

SAUCE Schools at University for Climate and Energy



WP6

Cross-country evaluation report 2009

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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 pupil's 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 Introduction: The aim of evaluation in the SAUCE project

In the SAUCE project evaluation serves to improve the content and quality of the programme and to monitor and assess the impact of the SAUCE programme.

With respect to quality and content of the programme, the evaluation draws on the perception of the participating pupils, teachers and lecturers and all others who were involved in the local SAUCE programmes offered by the partners of the consortium. The consortium members offering the SAUCE programme are:

- Freie Universität Berlin, Environmental Policy Research Centre (FFU) (Germany)
- Vienna University of Technology, Institute of Power Systems and Energy Economics, Energy Economics Group (Austria)
- Aalborg University, Department of Development and Planning (Denmark)
- Roskilde University, Department for Environmental, Social and Spatial Change (Denmark)
- Berlin Energy Agency (Germany)
- University of Latvia, Department of Environmental Management (Latvia)
- University of Twente, Twente Centre for Studies in Technology and Sustainable Development (The Netherlands)
- London Metropolitan University, Department of Applied Social Sciences (United Kingdom)

With respect to impact the evaluation distinguishes between impacts at three different levels: the individual, the network and the institutional level. These three levels have been derived from the operational and strategic objectives of SAUCE. With respect to the three levels the evaluation aims to assess:

- At the individual level SAUCE' impact on the mindset of participating pupils and teachers of primary schools as far as this is possible in the context and with the means of this project.
- At the network level the development of the actor constellations initiated by the SAUCE programme in the participating countries
- At the institutional level the embeddedness of the energy and climate theme in primary schools' curricula and the diffusion of the SAUCE programme to other universities.

Since SAUCE' impact needs time to develop it is only tentatively addressed in this first evaluation report. Impact will be assessed more extensively in the second and third evaluation report. In 2009 the evaluation of the impact of the programme was predominantly focusing at the mindset of participating pupils and teachers in the different countries.

The SAUCE 2009 evaluation report's major focus is on the reception of the content and quality of the programme by the participants of the first programme run: pupils, teachers, lecturers and volunteers which organized, performed and participated at the one-week on-campus education programmes at six European Universities. The seventh SAUCE partner university, Roskilde University, is not included in this report yet, as the first SAUCE programme there will be presented in May 2010.

The 2009 evaluation report comprises of the findings of the local evaluation of the programme. The second chapter of the report describes the general method and the country-specific methods used in the evaluations. Similar, the third chapter initially documents the general evaluation findings and then the specific findings of each University. Since the report also functions as evaluation tool, it finishes with some recommendations for the 2010 and 2011 SAUCE programme weeks.

2 Methodology

Written and oral questioning of participants was the consortium's common method in the 2009 evaluation. The consortium members used single page combined open and closed questionnaires, added by unstructured interviews (Berlin, Aalborg, Vienna), SWOT analysis (Twente and Vienna), discussion with pupils and teachers (Aalborg) and feedback from intermediary institutions and from pupils' letters (London). Twente, the WP-6 leader in the consortium, made suggestions for questions to the consortium members who processed them into locally specified questionnaires.

2.1 Aalborg

Children

The local team visited 4 classes of about 20 pupils at:

- SAUCE
- Gug school, municipal, 793 pupils
- Vaarst-Fjellerad school, municipal, 97 pupils
- Klostermarkens school, private, 526 pupils
- The evaluation visits had two parts:
- Under the guidance of the team and the teachers the pupils filled in the questionnaire.
- A class discussion to allow children to elaborate certain points and aspects of the programme.

Teachers

The teachers got a questionnaire at the beginning of the programme day they attended with their class, with the request to return the filled in forms. Only five teachers, covering seven classes, actually returned a filled evaluation form.

Lecturers

All lectures received an electronic questionnaire. Six have been returned.

2.2 London

Children

A small number of children filled out the pupils' questionnaire immediately after the SAUCE event, and all teachers and pupils gathered for a brief plenary discussion and feedback at the end of the day. Pupils from one school wrote letters describing their experience.

Teachers

Teachers' feedback for the first UK SAUCE programme was gathered in the end of the day discussions, and via Islington Sustainability in Schools (ISIS - UK SAUCE partner organisation, formerly Islington Environmental Learning Partnership – IELP), who coordinate sustainability education initiatives in the borough.

Lecturer / performers

Lecturers and performers were asked for their comments immediately after the event.

Core team and volunteers

The organisers met to review the progress of the event on a daily basis, and with volunteers at the end of the event.

2.3 Berlin

Children

Some of the children were surveyed right after the event (3,3% of participants). They were interviewed by the team, guided by questions put down in a questionnaire or sometimes asked to fill in the questionnaires themselves.

Teachers

The survey of teachers was done by sending out electronic questionnaires to all participating teachers (total of 111). 10% of the teachers participating in the SAUCE programme responded, and 20% of those participating in the teacher's information meeting responded. In addition, a number of personal conversations or e-mail correspondence during or right after the teacher's information meeting and the SAUCE programme were held. In total, about 25% of the teachers were contacted. While the questionnaire covered organisational as well as content and pedagogic aspects, the personal contacts often were restricted to one issue only.

Lecturers

Lecturers were surveyed in personal conversation after the event by the organisers. They were held during the programme or in the week to follow.

Core team and volunteers

The organising committee and the staff were asked to summarise their comments. Furthermore, among those most intensely involved, several small meetings for the exchange of experience were held.

2.4 Twente

Children

Attendant pupils have been questioned immediately after each programme part by means of a questionnaire. The questions addressed the topics content, quality and leaning effect of the 2009 programme. Pupils where also asked their opinion on the university as learning environment.

The pupils were randomly chosen and participation was on a voluntary basis. Since the questionnaire also contains questions about the content, the quality and the learning effect of a course, the pupils were allowed to participate after every lecture and/or workshop even if they already had filled in a form for another course. In total, about 25% of the attending pupils submitted filled in questionnaires. Some pupils were unable to complete the questionnaire and others weren't interested.

Teachers

Three weeks after the programme, the teachers of the participating classes received a questionnaire by email. The questionnaire asked questions about the programme content, structure, timing and location. The response to this questionnaire was 33% which is pretty high for these kinds of surveys.

Lecturers

Immediately after the programme activity or a couple of days later, the lecturers were all asked for their impression and points of improvement.

Core team and volunteers

The core team and the volunteers made a so-called SWOT analysis to get an overview of the different aspects of the programme and organisation. The individual SWOTS

have been discussed and exchanged in a meeting resulting in a list of improvements for the next programme run.

2.5 Vienna

Children

Interviews with pupils guided by a short questionnaire: The student assistants picked two pupils per class and carried out in depth personal interviews with each of them (separately). Since the average number of pupils per class is about 25, this procedure covered about 8% of all attending pupils.

Teachers

Questionnaires were handed out to the teachers at the registration desk. The student assistants supported the teachers in case of questions and collected the completed questionnaires. Due to this procedure a 100% response (58 questionnaires) was achieved. However, not all questionnaires included responses to all questions.

Lecturers

The core team was in close personal contact with the lecturers and asked them for their feedback. This feedback was not formalized or structured, which allowed receiving very individual and personal comments about their experience.

Core team and volunteers

Student assistants were asked to give a written feedback about their impression and ideas of the logistical, organizational, pedagogical content, quality of the whole event and the workshops they attended. This written feedback was carried out in group work with each 3-5 students.

Members of the organization team visited the workshops and lectures and summarized their individual impression of these events as well as their perception of the organization.

2.6 Latvia

Children

Pupils have been questioned by their teachers immediately during the programme run – they were asked mainly general questions on how they find the programme, is it interesting etc.

Teachers

Three weeks after the programme, the teachers of the participating classes received a questionnaire by email. *They were asked to fill it in together with their pupils.* The questionnaire asked questions about the programme content, structure, timing, organisational matters and location. The response to this questionnaire was about 30% which is pretty good, taking into account the fact, that school teachers were questioned immediately during the programme run, too, so they had already expressed their view in the immediate setting.

Core team and Lecturers

The core team and lecturers were all asked for their impression and suggestions of improvement already during the programme run and few were immediately implemented.

3 Findings by country

This chapter describes the evaluation findings of the consortium partners separately. Based on the local findings the next chapter will draw general conclusions and will make recommendations.

3.1 Aalborg

Children

When asked about what they had liked about our programme (SKUB) it is obvious that doing things themselves like making a solar cell battery for charging their mobile phones or measuring water waves in the experimental basin while wearing waders are at the top of their list. The spectacular like experiments with liquid nitrogen or generation of high voltage sparks is also appreciated.

Still more passive and theoretical workshops like a power point presentation on "Energy systems of the future" was found interesting by a number of children.

Some were pleased to learn something new. Only 10 out of the 78 we interviewed said that had not heard or seen anything new.

They did not like too much theory, lengthy speakers and the introductory speeches where we presented SAUCE and its aims.

They were asked to mark the lecturers on a scale 2, 4, 7, 10, 12 (corresponding to the grading used in Denmark).

52% marked the lecturers 10 or 12 and 80% marked them 7, 10 or 12.

In the questionnaire we asked if they would like to again attend a programme at the university.

More than 80% said yes. Some even said "yes, yes, yes, yes, yes" or "yes of course"

The few *no* and *maybe* are not reliable as some of them apparently said *no* or *maybe* to attending the same programme once again.

General impression: The children were pleased with attending our programme even if they had some complaints on the theoretical level, the lecturers' use of technical terms and the lack of practical work.

Teachers

The answers we got correspond to the ones from the children. Generally speaking the theoretical level was too high and there was too little active taking part in some activity.

Two teachers found the programme useful for them to update their professional competence.

The material which was electronically at the disposal of the teachers had been little used probably because it was published too late to be included in the preparation, the level is too high and the description not sufficiently detailed.

The teachers missed a closer cooperation among the lecturers to avoid overlap and they missed a pedagogic preparation of the lecturers who should know more about the level of the children.

They were very satisfied with the electronic notice and enrolment we applied and satisfied with the organization of the programme. But they missed precise information on where to spend the breaks and where to have their packed lunch.

They wanted the programme advertised a longer time in advance in order to be able to plan their teaching and their possible visit to the university.

General impression: Teachers found the programme very attractive and indicated to participate again in the next year's SAUCE programme. Like some pupils, teachers too found the cognitive dimension of the programme a bit overemphasised compared to "the heart" and "the hands" dimension of the programme. Some teachers offered collaboration to support pedagogic skills of the lecturers. One headmaster was overwhelmingly enthusiastic and claimed that SKUB was just what he had been waiting for. He hoped the programme will be offered permanently by the university in the future. Although it is too early to conclude on the impact of the programme, we found the remarks and questions of the children on the topics surprisingly mature and constructive.

Lecturers

All lecturers were enthusiastic about the programme although they clearly noticed the difference between teaching children or students. Lecturers were a bit uncertain about the knowledge level of the children and they found it not always easy to deal with the knowledge and skills differences in the groups they were teaching. Some of the lecturers prefer smaller groups next time.

General impression: The lecturers were glad to have participated in the programme and all found it rewarding to communicate with children in the age of 12 – 13 years. Some of the lecturers indicated to appreciate some pedagogical guidance.

3.3 London

Children

The children preferred, on balance, the activities that engaged them physically as well as mentally (capoeira dance, mime, making food, creating jewellery from waste) and lectures with strong visual effects (making ice-cream with liquid nitrogen, films delivered by the film-makers themselves with stories about direct action for climate change, film of a youth expedition to the Arctic to explore climate change first hand, lecture with games to move a typical household to carbon neutral status, and particularly a musical event where they either designed a logo for an "international educational handshake" or wrote a verse for inclusion in a new release of the song "A change is gonna come" with the winners' version included in a performance of the song). Less popular were two of the four introductory lectures that were 'a bit theoretical' and in some cases overlapped with what some of the schools had recently included in their curriculum.

Some excerpts from the letters indicate a high level of appreciation and also enhanced concern for the issues under discussion, and a readiness to change behaviour (with spelling corrected):

"I am still amazed by how much electricity we use.. Those workshops were brilliant with all those cool dance moves... Guess what, I told my mum to get a washing line and she did! Now I know that it is extremely important to save electricity"

"Thank you for a life changing experience at the Metropolitan University. I thought our trip was very exciting, funny, amazing and well every good word in the book. So thanks for a great trip...Last of all Leo showed us a fantastic animation of the worked, it was just amazing his cartoon. You made my day, thanks!"

“[Lecturer 1] taught me a lot and made me eager to prevent our world from going downhill into disaster. [Lecturer 2] showed me how much I can do to help our world, also it showed me how much I wasn't helping...After lunch we went to do some cooking, we made chocolate balls that were delicious. After we made the chocolate balls the instructors ... informed us that it is better to eat food that is fairtrade, healthy and in season...The whole trip gave me a lot to think about..”

“The way you organised it --- ‘disallowed’ us to become bored, making sure we did not sit in the lecture theatre all day. Thank you...Now I have, based on the lecture, persuaded my family to do their bit to save the environment...The funny parts of the cartoon made it easier to concentrate. Thank you once again for an amazing trip and giving us an experience in cooking sustainably and the environment.”

“I liked the workshops and some of them were very scary, like the films. The Wake Up Freak Out film was the scariest. The way he explained what was happening was very easy to understand and the tipping point was good. The lady from the centre in Wales did lots of fun activities with us.. all the pollution it caused to buy a cake from a shop...It was a great trip, it was fun and very well organised. Thank you very much.”

“[The workshops] I learnt a lot from them but although the morning sessions were not as fun as the others, they were more informative.. I enjoyed the second session, especially the part about the wasteman, making him save more and consume less...Overall I really enjoyed our trip and would love to go again.”

“I am writing to thank you for opening my mind on the case of global warming.. I learnt a lot...and also had a lot of fun. The cartoon was brilliant as it was appealing to children and it also got the message across..”

“It was an enjoyable trip for a 10 year old kid, but some parts were maybe for older children. Firstly, I would like to thank you for an excellent trip and experience..[Lecture] helped me to understand how close we are to the “Tipping Point” and how we are destroying our planet and HOME...It was also fun and exciting when we worked on improving Mr Waster's house and I had a great time. I learnt how we were wasting energy by doing everyday things. ..The animation was my favourite, although some bits I didn't understand. The dancing was awesome. I really liked it. I especially liked the break-dancing we did.”

“I would like to thank you for inviting us to such brilliant lectures and workshops. The trip has changed the way I see our planet...what I can do to make our planet a better place...Thank you for a brilliant experience.”

“Thank you so much for those inspirational series of climate awareness workshops ..made me aware of the type of action needed to reduce global warming...inspired me to run a cake stall for the good of the planet. It was funny to learn that cows' farts pollute the environment and that eating less red meat helps reduce that...[The animation:] The fact that the animator had flown a banner from the top of the Houses of Parliament was truly impressive...Once again, thank you so much for a brilliant school trip.”

“We went there to make changes to the world...My favourite lesson was the cartoon where the filmmaker showed us the bad effects of climate change and global warming! I thought it was cool, I showed my dad the video on youtube.”

“...Me and my friend have started a club called “Green Planet” and we have many ideas for it inspired from the University...The cooking class was great and I learnt a lot about fairtrade and organic products...The film was a super way to show the problems

of global warming... The whole experience has really opened my eyes to how we can help prevent global warming if we work together.”

“When I first heard about climate change I thought I wouldn’t understand , but after [the SAUCE programme] I think I have to do all I can to stop climate change ..everything was very exciting, I loved it all. I keep trying to show my parents the animation but they have no time.”

“..It had really changed all our lives. We are very touched that you would go to all that trouble to teach us about the tipping point...This is not the time to panic this is the time to change.”

“I now think that [our school] will now take big action on climate change...The second lecture definitely changed me as a person...Now me and my family are working hard to stop climate change...I hope that all the other primary schools in London have been lucky enough to have the opportunity that I have so thoroughly enjoyed...thank you again for teaching me so much.”

“Your helpers and Doctors were great and I am hoping to come back. Good luck on saving the environment.”

“My mum and I and the rest of the family have saved...a lot of money, we have now stopped leaving all the heaters and lights on at night..”

“I found it all very scary but because of the answers you gave us I am much more enthusiastic to become an...Eco-warrior. ... I also found the food miles session very useful...thank you so much for inviting us on that amazing school trip. I will never forget what you taught me and I will continue to make a difference.”

“I particularly enjoyed the demonstration with the man who changed his lifestyle and massively reduced his carbon footprint..”

“..thank you for the fabulous and very informative trip...amazing that such small things could make such a big difference.”

“I have changed a lot since the trip. I have also told my mum off for not turning the light off when she takes the do for a walk. I really enjoyed our trip to the university and it really has changed me.”

Overall, the children’s response is overwhelmingly positive. It does, though, show how the climate change and energy-saving behaviour aspects received more attention than renewable energies, a finding that will feed into planning the next UK SAUCE programme. This feedback does also reflect to an extent the conscious attempt by this programme to include a range of activities in the arts.

Teachers

Teachers were, on balance, enthusiastic about the programme, especially its inclusion of art, dance and music. As pupils were in the building for five hours, there was some concern about the time taken to move them between activities and access to toilet facilities. One particular point made by the intermediary organisation (ISIS) was that the teachers would have liked more use of the University’s laboratory facilities, as local primary schools lack laboratories. This is under consideration, but presents serious health and safety challenges to organisers.

Programme organisation was regarded as smooth and efficient in access and timetabling, and as pupils were exposed to both plenary lectures and workshop

breakout sessions, there were few complaints about allocation to particular workshops, although some were more popular than others. (Pupils attended two out of three alternative workshops in the second session, and two out of five in the third, except for the final day, when every child attended one of the two music/performance session.)

The opening in the large lecture theatre and access through the main entrance to the building (initially, entry through a quieter entrance had been considered) as well as the lunch break in the University courtyard and sessions in well-equipped breakout rooms were regarded favourably as giving a good sense of the “academy” and helping meet the SAUCE goal of making the University more familiar to pupils who might not usually aspire to higher education.

One teacher raised a concern in the plenary discussion that her pupils might be tempted to chain themselves to railings after one presenter had explained how direct action by the suffragettes had been a key part in their success and how direct action by climate activists had the same aim. The organisers explained to the children that this was an illustration not a recommendation.

Lecturers / performers

The key themes for those delivering the programme were the enthusiasm of the pupils, who were well-behaved and responsive throughout, and the size of groups in sessions. Some sessions with 40-50 pupils were popular but were felt by lecturers to limit the optimal degree of engagement of individuals. The plenary lectures did not suffer from the size of the audience (c. 200 pupils) so much as from the variable levels of active participation facilitated by the lecturer.

Core team and volunteers

The core team and volunteers agreed that their numbers had just sufficed, and that more staff and volunteers would be needed next time to help move pupils between events. The pupils had been more involved and much better behaved than some had feared.

It was agreed that for future programmes an on-line survey would be provided for pupils to complete at school, in class after the programme. It was also agreed that for the next event, more details of teachers’ own delivery of climate and energy-related themes in school would be sought in advance, to explore the potential for pupil-pupil dissemination/communication sessions (transferring best practice), although the organisers would need to take care that this did not communicate an exclusive hierarchy of ‘green’ schools.

3.4 Germany

Children

Generally, the response by the children was very positive and enthusiastic when asked personally. However, this was often also the case when they had participated in lectures which had been evaluated less positive by teachers or the team. Furthermore, a number of answers lacked substance. Thus, the children’s responses have to be carefully interpreted and should not be overestimated. Conservatively judged, the children’s positive response may be interpreted as their positive view of the SAUCE event as a whole, of the location and the university environment, the non-school context.

Nevertheless, some children clearly differentiated in their evaluation and made critical remarks. This allowed for some valuable conclusions regarding the overall quality and partly also the pedagogic quality of the programme and individual workshops and lectures. The survey resulted in the following findings:

- The personal enthusiasm of the lecturer is decisive for the children's attention and interest and thus their susceptibility to the subject matter.
- Practical examples or experiments, own practical activities were generally very well received by the pupils. They may be regarded as important for their ability or willingness to follow what is being discussed. In the case of lecture formats, this could mean to include sequences of dialogue with the pupils or ask pupils to participate as "assistant teachers".
- Individual messages, e.g. about the levels of energy consumption involved with food from different regions or different types of food, do come across, so that an initial step towards reaching a learning effect is apparent.
- The knowledge level of the pupils is quite different, therefore for some the same programme was over demanding, for others under demanding. Decisive factors seem to be age, social background, time of day / previous activities.

From the survey some important conclusions may be drawn:

- The university is an exciting and fascinating learning environment for the pupils, which arouses their interest and attention.
- Most pupils are very eager to learn and take in what is presented and to test their own knowledge against it. This was particularly the case when they had been confronted with the topics before and had acquired knowledge about it before which could be picked up.
- Regarding the structure of the programme, enough time for breaks must be planned for, since a 3-hours programme is too demanding for them.
-

Teachers

The general perception of the SAUCE programme was very positive. The choice of topics of climate and energy, the location, the organisation were generally very well received. A number of teachers were very enthusiastic and returned for the week's programme with several of their classes. Even those teachers whose experience was not overwhelmingly positive stated that they would want to return for the next SAUCE programme.

Organisation of the programme was well received. In a few incidents, misinformation led to misunderstandings and mix up, but the local team was very much engaged and helpful, so that they could be resolved easily and on a friendly basis. The internet registration system was quite basic with low automation level leading to a few incidents of misinformation, but generally registration went smoothly. Timing of the programme and registration was also very well chosen, which is underlined by the high number of registrations. Some suggested to move the programme up a few months to January.

The **location** was regarded as fascinating, interesting and inspiring. The spacious lobby of the lectures hall Henry-Ford-Bau and the open campus around it were ideal. Also the large seminar rooms with ample space to move were very well received.

Somewhat unfortunate was the fact that we used two different locations, which required some hasty moving back and forth. For a number of participants the travel distance from their schools to the university campus outside the city centre was quite long (over one hour) and regarded as a problem, particularly if the class could only be enrolled for one workshop.

The **SAUCE programme** was generally regarded positively. Interestingly, the workshops were most favoured, and a number of teachers were hesitant to enrol their classes in the large auditorium lectures (up to 150 participants, for art shows even 400 participants). They feared that their pupils would be too inattentive. In fact, those lectures with auditoriums exceeding about 120 pupils tended to be quite noisy. A group of about 4 classes (ca 100 pupils) turned out to be a good group size.

Furthermore, a number of teachers who attended only one workshop/lecture stated that they would have liked to enrol their classes in two or even more workshops to have a full morning programme and to cover different aspects. In contrast, others stated that in depth confrontation with one topic in only one workshop was sufficiently demanding for the pupils, particularly if the teachers plan to follow up on the SAUCE topics at school lessons in the coming weeks.

A number of teachers commented that workshops or lectures, i.e. the **lecturers**, did not meet the knowledge level of their class and that they were over or under demanding. In many incidents, this experience was not shared by all teachers attending the same programme part. Thus, the knowledge level of classes and /or the expectation of the teachers apparently differs quite considerably. In a few cases, the critique was legitimately taken.

The exhibition did not meet the expectation of the teachers, as it did not include enough participatory elements meeting the intellectual level of the children.

The main **factors motivating the teachers** to participate were:

1. Their own interest in the topics energy and climate and their intention to teach the children about it. Some stated that they were planning to start energy projects at their schools and were looking for inspiration and support.
2. To take advantage of the possibility to enliven and enrich their natural science lessons by experiments and measuring tools or other equipment unavailable at school.
3. Their intention to enlarge the children's general horizon, to introduce them to the university campus, research centres and laboratories as a location and institution.
4. The teacher's intention to give their pupils the opportunity to become active in a non-school context. In many instances, this is very much to the advantage of children who have difficulties to concentrate at school but become very much engaged in these "extraordinary" contexts. Thus, the teachers previous perception of these children may be positively changed.
5. Some teachers were asked by the pupils' parents to attend as an opportunity to offer them a special learning opportunity (usually at schools with families of above average social status).

The majority of teachers indicated that they had taken up the topics of climate and energy in their teaching, that the **SAUCE programme matched their curriculum** very

well and supplemented it. Most of them took up the individual lecture's or workshop's topics in their classes at school following the SAUCE programme and a number of them were motivated to integrate more practical teaching elements / experiments in their own lessons.

A number of teachers formulated their central expectation, which in effect supports one of the principle approaches of the SAUCE programme: putting the focus on pointing out to the pupils ways and activities they themselves can take or do to save energy and protect the global climate in their own environment.

Lecturers

Some lecturers suggested reducing the number of participants in lectures which numbered up to 150. In a number of cases, this large audience had resulted in distractions and noise.

With regard to pedagogy and content, organisers came to the conclusion that for the next programme they would give some lecturers additional input and information for preparation. Furthermore, larger events with several lecturers, would have to be planned more carefully and be accompanied and guided by professional presenters.

Core team and volunteers

Generally, the impressions of the organising staff were very positive with regard to the programme content, pedagogy and structure. Most of their observations matched or underlined the findings from the survey of lecturers, teachers and pupils. The following additional issues were brought up:

- One issue concerned the topical information made available for teachers. Some lecturers, but by far not the majority, brought with them materials on the specific topics of their workshops to hand out to the teachers or pupils. This was very well received by the teachers.
- From the **organisational** perspective, particularly the internet registration system turned out to be a time-consuming and volatile procedure. Since the system lacked automated elements but was largely dependent on data input and transfer by hand, a number of mistakes appeared and caused extra work.
- Furthermore, the fact that two main locations were used required much additional communication and additional supporting staff.
- Volatile technical equipment (beamer) in the seminar rooms caused a number of problems and underlined the need for more staff and for careful instruction.
- The dispersed location also had a disadvantageous effect on the ability to reproduce "university" atmosphere at the seminar centre, where only a few pupils at the time were present. In contrast, the lecture halls and the large number of pupils and at times also students present in the lobby made a deep impression on them.

3.5 Twente

Children

Regarding programme content and quality children were asked several questions directly after each lecture. The response of the children showed that they almost all liked the lectures including the ones basically addressing the cognition of the children. They also indicated that they had learned a lot of new things on climate change and

energy from the lectures (90%). Children entered the lectures with certain expectations regarding content and focus and the lecture did deliver what they had expected. The visit to the university was announced, introduced and prepared at all schools, but not in the same intensity. Children were also asked if they had an interest in climate and energy before participating in the SAUCE programme. Their answers learned that about 25% of the participating children had no interest in both issues at all and the same number already had quite some interest. The other 50% was only modestly interested in both themes. The children indicated that they really enjoyed the Campus environment as location for the lectures and they unanimously had a (very) good impression of the lecturers. Only 3% of the children gave a negative evaluation of lecturers.

The lesson from the children's evaluation is:

- University is a productive learning environment
- Programme adds to the knowledge of children
- Programme was well received by the children
- Local lecturers did a great job.

Teachers

The teachers evaluated the programme by means of a written questionnaire. Teachers from different schools with pupils different in intelligence filled in the questionnaire and they all perceived the programme in general very well. They all were enthusiastic about the programme content, the organisation and the campus as teaching environment. Some of them also indicated that they read from their pupils' behaviour and response, their enthusiasm about the offered programme. Teachers considered this as a compliment to the content and quality of the programme.

Some schools also brought above average intelligent children (a bit younger in age) and these children too responded very well to the offered programme. All children felt challenged by the lectures although some teachers suggested involving children in the programme also more actively. The programme content (activities, themes and topics) motivated all schools to participate. The schools prepared the children in different ways. Some schools discussed the theme of climate and energy and some schools only briefly introduced the university as destination of the next excursion. Despite differences in preparation, the programme did satisfy the school's expectation. Teachers also appreciated the communication by the SAUCE team, both written, electronic and oral.

Teachers were positive on organisation and logistics of the programme despite some miscommunication and searching for locations due to heavy construction activities at the campus. The construction activities forced most programme parts into an older university building. The facilities in the building were okay, but a bit outdated. Next year the construction activities will be finished and is the modern university lecture building available again. The programme offered drinks and snacks for the children and tea and coffee for the teachers and parents in the break. The campus of the Twente University is in the rural part of the country and requires car or bus travelling to get there. Dutch primary schools don't have financial means to rent a bus. Excursions and visits outside school therefore always imply transportation of the children by parents on a voluntary basis. Transportation turned out to be a barrier for participation in the programme. However, parents also participated in the programme and responded without exception

very enthusiastic and positive about the programme parts they were in. For several parents it was a first visit to the university and all liked it very much. They also found the programme content interesting and highly relevant for their children.

The group size for the different programme parts turned out to be good. The lectures were attended by groups of 100 pupils maximum and this turned out to be a good volume for a two hours lecture with a break of 20 minutes. All teachers were satisfied with the timing of the SAUCE programme in the week after Eastern in April. This turns out to be a good timing for the final groups of primary schools. Pupils have finished the regular programme with an examination and are very much open for new themes and topics.

On organisation the evaluation learned:

- That the attendance of the programme can be increased if transportation is offered. By means of sponsoring we try to organise bus transport to allow distant schools to participate in the programme.
- The size of groups should not exceed a number of 100 for lectures.
- The on campus guidance of groups should be improved
- The next year's lecture building should not be the same

The offered programme did meet the expectations of the teachers and they all had recommended participation to colleagues and other schools. The level of the programme did match the cognitive performance of the children. The teachers were also very positive about the performance of the lecturers. They all did a great job. On this point the perception of teachers and pupils is pretty similar.

Lecturers

The lecturers in the programme all were enthusiastic about the audience of primary school pupils. All lectures were quite motivated and all voluntary joined the programme. All had the basic knowledge and skills to teach young children. All lectures and workshop went very well and the lecturers only had minor suggestions regarding the content, structure or duration of their lecture for next year. All lectures had an rather good timing and duration. The balance in pedagogy was sought for in the programme and not so much in separate lectures.

A lesson learned for next year is that a lecture should last for 70 minutes at the maximum with a break in between of 10-15 minutes. This timing seems to have the best match with the concentration circle of children aged 10-13 years.

Core team and volunteers

The members of the core team made a so-called SWOT analysis of the first SAUCE programme week. SWOT stands for Strength, Weakness, Opportunities and Threats. The analysis highlighted important points on all four aspects of the programme. The newness, the theme of climate and energy, in combination with the university environment was clearly seen as strength of the programme. Other aspects mentioned as strength of the programme were the enthusiasm of the team members, lecturers and the volunteers, the collaboration between university faculties, the organisation and logistics of handling large numbers of children and the very good media coverage of the programme.

The lack of programme structure was considered as a weak aspect of the programme. The first programme has been structured by university activities in the field of climate

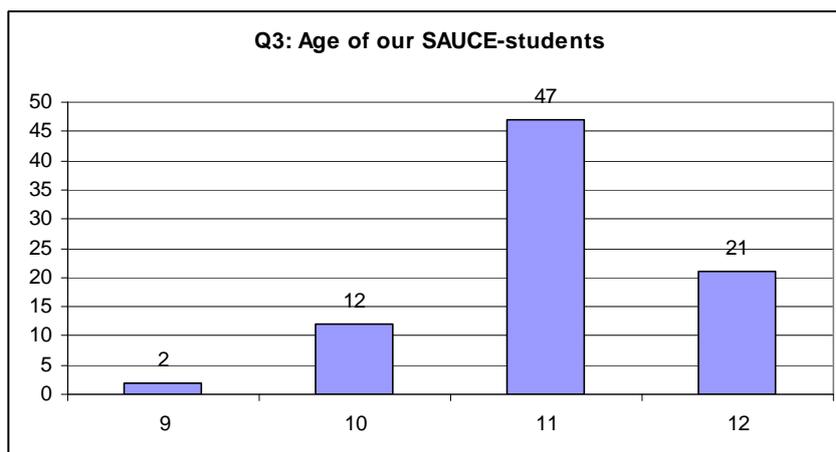
and sustainable energy. All renewable energy production options in one way or another were part of the programme. Their appearance in the programme differed, but all had a good audience. It was concluded that the next programme should also have some entertainment on climate and energy. The financial restrictions were also considered as a weakness, which, among others limited the publicity in particular in schools. Primary school teachers are extremely burdened in the Netherlands and this kept them from active involvement in the preparation of SAUCE. The time needed for preparation of the programme week needs to be more in the coming two years. Final weak point was the transportation restrictions of many schools in the region which keeps them from participation in the programme.

The strengthening of the programme structure and the deepening of the programme content was identified as the major challenge. One of the suggestions was to green the programme week more directly in the facilitation of the children and teachers. The core team learned from the first programme experience in terms of communication and division of tasks. The learning points have been taken up by the team, among others by agreeing a new division of tasks. A final challenge identified is sponsorship. Attracting more money was identified as priority, but seems to be very difficult in times of financial crisis.

3.6 Vienna

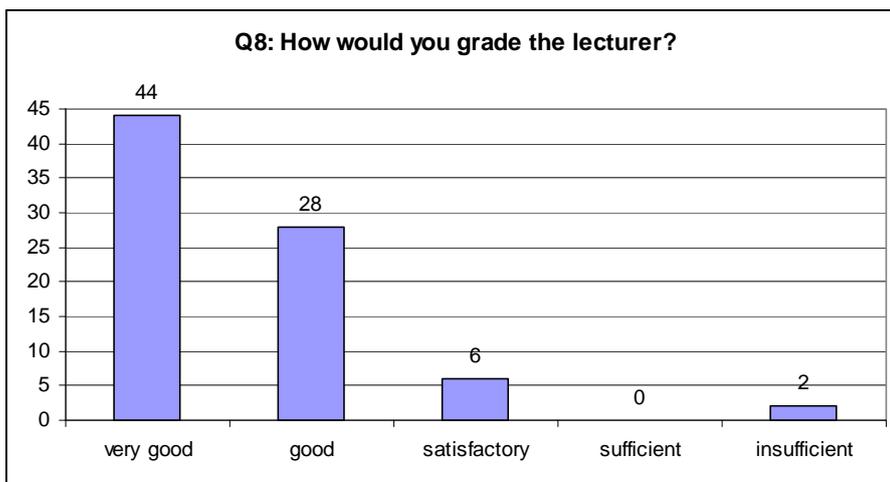
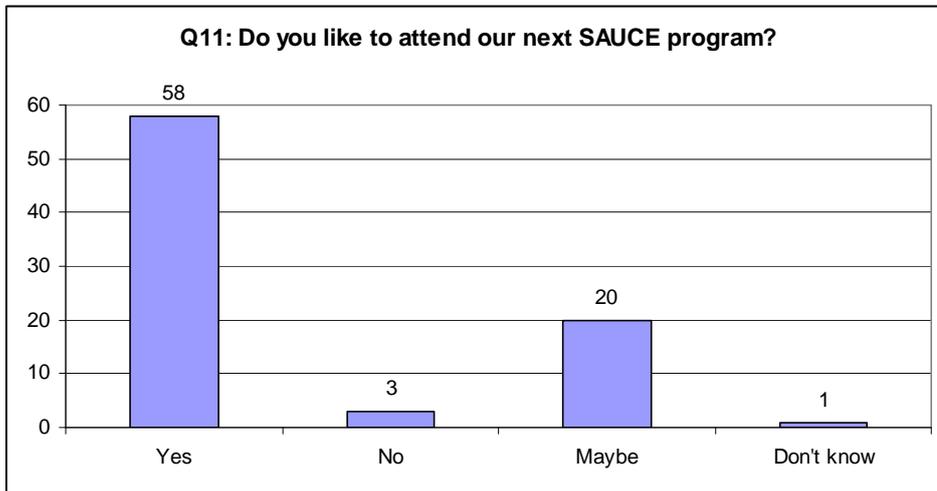
Children

Our student assistants got questionnaire-like interview guidelines for assessing the pupils' perception of the SAUCE programme in detail. Two kids per class were chosen for these interviews, covering 8.4% of all pupils attending our first SAUCE programme (983 pupils in total). 37 female and 46 male pupils were interviewed by an average age of 11.1 years (see graph below). In order not to overstrain the kids and not to take their attention off the lecture the interview consists of eleven questions only. Following the findings of children's perception are described in more detail.



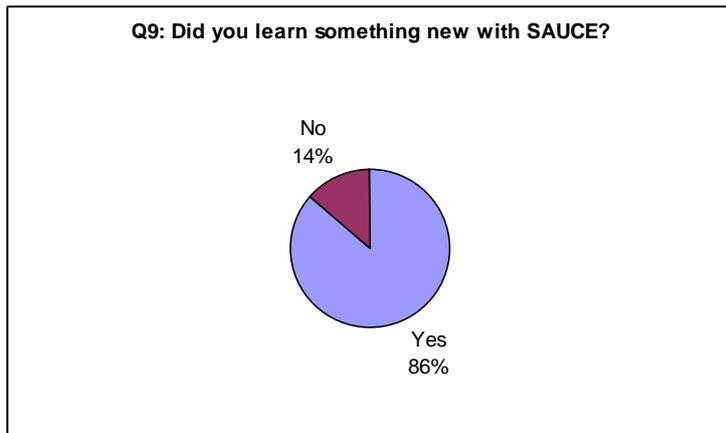
By their experience of the first SAUCE programme the absolute majority of children also wanted to attend the next SAUCE event, while several kids were not sure by various reasons, e.g. the teacher will apply again. Only three kids (3.6% of the sample) didn't want to attend again because they didn't like the lecturer or the topic. This also

accords with the marks the lecturers received by the children; the vast majority – almost 87% of the sample – stated “good¹” or “very good” as preferred grade for the lecturer. Children who graded the lecturers “satisfactory” often answered question 11 (see graph below) with “maybe” and seemed to be bored or distracted but for showing significant relationship between these items the sample is too small of course.

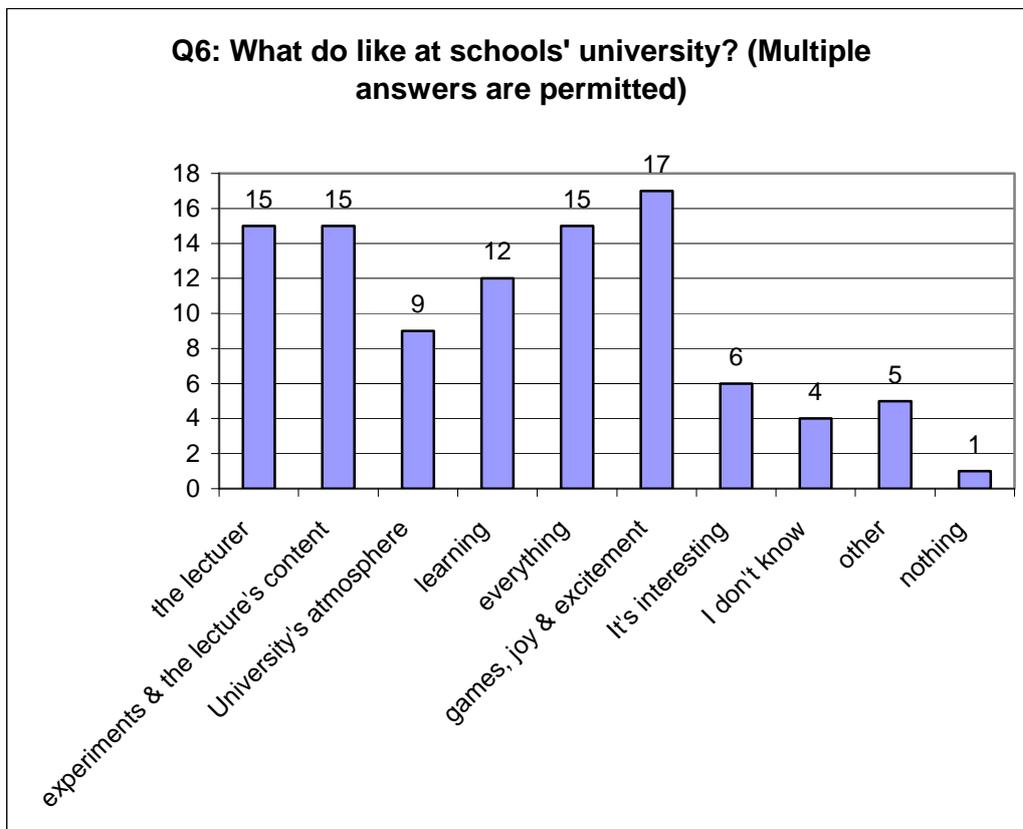


The programme had a huge impact on the children’s perception of energy and climate like shown in the graph below. 86% of interviewed children stated a gain of knowledge while the answers to this open question were too various to build meaningful categories out of them. The answers mostly depended on the attended workshop. A similar question “Do you have any ideas about renewable energy and climate mitigation?” have shown following answers very often: “Reduce energy consumption”, “use public transportation instead of private cars” and “electro mobility”. Representative these answers might be taken as the “real” impact of the first SAUCE programme among the kids.

¹ According to Austrian school grades: very good (1) – good (2) – satisfactory (3) – sufficient (4) – insufficient (5)



The findings of question 6 “What do like at schools’ university?” are also in line with the results shown above. Beside the fun-factor (e. g. “It’s something brand new”) pupils liked the lecturer and experiments most. The organizing committee is very proud that 15 kids liked everything about the SAUCE programme. Very interesting is that 12 children stated exciting learning approaches or learning in general as their most preferable outcome of the event and additionally 9 children said that they appreciate the university’s atmosphere (e. g. the large lecture halls, university is an exiting place to be).

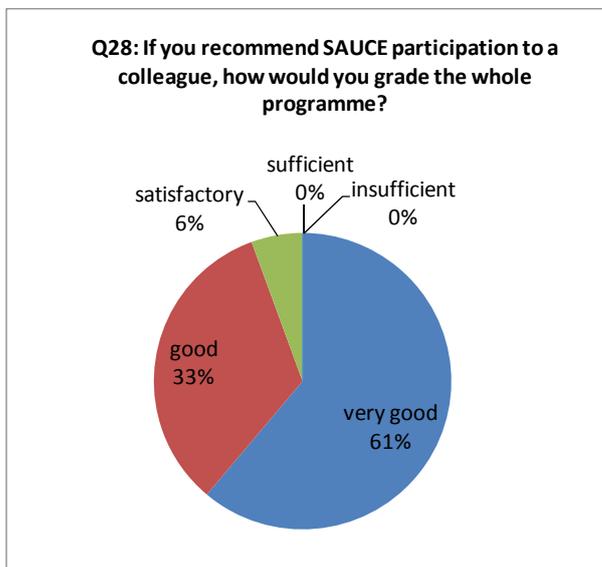


Concluding the children’s evaluation most of the pupils received a gain of knowledge by attending the programme. They enjoyed the pedagogical concept including many

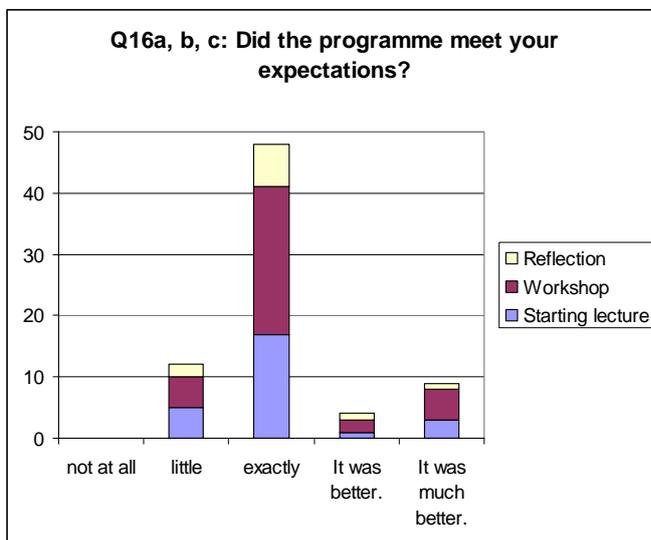
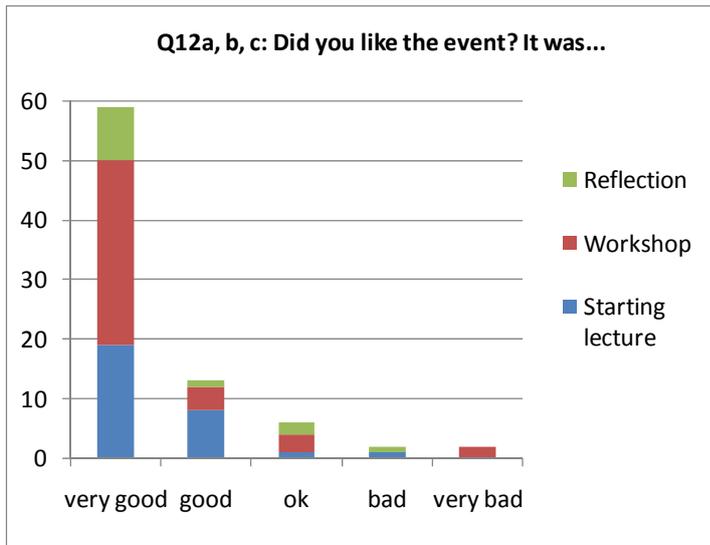
experiments and lot of funny games as well as the location; “Now I know how a university looks like” was therefore a representative answer. Negative assessments only appeared in case of one workshop and one lecture where pupils felt too little interaction. Very interesting was the fact that some lectures, of whom our assisting students and the teachers stated they were overstraining the pupils, the kids themselves enjoyed and graded the lecturer “good” or even “very good”. This indicates a smaller confidence of grown-ups in pupils’ skills than they have in their own perception. Overall the children’s evaluation shows a very much appreciated and suitable SAUCE programme that only has to be improved in some minor parts.

Teachers

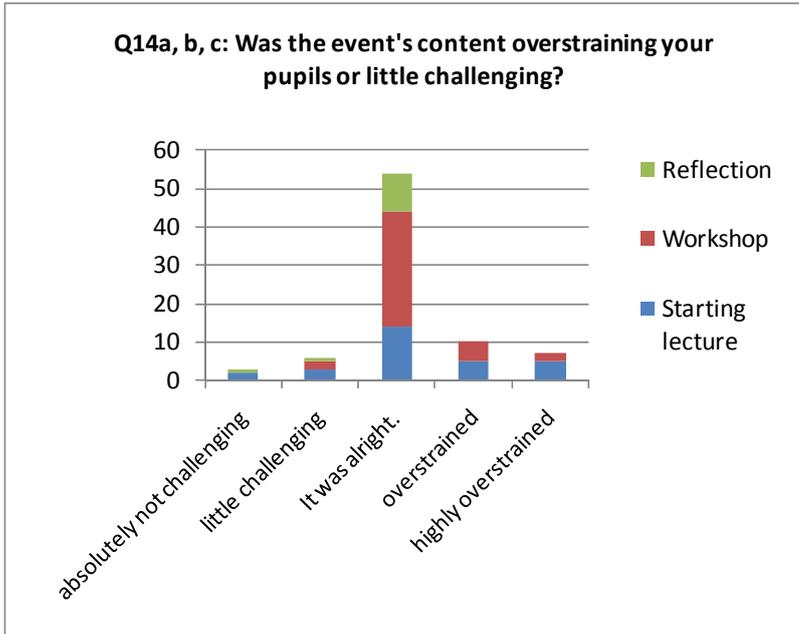
The following graph shows the overall assessment of the programme by the teachers. More than 90% of the teachers assessed the overall programme as “good” or “very good” (according to the Austrian school grades).



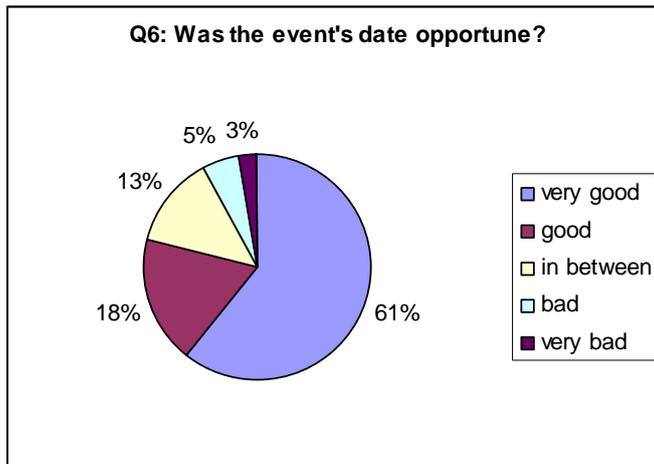
Most of the classes attended the starting lecture, a workshop and the reflection. The following graph shows the assessment of the teachers for these single parts. Since the workshop was the longest and probably most dominant part of the each day’s programme, the interpretation of this graph is not straightforward. On the one hand, of course it shows a high degree of satisfaction with the overall event. On the other hand it shows that at least some starting lectures were assessed less positively than the workshops. (This finding is in line with the feedback from team members and student assistants; see below). However, special attention should be given to those responses with low overall assessment grade. We will come back to that below when we are dealing with qualitative aspects and personal comments of the respondents.

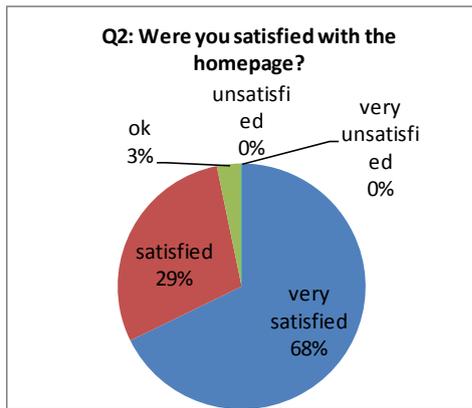


In general, most teachers thought that the content of the event was in line with the skills of the pupils. Some teachers thought it was too complicated and a few thought it was too easy.

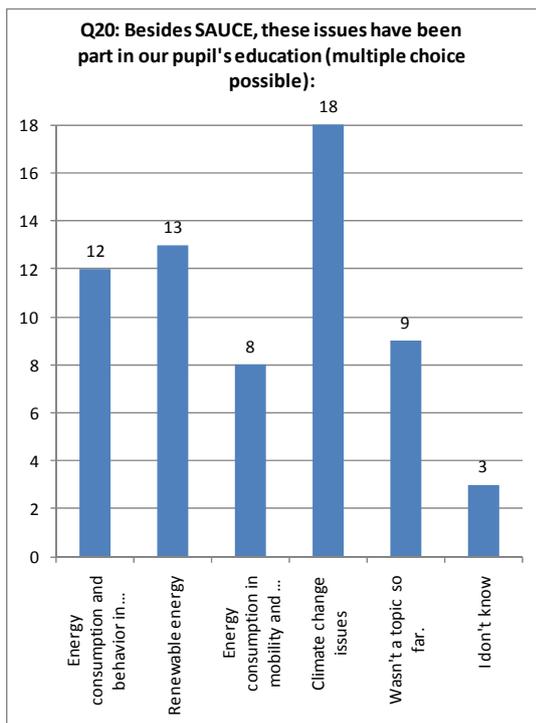


The following graphs show to which extent the teachers were satisfied with the date of the first SAUCE programme in Vienna (end of September 09), with the organization and the homepage (enrolment via homepage).





Most of the pupil's education includes some of the issues addressed in the SAUCE programme, according to the teachers' estimation. In particular, climate change issues are an important topic. However, it is not clear to which extent this is the case because only those teachers participated in the programme who are active anyway or to which extent this reflects the average standard in Austrian schools.



Most teachers were satisfied with the programme, its content and the organization. Some complaints rose among the lectures (e.g. too many pupils in the lecture hall, overstraining content) which are taken very serious by the organizing committee; for corrective action see section 5 and 7 of this report. Some improvements based on teachers' perception have already been established for the second SAUCE event.

Lecturers

The organizing committee had a very intensive and kind contact before, during and after the first SAUCE event with the lecturers and educating children was not new for most of them. Therefore qualitative informal personal feedback was chosen as evaluation method for this peer-group.

The lecturers' opinion towards the SAUCE project was a very welcoming one. On the one hand it gave them opportunity to present their organisation to a broader public but also to try new approaches as it was the case with some scientists participating. On the downside a lack of information on the type of school² that booked a specific workshop has to be mentioned which made preparation difficult for some less trained lecturers. Overall the logistics and organisation was one of the very much appreciated features. Concluding the lecturers' perception of the programme they mostly stated the professional support by the organizing team including student assistants and a pleased auditorium as their strongest impressions of the first programme. On the other hand less trained lecturers will get a stronger support by the local SAUCE team for the next event especially in providing information on the class attending their workshop and guidelines in preparing an age-based lecture or workshop.

Core team and volunteers

The core group of Viennese organizing committee includes three persons. They've been supported by subcontract partner "IG Windkraft" and student assistants during the event who wrote term papers including their major impressions of the programme. These qualitative findings as well as the perception of the core group are summarized in the table below. Thus the evaluation covers 100% of the organizing committee. Besides the core group and the mentioned subcontractor spent an afternoon on evaluation by using self-reflecting techniques right after the first SAUCE event.

² In general there are three different types of schools for that age in Austria: Hauptschule, Allgemeinbildende höhere Schule and Neue Mittelschule. The educational level varies among Austrian provinces.

Table: Impressions and findings of the organizing committee

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> ○ Competencies complementing one other ○ high commitment ○ excellent communication within the organizing team ○ very good contacts to assisting departments/staff of the university ○ Very good cooperation with students, also due to the course that has been arranged for them ○ Smooth event 	<ul style="list-style-type: none"> ○ Working hours too high ○ Additional funding scarce ○ Hard to reach teachers efficiently ○ Rare publicity in media ○ The SAUCE-course for university students is rarely known ○ Technical support by university ○ Lecture halls are highly separated ○ Some suggestions on minor weaknesses during the first event evaluated
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> ○ Vienna as an urban centre esp. for surrounding countryside ○ Public transport sufficient ○ Product is unique in Austria ○ Topics highly up to date ○ Infrastructure ○ Large number of contributing institutions ○ Various “climate and energy” related sites are close to university ○ Large number of potential lecturers ○ Many additional pedagogical concepts available 	<ul style="list-style-type: none"> ○ No additional funding in the future ○ Decreasing number of assisting students while the number of workshops & lectures is increasing ○ Preparing a large SAUCE programme may take too much effort in working hours

The student assistants’ recommendations on improvement as well as perceptions of the organizing team including feedback from teachers, lecturers, supportive staff from university and the pupils of course lead to a vast insight in various aspects of the programme and surrounding issues. Due to the fact that the first event was appreciated by most participants only small corrective action for preparing the second has been taken (e.g. offering more workshops, revision of starting lecture). By continuous communication within the core group and the stakeholders steady improvement of the programme is guaranteed.

Conclusions

- The evaluation of first SAUCE programme served a vast number of various qualitative and quantitative data. Some major highlights representing the whole data set were shown in the sections above.
- Children and teachers assessed the content and the used pedagogical approach to be adequate to the target group among a large majority. Only a few workshops

were outstanding and even fewer inadequate. Although the organizing committee is very pleased by this very comfortable feedback particular attention will be paid to the lectures and workshops with bad assessment.

- Organization and logistics of the first event seemed to be pretty well to our guests (pupils, teachers and many lectures). Only a few suggestions on improving the organization were made by the core group and the student assistants.
- The structure used (starting lecture, workshop and finally a reflection) was highly accepted among all groups. Especially the children gave a very positive feedback about the location of the SAUCE event. Some concerns by teachers and the assisting students about too small lecture rooms were noted which was true to some extent because all rooms aren't available each time. The communication with the stakeholders was perceived very positive. The impact of the programme on children or the schools can not be determined seriously after the first stage of SAUCE programme. There are some signs that point to a higher awareness of climate change and energy consumption among pupils and possibly the teachers, too, but meaningful statements cannot be made so far.
- Workshops are preferred rather than lectures. That means less pupils in total reached per event but assuming equal duration of workshop and lecture it leads to a higher interaction rate (measured e.g. by lecture time per pupil).
- Continuous communication – which is indeed a kind of informal feedback loop – with teachers, lecturers, supportive staff, assisting students (if applicable) and within the organizing committee is the most important fact for improving program's overall quality.
- Besides fun, action and experiments pupils appreciate the exciting learning environment and university's atmosphere very much.

Local revisions

- Less lectures, more workshops
- Revision of the starting lecture (one single lecture to be held each day in the same form)
- Small improvements in registration procedure and webpage (e.g. better wording)
- Small improvements of teachers and pupils questionnaires (removal/adding of some questions)
- Revision of some organizational aspects of the reflection
- Providing a master table (excel file) for students evaluation
- Gaining new media contacts for better press coverage
- Briefing and guidelines respectively verbal recommendations for less trained lecturers in order assure high quality level

3.7 Latvia

Children

Pupils were questioned by their teachers already during the programme run. The response of the children showed that they almost all liked the programme and appreciated the different forms of teaching. They also indicated that they had learned a lot of new things on climate change and energy from the programme and that the

programme contributed to their motivation for further studies and projects in the field. One school chose climate change and energy issues as a central theme for their school project week, for another school the programme served as a continuation of the energy theme from the last year's project week. One school suggested including the issue of nuclear power into the programme.

Children entered the lectures with certain expectations regarding the programme content as all participating classes had the programme outline before they came to university. There were very few pupils who were not interested in the programme at all and did not attempt to take part at the programme. All participants said that the setting for the programme was very good and interesting (they saw real labs).

Teachers

The teachers evaluated the programme by means of a written questionnaire and they all highly appreciated the programme. They all were enthusiastic about the programme content and the organisation and the project team received many compliments for the work done.

The majority of school students participating in the SAUCE programme were in the age range of 11-14 years. Children were from regular primary schools in the Riga region as well as two schools for children with vision disorders and some general disorders. The group of 10 year-olds was represented by one class and showed special interest and was highly participative and remarkably open for the knowledge and information provided in the presentations and workshops, typical for this age. The high involvement, interest and openness of students from special schools should be noted as well. There was also one group of school students aged above 15 – their theoretical knowledge background already gained at school was well supplemented by application demonstrations offered by the participation at the programme. However, the programme was designed for the average school students of the age between 11 and 14 years (according to the school curricula in Latvia).

Participants were in general positive on the location and logistics of the programme. The Solid State Institute of the University of Latvia, where the programme was held, is situated outside the Riga City centre and for some schools it took quite a long time to get there by public transportation, particularly those from schools outside Riga. Few parents also participated in the programme and responded very enthusiastic and positive about it.

The group size for the different concurrent programme workshops turned out to be good. The presentations were attended by the whole class if a number was big or was combined by several groups of pupils if their number was small. Participants were satisfied with the division into groups. Besides, there were groups of pupils from Russian language schools too, and it meant that we had to take into account also the other factor – teaching language, as presentations for Russian speaking pupils were organized in Russian.

On organisation the evaluation learned:

- The size of groups participating at workshops should not exceed a number of 30 as programme is interactive.
- The on campus guidance of groups proved to be very good.

The offered programme did meet the expectations of the teachers and they all had recommended participation to colleagues and other schools. The level of the

programme did match the overall background of the children. The teachers were also very positive about the performance of the lecturers. They all did a great job.

Core team and Lecturers

The lecturers in the programme all were enthusiastic about the audience of primary school pupils. All lectures were quite motivated and all had broad experience in working with school students and science communication – they all had the knowledge and skills to teach young children. All workshops went very well and had a rather good timing and duration. The balance in pedagogy was adjusted for each age group. Teacher feedback confirmed that the programme timing, the one like lessons are organized at school – 45 min. workshops and 15 min. breaks in-between, was good.

Possible threat to the next programmes: Transportation restrictions for many schools in the country might keep them from participation in the programme in times of financial crisis.

4 Conclusion and recommendations

The final chapter summarises the common major conclusions of the country evaluations and the lessons learned.

Conclusion on evaluation approach and method

- The evaluation had a two dimensional focus: the programme, content, quality and organisation and the impact of the programme on pupils, teachers and schools. The first evaluation concentrated on the programme dimension and could only preliminary address the impact dimension.
- In 2009 four of the seven SAUCE programmes could organise a programme evaluation. Two programmes had or will have their first run in 2010.
- In 2009 and early 2010, the first SAUCE programme managed to attract substantive numbers of pupils and schools to the university on the theme of energy and climate. In total, more than 8100 pupils attended the programmes run until the end of January 2010.
- The evaluations used similar approaches and methods, but dressed in local flavours. All locations worked with questionnaires for children and teachers and interviews with lecturers, local organisers and voluntaries. Some partners interviewed children directly or some time after the programme, individually or as a group. Others asked children to fill in a questionnaire.
- The methods applied in the 2009 evaluation all proved to be productive in providing for required information on programme content and quality and to a certain extent on programme impact.

Conclusion on programme content and quality

- All programmes were very well received, but all got comments and suggestions for improvement from the evaluation. On programme content it was suggested that the balance between “head”, “heart” and “hands” could be improved. The university tends to address the cognitive skills of pupils in particular, which is a good thing as such. But the suggestions all articulated to be aware of the intellectual level of children and not to forget the experience and doing component in the content of the programme.
- All programmes ran at the university and it showed that the university environment clearly adds value as learning environment for children aged 10-13 years. Children, but also teachers, all were excited about the university environment. The evaluation showed that the university environment made the children more open for the content of the programme.
- All programmes have been designed by university staff members who are experts on content and substance of climate and energy. The overall high quality content of the lectures was clearly noticed by the teachers and very well received by both children and teachers at all locations.
- The University lecturers are clearly not all used to teach children aged 10-13 and at some locations, additional pedagogical training and support of the lecturers was considered for the next programme run.
- The structure and organisation of the first SAUCE programmes were all well received. The communication and organisation was largely through the internet and

this worked well at all locations. There were minor problems with respect to routing and timing of events, but no significant failures as such in the local organisation of the event week.

- Local circumstances to a large extent determine way and intensity of teacher and school involvement in the preparation of the programme. It showed that there is not one overall model applicable to involve teachers and schools. The consortium members all engaged schools and teachers according to local conditions.

Conclusion on programme impact

- The first evaluation could only provide for preliminary findings on programme impact. The first evaluation preliminary assessed programme impact on pupils, teachers and local networking.
- In general pupils on all locations received the programme very well. Their reactions have been very positive and all programme parts were well received. The pupils showed huge absorptive capacity which showed in the evaluation directly after the classes and in group talks some time after the event. Most pupils indicated to have clearly benefited from the programme. A sign that the theme energy and climate found fertile soil in the children's mind.
- Teachers and schools indicated that the programme had influenced their thinking on the theme of energy and climate. Moreover, teachers found the programme very inspiring and several teachers indicated to continue working on the themes in the regular classes.
- All consortium members managed to develop the local and national network and connected to national and international networks on energy and climate teaching for children. The German team managed to get recognition of the UNESCO Decade for Education for Sustainable Development and other teams are working on this issue.

Lessons learned from the 2009 programme run

- All programmes clearly indicated that the university is a productive learning environment providing added value to teaching young children on the theme of climate and energy.
- Academically trained university energy specialists turn out to be effective teachers of children aged 10-13 years. The effectiveness of their teaching can further increase by specialised pedagogical support.
- The "head", "heart" and "hands" programme components need a certain balance depending on the cognitive skills and levels of the children.
- A teacher's preparatory meeting is not absolutely necessary to engage teachers and schools in the programme. But the meetings clearly have a positive and supporting effect on networking among teachers, energy education experts and the respective universities. Furthermore, their success is evidence of the engaged teachers' demand for and, at the same time, a general lack of coherent curricula and teaching materials on energy (efficiency) for successive school levels (for further details cf. WP4 report).
- The 2010 programme organisation will benefit from lessons learned during the 2009 organisation of the programme.

Annex

SAUCE strategic and specific objectives

The evaluation focus can be derived from the strategic and specific SAUCE project goals. We made an inventory of all the specific and strategic goals formulated in the project proposal and tried to systematise them. We think SAUCE goals can be classified along two dimensions:

- A. Deliverance, content and quality of the program
- B. Impact of the programme at the individual, the network and the institutional level.

In the following overview we have classified all mentioned SAUCE goals along both dimensions.

Programme deliverance, content and quality

- Develop an interdisciplinary educational tool for pupils that raise their awareness of the core topics of climate change and sustainable energy use.
- Establish, support and acquire didactical qualities of the Universities as a special location for pupils' education.
- Develop a replicable SAUCE programme

Programme impact

Individual:

- Show pupils ways in which they as individuals can contribute to climate protection.
- Raise pupils' awareness of intelligent energy and mobility behaviours.
- Strengthen pupils' problem-solving competences with regard to climate change and energy issues.
- Boost pupils' ability to learn effectively.
- Broaden pupils' horizons regarding the international dimension of climate protection and intelligent energy use.
- Raise pupils' interest in 'green' sciences (e.g. green chemistry) and in developing green technologies.
- Support teachers to teach intelligent energy behaviour (20% teacher participation preparatory meetings)
- Raise pupils' interest in green sciences and technologies

Network

- Support the development of networks between different educational actors at the regional, national and EU level.
- Promote cooperation and exchange between European educators and non-formal educational actors.
- Disseminate the SAUCE tool through networks.
- Energy education networking

Institutional:

- Disseminate energy education tools to schools.
- Encourage and support schools and teachers in taking up energy and climate change issues at school.
- Disseminate and consolidate the SAUCE concept in European universities.
- Establish and consolidate SAUCE as an educational tool.
- Making universities more familiar and attractive to non-traditional groups of potential students.
- Support the integration of intelligent energy use and climate change into the regular curriculum.

- Disseminate the model to other European universities
- Disseminate educational tools on energy and climate throughout member states
- Raise pupils awareness of energy and climate change issues
- Establish SAUCE programmes at further European universities
- Make universities familiar to large no. of European pupils

With respect to programme content and quality, the evaluation basically should address pupils, teacher and lecturers. Pupils and teachers should also be addressed to evaluate the program's impact at the individual level. The evaluation should monitor and evaluate for example to what extent the actors learn from participation in the project, if they enjoyed participation, if they use SAUCE as education tool and if they would further use and recommend SAUCE. The evaluation should also provide information about the usefulness of the teaching environment, the course contents and design as well as the circumstances of the event. With respect to impact it is for instance relevant to know to what extent the course material is consistent with the school material, if the course content is application oriented, if the duration of the course is sufficient.

The survey design for pupils

Due to the fact that SAUCE is an innovative education and networking tool the survey design must be able to show the causality of the SAUCE project, learning and networking effects. Furthermore it is intended as a monitoring and evaluation tool so the survey will be able to show strengths and weaknesses of the project. Therefore the survey includes a pre- and post-survey phase.

The pre-survey phase mainly shows the status quo of the participants before actively participating in the SAUCE project. It sheds light on the personal expectations, motivations, goals, knowledge and interests. The pre-survey phase is also necessary to evaluate the learning effects of the SAUCE project. Subsequently the post-survey phase evaluates the lectures, the university as learning environment, the organization of the SAUCE programme, information material and the network of the SAUCE project. The participants will evaluate the project after following the lectures or actively participating.