

POLLEN PROJECT IN SLOVENIA

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ABSTRACT

Pollen – seed cities for science is a developmental and research project, financed by EU within FP 6 Science and Society programme. Twelve cities in twelve European countries have chosen a community approach for the sustainable growth of science education in Europe.

Pollen project in Slovenia is aimed to support experimental and inquiry based approach to science education in kindergartens and primary schools.

Keywords: science education, inquiry.

Introduction

The popularity of science and science education in Europe is alarmingly low. Pupils do not choose science subjects in schools, and the enrolment in science and technology studies is lowest ever. Public opinion sees science as a cause of the environmental and energy problems, world is facing now, and careers in science are no longer attractive. If the trends are not inversed, Europe's future is grim. It is obvious, that European society can not sustain its level of progress and can not keep its standard of living without scientifically educated young people, who would be capable to find solution for the problems world is facing now and in the near future. This initiated European leaders to finance projects to popularize science among pupils, teachers and society as a whole.

Pollen - seed cities for science

Pollen project aims at developing a model of science education in primary schools, based on inquiry approach, which has been proven successful in several of the participating countries. Through this approach, children develop enthusiasm for science and technology, language skills, critical thinking and autonomy.

As it is well known, the quality of education profoundly depends on teachers, so special attention is given to them. Didactic support and materials are provided, as well as other resources. They should no longer consider science and technology as too difficult to teach.

Pollen develops a local approach based on community participation. In each of the participating countries, one seed city is created; Saint Etienne in France, Brussels in Belgium, Tartu in Estonia, Berlin in Germany, Perugia in Italy, Amsterdam in Netherlands, Lisboa in Portugal, Girona in Spain, Stockholm in Sweden, Leicester in United Kingdom, Vac in Hungary and Ljubljana in Slovenia.

Seed city is a city which gives special attention to science education. The whole community supports science education, including local industry, scientific community and authorities. Schools and science education cooperate with local community and education is given proper social context and relevance.

Pollen builds on successful national projects, European network Scienceduc and involvement of national Academies of Sciences. [1]

Pollen project in Slovenia

Ljubljana was the first Pollen city in Slovenia. Activities started at the Faculty of Education. Pollen team was constituted from university staff and a teacher as a teacher training coordinator. This was very favourable, since university teachers are in continuously in contact with teachers through in-service training, and in this way well aware of their troubles and needs. The philosophy and outcomes of the project were immediately passed also to the future teachers, who are currently students at the faculty. Hopefully, the outcomes and good practice will be better distributed because of that, and the effect doubled.

The team agreed that project activities in Slovenia should be

- Curricula oriented; teachers already complain the curricula is too extensive, and adding new content, no matter how innovative in approach, would be rejected;
- Supportive to teachers regarding their knowledge; curricula was changed in the last years and teachers do not feel confident about new content;
- Supportive to teachers regarding classroom equipment; schools are often not adequately equipped for the teaching of the new content;
- Mostly practical, not theoretical; teachers should be educated as they are supposed to teach the pupils.

And also

- Only schools with at least two interested teachers were accepted; as sharing and exchange of ideas among colleagues is very important, not to mention support.
- Inquiry based teaching and learning should be given special attention, as it is relatively new for the Slovenian teachers and they lack experience in it;
- Suggestion for the assessment and evaluation should be provided; teaching in a new way demands also new ways of assessment and it is known that assessment determines what and how is being taught.
- Developing language skills was promoted; learning of scientific terms should accompany activities and content.
- Project activities should be extended to kindergartens; kindergarten teachers are very keen on “doing science” with the kids, and they lack appropriate workshops. Research also showed that attitude towards science is not formed at the age when the career is being chosen, but much earlier in the childhood.

From the previous contact we were aware of several “problematic” parts of the curricula, so the first set of (ten) workshops for the teachers were designed to address them. Following the Swedish example, we also decided to provide a full set of experimental equipment, used by the teachers at the workshop, to rent for the classroom use, too. Each enables the whole class to carry out activities in pairs, and a kit for the teacher is added – 15 altogether. Teachers tested and carried out the experiments at the workshops (Fig. 1). In this way they can feel confident when doing it in

the classroom. Adequate content knowledge and didactic materials were also provided, together with some materials for immediate classroom use. Experimental equipment is available to rent for the workshop participants, and is refurbished after each use.



Figure 1. Teachers are preparing pigments at the workshop “Light and Colours”



Figure 2. Pupils are experimenting with “Water flow”

Teachers were strongly encouraged to implement at least one of the topics per year in their classroom, and report back on it (Fig. 2). In this way, materials and activities can be developed further.

Only two topics were dedicated especially for kindergartens. Materials were developed following constructivistic approach; a questionnaire on children ideas was designed and distributed among the registered participants in advance. They reported back on childrens’ answers, and only then the workshop was designed. In the third year, kindergarten teachers often joined workshops for primary teachers, too – they were confident they can adopt materials for their pupils.

Both kindergarten and primary teachers were also asked to extend their activities beyond their classroom. Science and their experimental activities should be presented also to parents and others: local stakeholders, authorities, politicians, In this way, science and Pollen were presented at “Open door days”, local festives and other occasions (Fig. 3). It helped promote our activities and, hopefully, science, too.



Fig. 3. Ljubljana Major, Mr. Zoran Janković observes children weighing objects (workshop “From counting to measurement”) in Mravljinček Kindergarten.

From the first year, a second city, Kamnik, was also involved in the project. Promotion of the activities among the participating teachers spurred Kamnik city authorities to purchase city's own set of equipment and maintenance was provided. Activities there were almost the same as in Ljubljana. Because of the smaller size, even bigger portion of the teachers were involved there.

Conclusions and some perspectives

As the quality of education depends on teachers, Slovenian Pollen team decided to support teachers and their efforts. Teaching science in active way demands much time and effort, besides extensive knowledge. By providing them with all the material for the pupils, they were encouraged to perform the experiments and activities in the classroom.

Teachers' feedback was very positive about the workshops, and especially about the equipment renting. Some of them, being encouraged by the experience and pupils appreciation, have taken initiative in their hands and started to design their lessons in different way. Others, offered everything "ready to use", were doing at least some lessons practically – and that means improvement to education, too.

As the project is near its end, teachers are very eager for continuation. Equipment provider consented to provide funds for some workshops in the next (school) year (engaging local enterprises proves beneficial), and both cities' authorities are ready to support the project activities. It is vital, that they do not stop at this point, as the school system is very rigid, and changes need time to settle down as established practice. And because of that, it is also vital to gain the support of the local community; if science is appreciated only within the schools, it will not attract young people. It is public appreciation that counts; and as the funding of the project from EU is too short to achieve any permanent results, we also need local material support to continue with the activities in the future.

References

- [1] <http://www.pollen-europa.net>