Norway

Ruseløkka School

This learning environment features multi-subject projects on technology and design in primary school and lower secondary school classes. Each year, several teaching programmes of one or two weeks are implemented as part of the general education. During these weeks, the students create simple technological products with social relevance, making decisions concerning resources, environment and ethics. The activities stimulate students to use formal mathematics and subject matter from natural science and crafts to resolve practical tasks. This practical approach allows them to gain a sense of mastery, see the relation between school and later life, and discover their talents and interests to choose further education or vocation. Students work in small groups supported by a teacher, and parents and professionals are invited to take part in the projects. The teachers have published textbooks on the multi-subject projects to be used by other schools.

Main Focus of Innovation: TEACHERS, CONTENT, RESOURCES

General Information

Name of the ILE: Ruseløkka School

Location/Address: Ruseløkka School, Løkkeveien 15, N-0253 Oslo, Norway

Website: http://www.ruselokka.gs.oslo.no/

ILE submitted by: Eva Celine Jørgensen

Rationale

Why do you suggest that it should be included in the project? How does it respond to 21st century learning challenges?

The school development project at Ruseløkka School touches on the core of many of the challenges today's school is facing – giving pupils an up-to-date general education, motivating a broad range of pupils and giving each pupil a sense of mastering and thus strengthening their initiative and ability to satisfy their objectives.

Our pupils create simple technological products that are relevant for society …

The project concerns development activities in *technology and design*; a new multi-subject topic that is part of the general education after the new Knowledge Promotion plan was implemented.

The backbone of the project is developing, testing, assessing and documenting a number of multi-subject teaching programmes. The school development project comprises all the ten years of school, and each year contributes with several teaching programmes. These programmes continue for one to two weeks and are implemented once or twice each year.

The common factor for all these programmes is a practical approach. Our pupils create simple technological products, such as a crane, an electronic warning circuit, a new and modern design for an old lamp, an environmentally friendly model house, a beautiful and strong bridge, an attractive and quick electric vehicle and so on, and these are related to the products used or under development in society.

Parents/guardians, professionals and representatives of working life and educational institutions are regularly invited to take part in our teaching programmes.

Teaching model and methods

The model is used in the primary school and lower secondary school years, and is roughly as follows:

- The teaching programmes consist of theory and practical elements. Pupils are prepared before we start during regular teaching hours. When launching the teaching programme we clarify competence objectives and assessment criteria. We emphasize assessment of pupil work and follow-up work in the various subjects, making the teaching programme part of a larger whole.
- The practical work is simple and is led by class teachers. Pupils will be placed in small teacher-led groups of four or five, the way they sit in all subjects in lower secondary school at our school. Each small group will share tools and equipment and help each other. The regular classroom is the "workshop", and special rooms are not much used.
- Teachers of natural science and arts and crafts subjects have particular subject responsibility, but all the teachers and all the subjects are included in the teaching programme. All the teachers also participate in designing the programme before it is started and in evaluating it after it is completed. All the teachers have carried out the practical elements of the teaching programme using the same tools and under the same conditions as the pupils.
- The equipment and tools we use are inexpensive and robust, and can be used in many teaching programmes in technology and design. We have an ambulatory collection of equipment with a paid collection supervisor.

The model requires a project management with adequate organisational and academic competence to pull along, instruct and assist the staff. The school administration participates actively and assigns this field priority.

A summary - a stage on the way to better general education
Our pupils are actors, designing and redesigning simple products with social relevance. They must make decisions that concern resources, the environment and ethics. They encounter technology in an involving, challenging and active manner. All the pupils, including boys and girls, are given an up-to-date solid general education, in accordance with the general section of the curriculum and the competence objectives in the Knowledge Promotion curriculum.

The work has many positive ripple effects. Our teaching programmes have a practical approach, are true to reality in their themes and give our pupils a sense of mastering. The pupils learn, experience the joy of mastering and are motivated. This gives them the will to work and succeed that is very useful in natural science subjects. The pupils use formal mathematics and central subject matter from natural science and arts and crafts to resolve practical tasks in our teaching programmes. They more easily see the relations between what they learn in school and what they need to master as adults. More pupils also find that they have abilities and talents that may come to influence their choice of education and vocation.

Evidence
Is there any evidence or indications showing that this initiative achieves the outcomes that it is aiming at?

We have quite comprehensive documentation. A primary concern in the last six months of the project is actually to process and edit the documentation aiming to reach a broader audience. Each year has documented two or more multi-disciplinary teaching programmes. Documentation of a single teaching programme may for example include:

- Planning documents from the teacher teams
- Background material of various types, relating to the subject, teaching methods and practical matters, links and local texts
- Information letters to pupils and parents/guardians
- Invitations and cooperation agreements with communities and experts outside school
- Week plans/ work plans for the pupils
- Support information, help figures and guidance to the teachers
- Work sheets for the pupils (frames, practical guidance, assessment criteria)
- Subject tasks. This in particular concerns maths, natural science and arts and crafts, but we also have examples of tasks in Norwegian, English and UV Several tasks aim to train in basic skills
- Pictures (large photo base!), films and pupil folders (digital and written)
- Pupil journals (pupil assessments of learning profits and overview features)
- Tests and examples of pupil papers
- Team experiences and assessments after the teaching programme

The documentation forms the basis for a serious, scientific and qualitative assessment of the project. We have also had relatively comprehensive scientific follow-up research from the natural science and aesthetic departments of the University College of Oslo throughout the entire autumn semester of 2008.

It is important to point out that what we have achieved with this project cannot simply be measured by means of simplified quantitative measurements, such as test and examination results from one year to the next, especially with respect to individual subjects. We have obtained a solid academic basis for what we are doing.

Analysis of pupil performances and the pupil survey under the auspices of Læringslabben (the Learning Lab) or similar institutions does not lend itself well to measuring the learning profits, but gives positive indications. Several pupils also appear to consider a broader range of education choices, a trend we are seeing clearly already now.

The true value of what we have worked with in the project is clearly the long-term effect, in the form of a good learning environment that will remain part of the school tradition, motivated pupils and what each pupil brings with him or her into the world.

History of ILE

Who initiated it? For what reasons was it started and with what purpose? Have these changed since?

Ruseløkka School started work with this learning arena in 2000/2001 with a group of pupils in lower secondary school. Our equipment and competence were based on this group. The learning arena quickly spread to the whole lower secondary school years based on the general section of the curriculum and the subject curriculum. The school's teaching model with strong teacher teams and proud traditions in project work have played a decisive role. The fact that pupils have been placed in small permanent groups in the classroom has also been vital. The school administration has also allowed teachers to be leaders in their fields with necessary priority and support for the development activities. Following the introduction of the Knowledge Promotion curriculum and the school development project, initiated in 2006, the learning arena came to the primary school with full force. The school development project also provided funding for a project manager, more equipment and instruction of the staff.

Our school has very skilled arts and crafts teachers. Three of them have authored *Akantus*, the most used textbook for the lower secondary school years in Norway. These teachers have cooperated closely with natural science teachers for many years and have played a decisive role in the development of our school's learning arena entitled technology and design.

The technological competence is fundamental because it represents the genuine promotion, the new and major challenge for our school. We have had this competence in place:

The project manager has an engineering background and has developed the learning arena in close contact with leading expertise from engineering educations and stakeholders who want to give technology more attention in Norwegian general education. In cooperation with two of these she has authored the first and only Norwegian textbook in the field, *Teknologi og designboka* (2006). Together they have given teacher courses across Norway based on this book, almost 30 practical two-day courses so far. The teaching programme in electronics in particular has been tested by us and documented in this textbook. A large multi-subject vehicle project has also been developed here and is thoroughly documented in the textbook. The project manager has regular contact with other pilot schools in this field, and with all key persons and expertise communities that have contributed to developing this field in the Norwegian school.