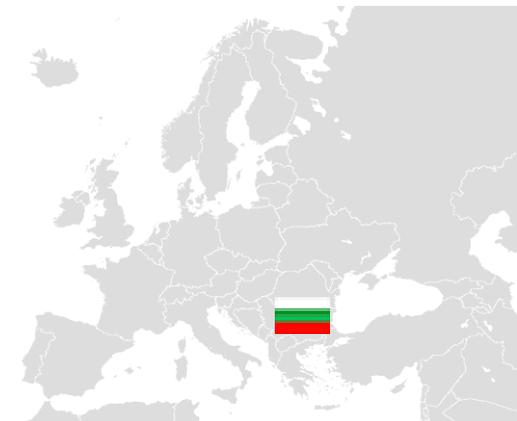




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# Collection of Students' and Teachers' Experiences In Bulgaria





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## COLLECTION OF STUDENTS' AND TEACHERS' EXPERIENCES IN BULGARIA

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### Introduction

Zinev Art Technologies has been working in the field of European project for almost 10 years now. ZAT has created a network of schools and teacher to work with during the years. In order to implement the activities under WP1 – collecting description of science teachers' and students' experiences in the field of education in science - we adopted the following methodology:

- **Involving schools:** ZAT contacted various Bulgarian schools with information about the project for the purposes of involving them in the project activities. The contacts were made by the project manager and the project coordinator, appointed from ZAT;
- **Translation of forms in the national language:** ZAT translated all project related forms for the schools, because it eases the work and people understand better what their responsibilities and duties are;
- **Close work with teachers:** after contacting the headmasters with information about the project and involving the necessary number of schools ZAT started working more closely with the teachers, who volunteered to join the project or were chosen by the headmasters of their schools. The close work with the teachers involved face-to-face meetings, further explanations of the expected results and providing examples of the expected results. This close work with the teachers proved to be very helpful since they felt really insecure how to describe their experiences and how to approach the students in terms to receive their descriptions;
- **Setting deadlines:** in all school related activities ZAT set deadlines for the schools and the teachers prior to the actual final deadlines in order to secure receiving the necessary material in time (having in mind also the fact that translation time for the documents will be needed).
- **ZAT team being ALWAYS available:** since Bulgarian teachers have a lot of work, not only in terms of their curricular activities, but also extracurricular activities, ZAT team under the project adopted the strategy to be ALWAYS available – meaning that whatever activity should be organized with teachers, we left them choose the dates, the timing and scheduling in order to ease them in the process of working under the project.

### Involving schools

The target group ZAT addressed with its informational campaign about the project was all secondary and professional high schools in the country. Despite the fact that the specific project target group was science teachers and students, we addressed all the schools in the country, since according to the adopted Bulgarian curriculum science subjects are taught in every school no matter of its professional type. In order to reach the target group ZAT used several communication means - face to face meetings with headmasters and teachers; publishing information about the project and invitation for the schools to participate in the project in targeted online directories and bulletins; sending informative mailings to schools.

As expected the personal contact was most useful amongst the adopted contacting techniques. The project manager and coordinator decided to contact school headmasters first, since considering the specifics of the Bulgarian educational system the headmasters are the decision-makers for involvement of the schools and teachers in activities besides the normal curricular and teaching



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activities, such as European projects. One of the difficulties ZAT team met during the process of recruiting schools and teachers for the project was the fact that science teachers appeared to be reluctant to participate in any extracurricular activity. In order to convince them to get involved in the project, we organized meetings with the headmasters in the schools, specifically pointing out the benefits for the teachers, students and the schools. In general the recruiting strategy could be regarded as successful since the required number of schools, teachers and students was achieved as follows:

- 5 schools involved: 1 secondary school; 2 vocational high schools; 1 professional high school; 1 boarding school;
- 11 teachers involved: 2 in sciences; 2 in physics; 3 biology and chemistry; 1 in mathematics; 1 in geography; 1 in Bulgarian language; 1 pedagogy counsellor;
- 200 students age 14-18 years.

### **Collection of teachers' and students' experiences**

For the actual work of collecting teachers' and students' experiences ZAT adopted a strategy of several steps:

- translating all necessary documents and forms in the national language – in order to ease the work of the teachers ZAT team members translated all forms of collection of the experiences in Bulgarian;
- sending emails to headmasters and teachers involved – before the personal contact with teachers ZAT sent emails to all of them with the forms and detailed explanation of the required work and results to be achieved. This was done in order for the people to be familiar with the forms and have the guidelines to follow in their work; in case teachers had some questions or required more information about the documents they could have asked them at the meetings face-to-face;
- setting deadlines – in order to receive all the necessary experiences as set by the partnership ZAT set earlier deadlines for teachers, also because team members needed some time to organize their translation in English;

After the initial mails to teachers were sent ZAT team members organized meetings with teachers face-to-face or via Skype in order to have the personal contact with the people and answer to their questions and concerns accordingly. What we received as major concerns from teachers, related to the description of their practices and collection of students' experiences was:

- some of the teachers expressed their concern they cannot describe their experiences unless they have an example model to follow;
- some of the teachers were worried they cannot put their experiences in writing – no matter how many examples they had. Some even refused to fill in the form, because they considered it too complicated to put in words the experiences they have in their practice of teaching sciences;
- some of the teachers were concerned how to organize their work in collection of students' experiences in order to receive really good examples.

ZAT tried to address all teachers' concerns. First, about collection of teachers' experiences, we provided the teachers with model descriptions. In order to do that we took some models from our Latvian colleagues, published on the portal goerudio.com and translated them in Bulgarian. After that we sent these models to the teachers, who were happy to have an example to follow. Second we suggested the teachers, who refused to put down in writing their experiences, to do that for them – writing the experiences ourselves and then sending them back to the teachers for proofreading. In order to do that we organized Skype meetings with them and asked them to tell us about the experiences. After collection of the experiences in such way we sent the documents back to them to check and revise if necessary. With regard to the concern of teachers how to receive good students' experiences descriptions, we adopted a solution, which both in ZAT's team members opinion and in teachers' opinion was good enough to show us the students who can provide us with the necessary materials. Together with teachers we created a very short questionnaire for students to get a notion of what they think of science education and to make them think of their successes or difficulties in the learning process in particular (see questionnaire below). This helped a lot to have the students'



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experiences description easier and more detailed. Furthermore in order to ease the work of teachers in collecting the students' practices we asked them to work with student directly on computers and send us the forms in electronic versions.

*Students' questionnaire*

1. Have you ever had difficulties in learning the material (physics, chemistry, biology, mathematics)?

- a) Yes
- b) No

2. If you have had difficulties in mastering the material what you think is the reason for that?

- a) I do not make enough effort in learning (I am lazy)
- b) The material is very complex;
- c) In the textbook there are not enough examples to illustrate the theory;
- d) The teacher does not use materials and examples to illustrate theory;
- e) The school does not have a laboratory in which to practice the knowledge acquired on the subject (or the lab is not in use);
- f) Other, please write

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3. What is the major difficulty you face in learning the material?

- a) I do not understand what the information in the book means - the terminology, definitions, are incomprehensible;
- b) The information in the book for a particular topic is too broad;
- c) The information in the book about a particular topic is too small;
- d) I do not see how this knowledge could be useful to me in my life and I'm not motivated to understand them;
- e) Other, please write

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4. How do you overcome difficulties in learning the material, if you experience them?

- a) I'm trying to think of examples from the areas that I understand;
- b) I ask classmates or the teacher for clarification;
- c) I am looking for more information on (books, textbooks, Internet);
- d) Other, please write

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5. When you easily understand a topic, what do you think is the reason for that?

Please write:

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As result of the work, by the first deadline set by the partnership - 30 May, we had received around half of the necessary materials. Some teachers asked for prolonging the deadline; other directly sent us less than the materials required, making it explicitly clear that is the most they can provide, refusing to do more work. So what ZAT did was to adapt the methodology in collecting the experiences:

- extending the deadlines for the teachers, who asked for it;
- asking the teachers, who have already provided us with their materials, to provide more than we initially requested;
- advertising the collection of experiences under the project in directories and websites, targeted to teachers – in order to involve teachers, who would like to share their experiences even if their school is not involved officially;
- contacting partner organizations, which work with teachers in order to help us with the direct contact with science teachers and receiving of experiences descriptions from other schools, not involved in the project officially.

After adapting the methodology and changing our practice in collecting teachers' and students' experiences we managed to receive all the necessary materials as follows:



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- 50 teachers experiences: 10 in physics, 10 in chemistry and biology; 10 others (5 in civil education and 5 in robotics); 15 in mathematics; 5 in geography.
- 200 students' experiences: 80 in chemistry and biology; 40 in physics; 10 in mathematics and 70 describing general difficulties or successes in the process of learning sciences.

### **Trouble making factors and solutions**

The analysis of the gathered teachers' and students' experiences allowed us to define some main problems teachers and students face in the process of education in science in school.

As main trouble making factors Bulgarian science teachers pointed out the following:

- Lack of materials to illustrate problems for students;
- Lack of proper laboratories and laboratory equipment;
- Improper structure of the themes in the curriculum – in Bulgaria the process of development of school curricula is centralized and they are prepared by the Ministry of education and then given to schools to follow. Teachers in science find the organization of themes in the curricula for the different science subjects and classes not very adequate, since often in lower grades they have to deal with themes, which in order to be explained to students require knowledge, which is supposed to be taught one or two years later in the process of education;
- Lack of attention from students in science subjects;
- Incomprehension of the processes and the texts.

In order to face and tackle the above mentioned problems teachers create various solutions, like:

- Producing visual materials - in order to overcome the lack of visual materials they often work with parents and students in order to produce illustrative materials like models, presentation boards, etc. themselves. Though with these activities it is hard to cover all themes in the curriculum, they have proved to be very efficient in terms of comprehension. Students feel more actively involved in the process of education and are more interested to work on science topics; they allow themselves to be more creative and propose solutions for the visual materials in order the specific subject to be easier to understand for the other students;
- Work in groups – a lot of teachers use the team work and project-based learning in order to deal with the difficulties students have in the education process. They consider peer-learning and support in the group as effective method enough to help students understand science themes in a better way. The method allows science problems to be explained by peers in a language closer to the students model of comprehension;
- Practical work – teachers use practical work as a method to make students more actively involved in the process of education and learning. Practical work refers to a wide range of activities – making students create examples and experiments themselves; provide materials for the experiments; create models and structures for visualisation of specific themes.
- Presentations – presentations are a very easy tool to grab the attention of students. What Bulgarian teachers do is on the one hand to create presentations themselves, on the other to make students create presentation themselves, which to be shown in front of the whole class. There are also teachers who create presentations together with students and present together before the class – a lot of students shared that this is one of the most interesting method to capture their attention in science subjects;
- Work in nature – the method of working in nature is mainly used by biology teachers. This method is used for gathering samples of soils, flora and fauna specimens, etc.
- Using the links with the real life – this is a method, which has proven to be the most effective one in terms of improving students comprehension of science subjects. Teachers share that even when creating visual materials to illustrate certain topics they try to use materials from the everyday life, so for students to be easier to imagine the applicability of scientific knowledge.

As main trouble making factors in the process of education Bulgarian students pointed out the following:

- Difficulties in understanding of science concepts, terms and definitions – students share that the language their teachers use in the education process and the language used in their books is too complicated to understand;



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- Difficulties to remember the theory – if the terms are impossible to understand it is more than obvious that theory will be difficult to remember. A number of students shared that they often try to memorize the theory, rules and concepts, which help them in short term (for a test or evaluation), but not in the long term studying process;
- Difficulties to imagine the relation of science subjects they study in school with processes in real life – this is the most common problem shared by students. They do not understand how the knowledge they receive in the process of education in science can be of any help to them in their real life.
- Boredom of the process of education – boredom comes mainly of the fact that students find the teaching methods and practices uninteresting. Many students share that if the process of education is made more attractive, by using computers, laboratory, hands-on activities they will be happy to study sciences.

What students wish for in their education process in sciences can be summarized easily:

- More laboratory work in order to connect the theory with practice;
- More real practice - experiments, touching the object with their own hands, etc;
- Examples from the nature and connections of knowledge with real and everyday life.

## Conclusion

Considering that the required number of materials – both teachers' and students' experiences were collected we can say that after all, the strategy for collection of the practices was successful. Despite the fact that the methodology needed to be adapted and deadlines extended we evaluate the work done as of good quality. The experiences collected are detailed enough in order to allow analyses of the situation in the Bulgarian schools from the point of view of teachers and students with regard to science education – teaching and learning practices. The contacts ZAT made with teachers and partner organizations show that not only our efforts, but also the efforts of teachers and other organizations working in the field, are for science education to be improved in Bulgaria. During the process of collecting experiences we had conversations with teachers, headmasters, representatives of Regional Educational Inspectorates for the project outputs to be implemented in the school practices. So we really hope Goerudio will be a very successful project for our country and the result achieved will be sustainable and have the impact we all work for.