained some additional information about the areas. As we did not know some of the locations, getting to know the areas made fieldwork with pupils much easier. This is one of the more time consuming, but extremely useful and interesting activities for the teacher. Our interest in the work was also supported by the Department of Geography by preparing a test application in the ArcGIS online environment - an editor and data viewer of all derelict areas in the municipality.

- Monitoring and directing the work of pupils in the field and in the classroom, data entry in the application and spreadsheets (xls), data editing, photo editing, etc.

- We have prepared presentations of the results for visits abroad.

Pupil activities and work results

The aim of the research work of pupils in the field was to identify changes in functional derelict areas in relation to the situation, which was described in 2017 in the national register, to record them and show the new situation. In 2019, we managed to visit and describe in detail the situation in 21 out of a total of 32 areas. We also visited and conducted an interview in the municipality and very successfully presented the results of the work to the public at an international meeting in Estonia.

The work of the pupils included very different activities and required their engagement even outside the regular implementation of lessons. In addition to motivation, the key to the success of the project was the proper preparation and acquaintance of pupils with the problem. Their activities, however, were:

- **Acquaintance with the wider issue** of spatial development and derelict areas in a joint lecture. The appropriate course of research is ensured by the appropriate readiness of pupils, who must know the broader context of the discussed content.

- **Classroom preparation for fieldwork**, which ensured that pupils were acquainted with the theoretical foundations of the problem, understanding of concepts such as sustainable development, space, spatial planning, degradation, (functional) derelict area. The existing functional derelict areas from the national database were reviewed together in publicly accessible records, and the pupils were especially carefully acquainted with the derelict areas in the home municipality. As part of the classroom work, the pupils also got acquainted with the content of the census sheet and the categories that they supplemented in the field.

- The central part of the research was **fieldwork**: orientation in the home municipality, identification of existing derelict areas in the area, verification of current conditions and record of changes, own inventory of area characteristics, identification of various forms of degradation, joint reflection on reasons for abandonment and possible ways of recovery areas. Fieldwork also includes photographing areas where pupils photographed e.g. various forms of degradation (waste disposal, deterioration of buildings, growth of invasive plant species...). The first field trips were conducted together with a researcher from the Department of Geography, Faculty of Arts, University of Ljubljana, so the pupils had the opportunity for in-depth discussion and observation. We performed the following field activities ourselves. In the field, pupils, usually in pairs or groups, filled out a census form, drew the extent of the derelict area on a cartographic basis, and photographed each location in detail. They also tested the use of a field data entry application and entered some data directly into it. With the help of the phone, they could also include photos taken in the field directly into the application.



Figure 2: We looked at very diverse areas in the field. The security guard also opened the door to the abandoned TEN TEN tennis court in Domžale, where the new owners are working to change the area from a former sports to residential use. (Photo: B. Lampič)



Figure 3: Direct field identification of processes in space and various forms of degradation - the best way to get to know the home landscape. Completely abandoned former agricultural area ROD Radomlje. (Photo: P. Dovč)

- **Interview with a representative for spatial planning in the municipality of Domžale.** We visited the municipality with a group of eight pupils, who also prepared questions related to selected derelict areas. There were no problems with the arrangement for the meeting, as Mr. Jure Košutnik, Head of the Department of Spatial Planning, Geographer. The main purpose of the visit was to acquaint pupils with the process of spatial planning. The pupils also checked what plans the municipality names for abandoned areas and where major problems arise. After the visit of the representative of the municipality, the fieldwork was even more efficient, as the pupils learned various details about the locations and found it easier to think about the planned solutions for the revival, which they presented in the municipality of Domžale. We especially encouraged their proposals and initiatives, as well as joint discussions. It was very interesting e.g. the thinking of the pupils at the long-abandoned Krumperk Castle. The area has been completely abandoned for several decades, and the castle and its buildings belong to the register of cultural heritage. In the municipality, the development of tourism - hotel and apartment work - is already planned for the wider area of the castle in the spatial plan. The pupils were very upset by the idea that the hotel building in the castle was intended for elite guests. Interestingly, they voluntarily emphasized that such special facilities should be intended for the general public and that they would rather propose other, public functions (museum, library, wedding hall...).



Figure 4: In each derelict area, we first checked old data from the national database, then entered newer findings that pupils perceived in the field, followed by a discussion on possible uses. City Krumperk. (Photo: B. Lampič)

- **Classroom work after the completed field:** arrangement of all materials, entry of field data obtained in the xls table (enables data analysis and graphical displays) and entry of part of the data in the application of derelict areas of the municipality of Domžale. Pupils also entered the remaining photos of the derelict areas visited. The use of the application was primarily a new experience and tool for the development of ICT skills.

- **Preparation of a public presentation.** All additional research activities must have a specific goal and, finally, some form of dissemination of results. We have not yet completed the work in full, but partial results have already been presented abroad. The pupils presented a broader picture of derelict areas in Slovenia as well as the situation in the municipality of Domžale. The pupils moved five areas in more

detail that they found particularly interesting. As we are involved in an international project, the presentation in English was an additional challenge for the pupils.

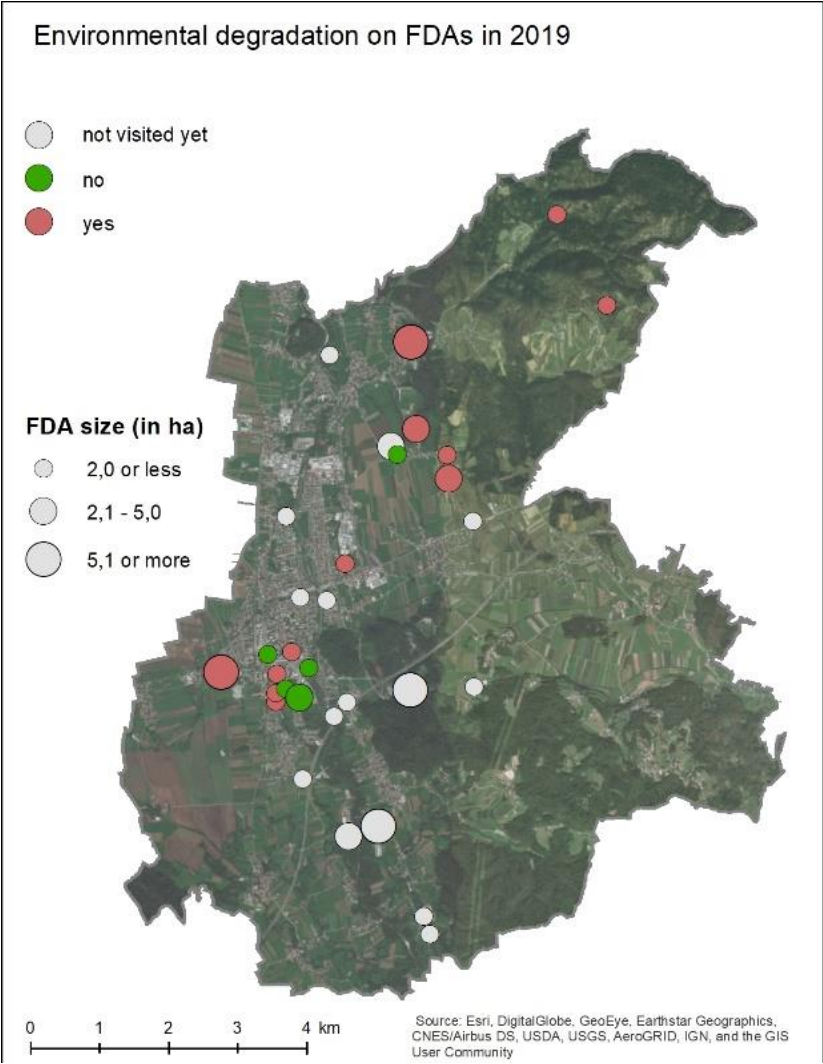


Figure 5: The results of our research were presented abroad. An example of showing locations where we identified different forms of environmental degradation.



Figure 6: Partial results were successfully and sovereignly presented by pupils during a visit to Estonia in May 2019. (Photo: M. Majce)

Derelict areas project to support the achievement of general and specific objectives in geography lessons

Our experience shows that dealing with or researching current (and ubiquitous) issues of derelict areas effectively supports the achievement of general and specific learning objectives in the teaching of geography. Pupils must be sensitized to the processes and changes in space already in the process of education and, as future space managers or responsible citizens, must be educated for responsible and rational use of space. We need to encourage them to explore space, identify spatial devaluations and rapid spatial changes in their home environment, all with the aim of raising awareness and expanding knowledge about the environment. The current curriculum for the subject of geography emphasizes that we train pupils for a responsible, active and solidary attitude towards the natural and social environment, for solving spatial problems and coexistence between nature and man. The development of pupils' ability to use simple research methods with which they obtain, edit, interpret and transmit geographical information is also very important (Polšak et al., 2008, 8). The course also develops pupils' interest in the home landscape and the daily pulse of life in the wider environment, at home and around the world, and encourages their response to daily events, thus teaching them active citizenship.

In the following table, based on our concrete project experience of researching derelict areas, we assessed the level (from 1 to 3) of achieving the selected general goals that we achieved with the implementation of our course in pupils. Our assessment should be, above all, a guide and encouragement for teachers that it makes sense to undertake this type of research.

Table 1: Assessment of the level of achievement of the selected general objectives and inclusion of basic abilities in the teaching of geography in the research of derelict space in the home landscape.

Area	Objectives / Capabilities	Level of achievement of the objective
Knowledge and understanding of geographical structures, processes and relationships	<ul style="list-style-type: none"> - pupils understand the problems of protection of the geographical environment and are aware of the importance of man as a transformer of the geographical environment and society's efforts to maintain balance; - are trained to recognize the need for sustainable development and the responsibility to preserve biotic and abiotic environmental factors for future generations; 	+++ ++
Application of knowledge and skills	<ul style="list-style-type: none"> - are capable of basic forms of independent geographical research; - acquire and develop skills for direct and indirect observation of natural and social factors, phenomena and processes in the landscape; - develop the ability to search for and select relevant data and information from the many possibilities offered by written sources and modern technology; - are trained in communication in various ways, including the use of information technology; 	+++ +++ + ++
Digital Capabilities	<ul style="list-style-type: none"> - pupils increase the application capabilities provided by information and communication technology to reinforce critical thinking, creativity and the discovery of the new; - develop a positive attitude towards the use of ICT in independent work and in a group; - collect, edit, process and display data on spatial phenomena and processes with the Geographic Information System (GIS) and other tools (GPS, online maps); 	++ +++ ++
Civic capacity	<ul style="list-style-type: none"> - pupils develop the ability to communicate with public institutions and bodies; - ability to be involved in decision-making on the development of the home landscape and beyond; 	+ ++
Special geographical abilities	<ul style="list-style-type: none"> - knowledge of space in terms of knowledge, understanding and evaluation of phenomena and processes with the ability of their spatial - chronological location; - geographical skills and abilities to explore the landscape and the ability to combine theory with practice with critical geographical thinking and the use of general and specific research methods; - critical understanding of the spatial distribution of phenomena and their contradictions; - ability to search for cause-and-effect interaction of natural and social processes in the landscape; - ability to connect geog. knowledge with other knowledge for a comprehensive understanding of the modern world; 	++ +++ +++ ++ +++
Use of general and special research methods	<ul style="list-style-type: none"> - skills of active field research work; - identification of research questions; - data collection and classification; - data processing and display; - generalization, interpretation and application of knowledge 	+++ + ++ ++ +++

Note: +++ - fully achieved; ++ - mostly reached; + - partially reached

Source: Polšak et al., 2008.

Conclusion

Field research of derelict areas in the municipality of Domžale was included in an international project, which further motivated pupils (and teachers) to work, as we had to present our own research and results to other project partners abroad. The exchanges so far have shown that we have taken the most serious and organized approach to work among all participating partners in Slovenia. We designed and implemented our own "national project". Thus, our participation in the international project was based on a geographical approach.

We find that learning about and exploring derelict areas in the home region is a completely new content for teachers as well - together with pupils we observed, collected data, made field inventories, took photos, looked for types of changes in space and their causes and thought about sustainable spatial solutions for individual locations.

Our experience has once again confirmed the great interest and motivation of pupils to work in the field. We invested tens of hours in this project, and the work also took place outside of school hours. Joint preparations and fieldwork connected us and we got to know each other better. We were in the field in both sunny and rainy weather, by van or on foot. The concrete work significantly influenced the pupils' spatial representations, and at the same time, they got acquainted with completely new methods and techniques of research work, various data sources, spatial databases, professional terms, spatial planning, the operation of the municipality in practice, etc.

Facing various forms of degradation in space directly on the "domestic threshold" has significantly sensitized pupils to various unsustainable processes that take place around us or in space. Different types of devaluations, e.g. decay of buildings, disposal of various, even hazardous waste, uncontrolled proliferation of invasive alien plant species, unplanned expansion of sealing, collapsed and dangerous areas in their immediate vicinity, etc. they were further encouraged to think about the need for sustainable behaviour and action.

When we talked to the pupils after work or met at school after visits abroad, there was a sense of joy and gratitude for the new insights and the opportunity offered for additional activity. Project forms of work require different planning and organization, and exploring new areas requires additional engagement of us teachers, greater integration within and outside the collective. Sometimes it is difficult to reconcile regular and additional activities, but the results are excellent and lasting.

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