

SAUCE Schools at University for Climate and Energy



Handbook – Second Stage

D11.2 of WP7 of the SAUCE project
2nd draft
7 December 2010

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This report was published as part of the EU project "Schools at University for Climate and Energy (SAUCE)"

Contract no.:
IEE/07/816-SI2.500399

www.schools-at-university.eu

About SAUCE – Schools at University for Climate and Energy

For the EU project SAUCE, seven European universities and the Berlin Energy Agency have joined forces to develop and promote university programmes for schools as an innovative educational tool aiming to make younger generations adopt intelligent energy behaviour. From 2009 until 2011, each university offers a series of one-week on-campus education programmes for pupils ages 10-13 on the topics of energy efficient behaviour, renewable energies and climate change in an exciting new learning environment. The programmes are complemented by activities reaching out to the pupils' teachers. Successful and effective teaching materials and information sources are made available, energy education experts and their teaching approaches are introduced to the teachers, and the exchange of knowledge and ideas between schools, academics and educators is facilitated. SAUCE thus contributes to improving teaching and curriculum on energy efficient behaviour.

SAUCE is supported by the EU Programme Intelligent Energy Europe. This programme aims to promote energy efficiency and renewable energy sources. It helps all of us to produce and use energy in more intelligent ways and to increase the use of renewables. For more information on SAUCE: www.schools-at-university.eu

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1 Preface

Based on the experiences of SAUCE (Schools at Universities for Climate and Energy) programmes carried out we gathered a lot of ideas, hints and suggestions that should be considered when planning a SAUCE programme. This handbook shall be a guide and source of inspiration for you and your programme.

What is unique to SAUCE?

As someone might ask for the difference between our Schools at Universities concept and the already widespread Kid's Universities at the beginning, we want to give the reader a short clue, what SAUCE is about.

- The idea of SAUCE is based on the concept of raising the pupils' interests on specific subjects – climate and energy in our case - by teaching in a diverse, dissenting environment other than the odd classroom (e.g. university, museum, nature, theatre, etc). Using the atmosphere and tradition of the university as a place for acquiring a still deeper knowledge the wide and complex subject of “Climate and Energy” can be seen in a different light.
- While a Kid's University is usually for individuals, SAUCE addresses schools and teachers, respectively their classes, supplementing the regular curriculum. Sauce therefore is also a tool for teachers to integrate climate and energy in the regular school schedule.
- Further, while Kid's universities are mostly booked by children with parental academic background, a “schools at university” programme is open to all schools. Such a programme is therefore a vital contribution in reaching population groups, which normally would not get in contact with higher education.

Based on these main characteristics of SAUCE, some important differences between the two concepts will be identified and discussed in the following sections.

2 Introduction

Survival of modern societies depends on finding ways to act responsibly with the use of natural resources. In the context of education policy, the aim is to enable pupils to grasp the concepts of climate protection and sustainable development. They also need to acquire skills, e.g. creative competence, which will allow them to actively develop solutions of their own in response to these challenges. Internationally, these aims were started to be implemented systematically by the UNESCO calling out the “UN Decade of Education for Sustainable Development (ESD) 2005-2014”.

The project SAUCE, supported by the programme “Intelligent Energy Europe” of the European Union, contributes to these aims by developing energy education in primary and secondary education. Seven European universities developed and promoted one-week university programmes for schools as an innovative educational tool to motivate young generations to adopt intelligent energy behaviour. At these one-week university programmes classes of 10-13 year old pupils visit the university (each of them usually for one day). They attended lectures, workshops, performances and other events. The detailed structures and concepts developed by the participating universities vary strongly which will be shown in the following sections of this document.

Why a handbook?

This handbook was prepared as a part of the project SAUCE. It is targeted at other universities and has the following objectives:

- Assist universities and other organisations in implementing SAUCE programmes or similar projects;
- provide a pool of ideas, concepts and experiences that have been developed in the SAUCE project;
- provide supporting information in both a precise and flexible way (offer modules of the SAUCE programmes: from separated workshops to a one-day event up to one week or regular programmes)

We want to emphasize that the SAUCE team primarily is set up of researchers and energy experts. Thus, our focus is on documenting which climate and energy issues could be subject of SAUCE programmes and also how these issues could be taught. The focus of this handbook is not on pedagogical theory. Thus the recommendations do not include detailed discussions on pedagogical background. Nevertheless some of our pedagogical guidelines will be explained later on.

Why carry out a SAUCE programme?

- For **recruiting the future generation of students**: Pupils get in touch with universities, they very possibly get a positive first impression, and may decide for this university for their higher education later on.
- **Teaching to pupils can be a very interesting and fruitful experience** for scientists giving insight for presenting the own field of research in an extremely clear and simple way. It may lead to a new point of view on the own field of research. Moreover, it can contribute to improving ones own teaching and communication skills.
- Programmes such as SAUCE are a valuable and rewarding **opportunity for universities to contribute to the sustainable development** of their communities and support the necessary change toward sustainable economic and social structures. As major educational institutions universities are challenged to meet the demand for education for the green new deal and a new generation of jobs. The SAUCE programme offers a valuable contribution to this process.
- Universities get involved in and **facilitate the local social and political network of actors working toward a more sustainable development**. These activities support the positive perception and reputation of universities as a relevant actor for local development.
- Children and teenagers are a core target group; in our project we selected 10-13 year old pupils. At the time of project start in a number of countries there was **comparatively little offered for this target group in regular curriculum** and the variance of educational materials was scarce. At the same time, this age group generally is very alert, sensitised for the general problem of energy and climate, open and eager to learn more, and at the same time not as pre-determined in their opinions as older age-groups often are. Therefore, this age group is easy to reach and a rewarding addressee. But in principle, the SAUCE format may easily be expanded to include further age groups.
- Teachers are motivated to extend their teaching in the direction of sustainability even if its not biology, geography or ethics they are teaching. Additionally **teachers are usually not targeted by other university-linked programmes** for children (e.g. Children's University programmes).
- **Publicity for the scientists/academics and energy research institutes**. Moreover, it would show that scientists are taking on responsibility for society and issues of crucial interest.
- Universities provide a unique place and atmosphere for pupils and campus has proven to be a perfect location for out-of-school educational experiences. This can be a major advantage for carrying out climate and energy workshops because it attracts pupils' attention and curiosity.

Which messages do we want the pupils to take home?

- Positive feeling and connotations towards climate mitigation and sustainable energy systems;
- Motivation for pushing sustainability in the own personal environment. The awareness that their own action can make a difference;
- Knowledge of basic facts on climate change, climate mitigation, energy efficiency measures, renewable energy systems ...
- Taking personal interest in and personally identify with the issues listed above;
- A positive association with “university” as a place for learning and searching for answers to important and interesting questions;
- University is an exciting place that is open to the public.

Which messages do we want the teachers to take home?

- Feel encouraged to take up the subjects in their teaching despite their complexity
- Feel supported in their contributions to shaping the future of their pupils and society;
- Ideas, materials and methods for their own teaching;
- The awareness that they can contribute to disseminating/multiplying the idea of sustainability and help implement it.
- Promote and enforce the positive approach towards changing society

3 Programme development

Two core principles have been guiding the project partners in preparing SAUCE programmes:

- A) develop educational programmes which provide a positive contrast to the school's teaching environment
- B) present a variety of approaches to teaching climate and energy issues which are to serve as inspiration for teachers for their curriculum teaching

With these aims in mind the SAUCE-partners developed programmes as an interactive, interdisciplinary educational tool of the core topics of climate change and sustainable energy use and presented individual options for sustainable energy behaviour in daily life. The scope of each programme was:

- to raise the participants awareness of intelligent energy and mobility behaviour
- to raise the participants interest in green sciences and green technologies
- to broaden pupils' horizons regarding the international dimension of climate protection and intelligent energy use
- to support teachers to integrate climate and energy in the daily school schedule

All SAUCE partners developed and realized programmes relying on the principles of participation and personal emotional involvement which affects positive and emphatic learning. The overall thematic focus of the programmes was linked to the social, everyday life and technical dimensions of energy efficient behaviour. Interactive methods are used to get the message across: engaging the pupils in hands-on activities, in role plays and in thinking about solutions, and fascinating them with experimental sciences and arts.

The SAUCE lecturers were recruited from the university, the local community and among national climate and energy education experts. All SAUCE partner universities have been establishing new ties to the local community and developing the environmental education network.

When developing a SAUCE programme, it is helpful to consider and take decisions on a number of key issues and thus prepare the ground for systematic cooperation within the core team:

3.1 What do you want to tell?

Define the target and content of the programme: Which contents are most relevant?

What is the key objective of your programme?

What makes it a "unique event"?

What age group do you want to target with the programme?

What comprises thematically the "narrowest focus" of your event?

What possible topics/areas of expertise can contribute to cover this?

3.2 Who is going to tell it?

The role of university, researchers and their contributions to the programme

At the very beginning, it becomes obvious that each SAUCE programme is an expression of the local circumstances, the respective regions schools' curricula and the cultural background of the green education approach of the local staff.

Our experiences in programme development distilled mainly two different types, which define the role of each partner university in the SAUCE implementation and education process:

- University focuses mainly on the role as an **innovative environmental education networker** who establishes new ties to the local community and unites environmental education from external and in-house sources/players on campus. With the educational tool of SAUCE, university opens its doors for interdisciplinary co-operation with the local education community to promote and to implement the approach of education of sustainable development in schools.
- University focuses mainly on being a facilitator for an **innovative, interdepartmental scientific SAUCE in-house network** and guarantees the quality of the SAUCE education by concentrating on scientific in-house capacities and knowledge. The project SAUCE combines and develops in-house capacities and opens the university itself for a new target group bonding the younger generation with the university as an educational institution.

Your approach might be highly influenced by the following facts:

1.

Universities situated in large metropolitan areas can usually revert to a wide range of environmental and cultural local educators which congenially suit the playful programme development and interactive approach of SAUCE. Therefore these universities focus their role on being an innovative environmental education networker who brings together external local and in-house environmental activities. The role as a networker allows embedding proven methods from external players to get the SAUCE message across and to offer an interdisciplinary programme with a balanced mixture of topics regarding the social, political, technical and cultural aspects of the interdisciplinary topic climate protection, energy efficiency and energy savings and its implications for daily life.

2.

According to the second type above, the programmes can be mainly based on interdepartmental activities from the university itself. The idea of this approach is to ensure a high quality of SAUCE education. Therefore the university staff itself developed suitable workshops and experiments to realise the SAUCE idea. The pupils get in close contact with university and its energy researchers and academics. But there are also pragmatic organisational reasons for this in-house approach, like the university cannot revert to external activities of an environmental community (e. g. in rural areas) or the university has not enough financial capabilities to engage external educators.

3.3 How should it be told?

The pedagogical background

For assessing the “sustainability skills” in 10-13 years old children a number of factors have to be kept in mind:

3.3.1 Psychological background

Developmental psychology, and there especially the works of Jean Piaget (1896 – 1980), has a lot to say about the way the age group in question is perceiving the world.

It is understood that most people undergo a qualitative change in their way of thinking at the age of between 11 and 15 years from being **concrete operational** to being **formal operational thinking**.

Concrete operational thinking is bound to acts that may be carried out concretely and to objects that are concrete. Concrete operations are thinking processes which may arise through practical acts but also through reading and listening. You can cope with a limited number of variables which often describe what happens but not why.

Formal operational thinking enables you to cope with multivariable problems and to give explanations. You can use hypotheses, formal premises and draw conclusions. You can ignore the concrete background.

Of course these are only categorical hypotheses. But keep in mind this transition takes place in your target group.

What does this mean for educative programmes?

1. Be concrete in your examples.
2. Refer to daily life experiences of the participants.
3. Let them use many of their senses.
4. Use professional jargon, foreign words or even in depth theoretical background information. But make sure you use it in a way suitable for all participants of the group.
5. Keep in mind that the same material will not be appropriate for all pupils attending the workshop.
6. Be assured that rich experiential learning outside of the regular classroom context appears a key component of successful environmental, and hence energy and climate, learning.
7. Playing games as a pedagogic method has not only a positive connotation from the start, but it is enabling to reach most of the participants at the same level.

Examples:

- When the pupils heard about wave energy they were allowed to enter the model basin and measure wave amplitudes and water transport.

- After being told (shown) on what to consider when constructing a “green” residential area, the pupils were asked in groups to make their own model with elements which were made beforehand.
- Pupils made a charging battery of solar cells for their mobile phone.
- Popular television series like “CSI Miami” are an important part of young media-culture. For the workshop, it could be modified to “CSI Energy“, pupils being the detectives solving a case related to the energy industry. The solution itself is about using renewable energies.

3.3.2 Use a positive approach!

Through the media we are familiar with disasters of all kind.

Presenting the negative side only does not go unnoticed by the pupils. The prospective catastrophe is shown explicitly, while no possible solutions are presented. Based on the model of experiential learning we believe that being given the power to act, on the one hand, serves as an intrinsic motivation to get active. It enables, on the other hand, to address upcoming problems as possibilities rather than obstacles.

What does this mean for educative programmes?

1. Meet the children in their own world.
2. Focus on the positive effects of changing habits and rearranging necessities.
3. Do not moralize.
4. Do offer the children the opportunity to form their own opinions and get personally involved.
5. Do not overestimate the perceived importance of teaching facts and figures.

For more experiences and proven methods please refer to the Annex VII “Ideas for a playful and interactive approach to Renewable Energies”

More information on previous SAUCE programmes can be found on the international web-site where links to local SAUCE pages are listed: www.schools-at-university.eu.

4 Organisation and logistical aspects

Organisational aspects vary a lot due to the specific requirements of each country and university. However, this section is providing ...

- ... a list of aspects that previous organisers of SAUCE programmes considered to be the most crucial ones and thus should be considered regarding the organisation of SAUCE programmes
- ... a rough guideline for the organisation of SAUCE programmes
- ... ideas of various organisational concepts and structures (e.g. time schedules of the programmes)

4.1 Define the SAUCE-team

Core group

A small team of persons should be defined in order to organize the event. Within this team clear responsibilities should be defined (e.g. for the rooms, the dissemination and invitation of teachers, for sponsoring, for inviting speakers ...).

Depending on the size of your prospected programme we recommend two to three persons for the core group.

Helping hands

In addition, it is highly recommended to have some active support for the core group during the event. This support would help with logistical requirements and room preparations as well as guiding school classes through the university building. Be aware to organise such support early before you run your programme and instruct your helpers precisely, preferably on-site.

Photographer

A very important point will be the documentation of the event. Photographers being on site for about two hours skimming through the courses taking pictures are a good choice. We have gathered good experiences with video documentation, too.

Do not forget to check on authorisation of the pictures taken with teachers/parents!

4.2 Define the time schedule of the programme

In the course of the SAUCE project lectures or workshops were offered in two types of programme structure:

- open-campus format

I.e. single lectures/workshops which can be booked on its own. This has advantages from a logistic point of view and allows to accommodate school classes which cannot stay for the whole school day.

- closed-cycle programme

E.g. with a starting event, workshops and finally some type of a final event. This might be more “impressive” due to its length and its recurrent theme.

Beside the underlying educational concept, this cycle model might be a reaction to the local infrastructure as well. Poor public transportation for example might force the organisers to offer proper 'all inclusive' closed-cycle events as school classes won't travel a couple of hours to attend only one 45 min lecture. This is especially true for classes coming from far away!

The Annex III provides examples of different time schedules and structures that were developed and tested during the SAUCE project.

4.3 Set the exact date of the programme

This depends on the regular curriculum of your local schools and your university, as well. As these issues vary from country to country, no general rules for setting the optimal time can be given.

The most convenient time has turned out to be semester breaks, when there are no lectures, conferences and other events at your university!

4.4 Contact speakers and define topics of the lectures and workshops

Recruit potential speakers from your own as well as other universities, from NGO's and from research institutions as well as actors and performers.

Get an overview of activities already going on in this field (e.g. NGO's offering workshops for schools etc) and of potential contributions by in-house researchers and contact the selected lecturers. When defining your programme, prepare and distribute a guideline for lecturers and sort out the remuneration of speakers.

4.5 Organise the teachers information meeting

As an interesting option you may want to arrange a trainings course for (participating) teachers on the chosen subject.

Scientists in the field giving their latest assessment of climate scenarios, education experts providing practical advice and methods for handling the bulky subject of "climate and energy" in school, etc are possible addressees.

The exact date of the preparatory meeting is best communicated along with the information about the "schools at university" programme to avoid confusion.

Check for an appropriate room to hold the expected audience plus a buffet for informal networking afterwards.

4.6 Select an appropriate location and make the reservations of the lecture halls and rooms for workshops

Make sure that the rooms in question are available at the given times AND the chosen rooms do have the appropriate infrastructure. In the end the rooms will have to meet the needs of the lecturer.

Short Title

Select rooms that are bright and offer a nice atmosphere. In particular for performances and workshops you should take into account the logistical requirements. It is helpful if the rooms are situated close together in the same building.

4.7 Talk to people being responsible for technical issues at university

It proved to be very helpful to stay in good contact with not only the facility management office of the respective buildings but also with key persons as the cleaning personal and janitors! They proved to be more helpful in the case of an emergency than every office person!

Make sure that in all rooms there is the right technical and presentation equipment (beamer, laptop, flip-chart ...).

4.8 Prepare other logistical issues

This might include breaks, transportation, restrooms, food,

4.9 Organise the enrolment procedure of the event

For larger events it might be helpful to establish an internet based enrolment procedure. For smaller programmes and the teacher information activities a registration via e-mail is sufficient. Make sure to take regard of the schools' planning horizons, as in some countries, the year's planning is arranged for at the beginning of the schools year or very long term.

Plan in some time for answering individual questions by the teachers who enrol.

4.10 Think about "special features"

Such as could be:

- Student IDs
- Certificates
- Outdoor-activities
- Art performances
- Media activities (e. g. Pupils design their own article for the local newspaper)

4.11 Before the event

If you chose a structure where there is moderation needed check for all the essential information being communicated to the moderator.

Remind lecturers of the chosen dates and times two weeks before the event.

Prepare a list of all the necessary telephone contacts during the event including

- Lecturers
- Student helpers
- Teachers
- Facility management
- Ambulance etc.

4.12 During the event

Make sure that all the necessary material is on site:

- Telephone lists

- School classes and the respective courses

- Posters for Corporate Identity

- Personal for welcoming the classes AND lecturers.

5 Networking, Sponsoring and PR

5.1 Networking

An essential part of the work around the SAUCE programme is related to networking activities and getting in contact with the right people: Teachers, speakers, sponsors, PR experts, technical departments at the university etc.

It proved essential to make use of many different resources and people from the beginning in order to come up with a programme structure fitting the regional needs best.

- within the university
 - o potential lecturers from various institutes / faculties
 - o Department for PR-activities
 - o Department allowing for support of technical equipment and logistical support
 - o Legal department for contracts, copyrights, etc.
- with ministries and education authorities etc
- with teachers and schools (and maybe school-networks)
- With experts in education for sustainable development
- Potential speakers

Annex II provides a pool-list of speakers, experts and stakeholders from the SAUCE-countries helpful for setting up a network and designing SAUCE programmes.

5.2 Sponsoring and other budget sources

In each country, very specific budget sources and sponsoring opportunities are available. In the following, we will list some potential sponsoring and other budget sources:

- Internal university budgets
- National and regional governments (e.g. ministries on education, environment)
- Energy utilities, in particular those active in the field of renewable energy
- Banks, media companies, assurance groups, companies related to Information and Communication Technology
- Other private companies
- Funds dealing with promotion activities of climate mitigation and sustainable development

Apart from the aspect of monetary sponsoring it might prove very helpful to cooperate with NGO's and companies in the field of interest as many can provide comprehensive networks and resources!

5.3 Contacting schools and teachers and PR-activities

Annex IV includes examples of press releases and other forms of how to contact media.

Invitation is probably most effective via education authorities or school- and teacher networks if these exist. Nevertheless, general PR activities are important to present the universities activities to the general public, thus increase the programme's and the university's public visibility. But they may also be important to reach the programme's target groups, particularly teachers and also parents. Thus, public media are only one important channel for PR activities. The other important channels are public and private information networks established to address and reach teachers directly, such as mailing lists or news letters of (environmental) education actors.

Helpful steps:

- Use the school authority's distribution system to send out programme flyers to the schools.
- Contact the universities press department and use cooperating media to publish news articles. Additionally, entering a media partnership can help raise public attention.
- Get in contact with organizations and initiatives involved in environmental and science education to use their distribution channels to directly reach schools and teachers. These mailing lists are also helpful to raise attention for special activities or open spaces.

Short Title

6 Evaluation of the SAUCE programme (work title)

This section will be available in the third-stage handbook.

7 Bibliography

„Für Kinder-Uni-Gründer – Checkliste“. [Online] [Zitat vom: 17. August 2010.]
http://www.die-kinder-uni.de/html/fur_kinder-uni-grunder.html.

Watts, N., et. al.: “Cross-country analysis and state of the art review of extracurricular energy education and kids’ universities”, report D1 of WP2 from the SAUCE project, London 2009.

Braun-Wanke, K. et. al.: „Programme development“, report D2 of WP3 of the SAUCE project, Berlin 2010

Piaget, J.: The Psychology Of Intelligence, Routledge Chapman & Hall; Auflage: 2. A., 2001.