

AEA's report on WP 4: Pupils' Pilot project in ITALY / PERUGIA

1. Strategies and experiences to implement the YEP project in schools

a. Realisation

1. Acquisition of the schools (ways, criteria of selection)

Five technical schools were chosen to take part in the YEP project. All school managers were very interested. In general the energy topic has been implemented in scientific subject such as chemistry, botany and physics. But in some cases the activities have also been carried out during different subjects such as economics or technical drawing. For example we have outlined the consequences of the wrong policy on the cost of fossil fuel. The energy problem is very widespread and so with the teachers we have looked for a link with several subjects. In general the teachers who follow the YEP activities teach about energy issues, but usually during the lessons they cover only a small number of aspects to do with energy. In their subject they didn't cover all aspects of the energy problem. So with the YEP didactic lesson we helped them to look at more aspects of the energy problem: environmental issues, International Protocol and European and National laws, fossil fuel problem, renewable energy sources and their technologies.

2. Model frame work (what did we plan to do and when did we plan to do it?)

The tools which were to be used for the YEP project was presented by AEA to the teachers and the pupils.

AEA did 5 x 2 hour lessons with the help of the teacher. The energy audit was performed by the teachers with the help of AEA.

A lot of technical lessons took place, like calculations to carry out the energy audit and to evaluate electric equipment consumption.

3. Contact & Communication with the teachers (how did you find your contact?)

AEA met all of the teachers involved in the YEP project. The teachers were soon well motivated and they contributed to the choosing and improving of tools. The meetings and phone discussions have always been very interesting and productive. The teachers agree about the importance of education of energy topics in the schools and they are very motivated to follow the pupils in this activity. They have been always ready and available to discuss and compare their opinions with AEA.

4. Help needed (teachers' questionnaires)

The teachers are technicians (Engineers) and they are aware of energy issues but there are a lack of resources available to support teachers in these areas. They believe that the future of energy education is through making it more relevant to the pupils.

5. The pupils' knowledge before the action (pupils' questionnaires)

The students have a limited understanding of energy issues and skills

6. Energy education in school (energy team, energy day, classes etc.)

In each school an energy team was established. In two cases the energy teams were formed by the most interested students from different classes and in the other three cases the energy team was formed by the students of one class. The energy team was responsible for the following tasks:

- energy audit of school, evaluating volume, surface and consumption
- observation of the applications of electric instruments from employees, teachers, pupils and of the heating system functioning
- evaluation of energy saving behaviour (kWh, CO₂ and money saving calculation)

7. Reducing energy consumption (change of behaviour, tune valves, etc.)

In the school the heating system is centralized and it is not possible for the users (pupils, teachers, caretakers, employees) to switch the systems on or off. So we have focussed our saving policy on electrical energy, both evaluating the good behaviour potential or in changing the electric system /electric equipments, lamps etc. For example evaluating the energy saving that can be obtained by changing the filament bulbs with energy saving lamps using mathematical calculations.

8. Used tools

- Didactic lesson (a book about energy issues made for YEP project was given to each school. Moreover AEA left the presentation of the lesson with the school in order to give them the opportunity to use them again)
- Procedure for energy analysis of school and workplace
- Procedure to evaluate energy saving deriving from the good behaviours in term of kWh and CO₂
- An inconvenient truth (Al Gore)
- Procedure of reading the electricity meter
- Didactic visit (building company or energy saving building fair)

9. Experiences

The pupils have been well motivated through the use of new didactic tools, not only frontal lesson but also exercises, group working, school inspection, consumption evaluation through cost control.

10. Pupils knowledge after the action (pupils' questionnaires)

They are more aware of environmental problems and the energy consumption of buildings, evaluating their structure, plant and electrical equipment.

b. Goals

1. Emphasis of the pupils

The pupils seemed to appreciate the lessons, arguments, and the organization of the pilot pupil program with practical activities. If they are well motivated they answer effectively!

2. Emphasis of the teachers

The teachers are the key people in the energy education project! An interested and motivated teacher means that the project has a big chance of success!

3. Knowledge through energy education

The pupils didn't know much about energy issues so we had to include in the programme: environmental problem, renewable sources, fossil fuel, plants, consumption tied with single instrument.

4. Energy topics in the curriculum

The involved schools are Technical or Commercial, and for Surveyor Secondary Institute" (Istituti Tecnici o Commerciali e per Geometri). We intend to involve the Surveyor section because in the future they will design houses and buildings. However in Italy actually the role of the energy certifier isn't well defined, it is a qualified technician. So a surveyor could be an energy certifier. We intend to provide them in the first instance with knowledge and competences.

5. Reduction of Energy consumption

The school caretakers have been involved by teachers and pupils in the school energy audit and in particular in the good behaviour application. He decides with the pupils the energy saving behaviours that will be carried out in the buildings. Moreover the pupils have quantified the potential energy and emission savings.

6. Special qualification of the pupils for the labour market

These students will become technicians so that they can work as energy certifiers, and also in the energy reduction of buildings and thermal plants industry.

c. Obstacles.

- Motivating the students was in some cases a problem.
- Motivating the teacher is not always easy (they have their own didactic program to carry out)
- Encouraging the school manager to agree to the project is not easy (they have to find a teacher to work on the project)

d. Suggestion and Notes

1. Lessons learned

- Organize the activities with School Manager/teacher well: you have to have the full help of all the school members.
- Adapt the PPP to the formative plan of the school in order implement the action successfully
- Use of new didactic tools as film, visits and practical tools: very positive way to motivate and interest the students.
- Face all aspects of energy problem (environmental/resources..) the attention level increases when you talk about actual issues: students could understand an actual problem well (many questions). Teachers were present during all the meeting and in many cases they are surprised at the engagement.
- Use their attitude/capabilities: teachers have to help you to divide and organize the activities
- Provide them with easy tools and methodology: They have learnt to calculate the energetic/environmental/economic expenses/saving of their behaviour: interest remained high even when they had to do mathematical calculations. They have to be able to quantify all of these aspects to understand the problem. The recording of electric power was very fun for them!
- Create incentives
- Organize a dissemination campaign into the school to share work and results.

2. Suggestion for the future

- Good dissemination of the results