



Delft University of Technology

## 1000 Flowers

### International Dimensions to Education

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# 1000 Flowers

International Dimensions  
to Education

Delft University of Technology



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# 1000 Flowers





## Colophon

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# Internationalising the University

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*Research results are influenced by the observations and desires of the researcher (Einstein) - and so the researcher becomes a creator of new views, concepts, theories etc.*

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The number of students and staff members from abroad is growing. Each of these individuals will influence the way research is interpreted and communicated in teaching and eventually adopted by students. An awareness of the impact of this diversity will prepare students and staff alike for their role in the multicultural environment within the scientific community and in society at large.

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*Traveling presents us with a world to be discovered and conquered every day.*

*Bas Naber*

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Delft University explicitly aims to contribute to societal and technological solutions around the globe. Every technical solution or product design is based on an analysis of the environment and stakeholders involved. As engineers, we have a civic responsibility to contribute to a sustainable and peaceful earth. This requires engineers who are willing to discover the world and conquer new vistas to realise their technical and societal solutions for a sustainable world.

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*The way in which we deal with new and strange situations and people determines the quality of our civilization.*

*Lolle Nauta*

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Engineering technical and societal solutions can only be effective if people respect one another and are willing to listen to and learn from each other. These are issues that need to be addressed in primary processes in the curriculum, specifically at the course level.

The “One Thousand Flowers in Delft” project aimed to support sustainable solutions to internationalise the curriculum, based on a grassroots approach. Lecturers brought the international dimension to their courses, PhD supervision and/or extracurricular activities. In this booklet, the results of the participants introduce us to different views on how to deal with new situations or people, which will constructively influence our applied research engineering for an international, peaceful and sustainable world.

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*Internationalisation means recreating and conquering the world every day in order to create a ‘civilized’ world*

*Renate Klaassen*

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We hope other lecturers will feel inspired to create or continue their own flowers for internationalisation.

**Drs. P.M.M. Rullmann**

Vice-President for Education  
Delft University of Technology





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# The Concept of the Flowers



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White cloud of mist  
above white cherry-blossoms . . .  
Dawn-shining mountains

*Japanese Zen poet Matsuo Basho (Matsuo Munefusa) (1644-94)*

Many of the activities undertaken by the teaching staff to internationalise their curriculum are unknown to the larger audience at the University. Many teaching staff members have wonderful ideas to internationalise the curriculum, even if they lack the means to take up the challenge. One Thousand Flowers in Delft is meant to help you find out about the beautiful activities realised in the Internationalisation of the curriculum with a little financial assistance. To discover all the cherry-blossoms we have in Delft and make them into mountains that shine beyond the walls of our departments and our University. To show the world that Delft University of Technology is truly International.

## Why internationalising the curriculum matters

According to the OECD, there are four main reasons to internationalise higher education: regional expansion, capacity building, economic reinforcement of the institution and internationalisation at home; internationalisation as a mission could be added as a fifth.

In the Netherlands, Internationalisation at home is one of the major driving forces in internationalisation. However, in the long run Dutch universities are likely to need the talents of international students and staff to survive, both from a financial perspective and from a content quality perspective. Irrespective of the motives of the institutions themselves, students stand to gain from the internationalisation process. If internationalisation is carried out well, students

- will be better informed and feel more responsible and civically engaged;
- are able to contribute to the multicultural society, thus improving security and effective diplomacy in foreign relations;
- may stimulate expansion and economic potential, yet are aware of the need to conserve the environment and the need to reduce health risks and costs.

The objective is to educate students to become world citizens. Moreover, it helps the image building of the institution.

However, to what extent will we as staff members or students benefit from internationalisation? Or is it something the institution wants for its own benefit, which has nothing to do with us individually? Fortunately, this is not the case. People with a focus on internationalisation, who take sustainability into account, will determine the riches in tomorrow's world. Internationalisation stimulates our intellect and increases our self-awareness. Coping with change breeds people who can effectively communicate and interact in a wide variety of settings. Being international provides access to further educational experiences and professional opportunities and will consequently probably increase our standard of living. As humans, we become better at making informed choices about health and environment issues, we become more socio-politically aware and we become participating citizens.



### What makes a curriculum international

As students, how do we know that we will benefit from the international programme at a particular university? Whether or not a university is paying lip service to the policies laid down by the central board? Is there a way in which we can assess the added value of internationalisation at a certain institution and if so, how?

We might be able to do so by assessing the learning outcomes of the programmes we want to follow as a student. And ask the following questions:

- do the learning outcomes provide a framework of what it means to be a world citizen?
- which small-scale or even individual decisions have global consequences? and
- how will our understanding of world affairs and recognising standards and ethics that transcend political and geographical boundaries, influence our technological solutions for the world? (University of Calgary Undergraduate Curriculum Redesign Team, 1998)

If these questions are dealt with in a constructive manner in the curriculum and in the courses embedded in the curriculum, this will at least give a clue about the extent to which internationalisation is realised in a programme.

These outcomes can be generated by means of courses and/or programmes with a different scope, either in a number of sub-courses, a part of a curriculum programme or in the entire programme. Below you will find a list of typologies generated by many institutions, to show the different levels to which internationalisation is reflected:

1. Curricula with an international course or area (languages studies);
2. Interdisciplinary studies covering several regions, areas or countries
  - comparative approach: comparing two or more countries or cultures within a given topic or course;
  - multidisciplinary approach: integrating two or more disciplines to develop a unique perspective on an international topic;
  - issues approach: selecting issues that are cross-cultural in nature;
  - minors addressing internationalisation as a central topic;
3. Traditional curricula broadened by international or cross-cultural approaches
  - Infusion approach: cross cultural perspectives with respect to contents are embedded in new courses;
  - Development of new international courses;
  - Partnerships with foreign institutions; joint education;
  - Technical approach; virtual online education with foreign partners;
4. Curricula explicitly addressing intercultural issues, such as linguistics or foreign language learning, diversity and intercultural communication, or international law;
5. Curricula explicitly designed for foreign students.

Of course, this is just one typology, and many more can be found in practice.

Finally, the Dutch Accreditation board plans to offer an additional quality label to institutions that have met the accreditation criteria for internationalisation. They will pay specific attention to an institution's vision on internationalisation, the nature of the teaching and learning provided by the programme; other issues include the qualifications of the staff with respect to internationalisation, the engagement of students in internationalisation, and the services necessary to support internationalisation.

Any which way, creating an international curriculum is no easy feat.

### White clouds of mist (It is not obvious yet...)

All too often internationalisation means having foreign and local students working together in groups. Both parties feel that 'the others' hold them back. Beyond the forced group work, no real interaction takes place. The feeling is that working internationally does not really add much of anything positive.

Another stumbling block is the lack of real integration of internationalisation in the content of the curriculum. World issues are not addressed, they merely figure as examples fluffing up the content as a diversion in the presentation. Or they are felt not to be important for a certain discipline. The proper way of doing things is certainly a matter for debate if ethnocentrism is still an acceptable route of escape.

Moreover, it is hard enough to realise a multidisciplinary view as we are all locked in our own fields of expertise and worldviews. Let alone taking different value systems to heart to realise an integrative perspective on complex technological and societal issues that are needed for solutions relevant for different world communities. It is simply too attractive to bail out as there are so many demands already on the table.

*“Curriculum is the educational tool that determines what is real or unreal, whose truth is celebrated, whose values are mainstreamed, where the peripheries are located and who occupies spaces of marginalisation in the world.”*

*Rosetta Khalideen, PhD, Internationalizing the Curriculum in Canadian Universities: Considering the Influence of Power, Politics and Ethics*

Another problem is that collaborative internationalisation very easily turns into large-scale endeavours, in which cost of travelling and communication are not easily solved. If the added value cannot be made explicit, the time and money needed will soon become insurmountable hurdles. Even if the will to do more is present, a lack of financial and other support will prompt lecturers to say that they cannot possibly do more than they already do.

### **Visibility of the international dimension in curricula**

Internationalisation starts and ends with a basic question: what is the international component in my course/students/contacts? And how can I use this international component to add an international dimension to my education? Learning content and environment often have an international component that can easily be recognised and acknowledged. International skills, knowledge and attitude thus become a more natural part of the regular curriculum.

The lecturers in this book have found the international component in their education and created thrilling and new best practices for the internationalisation of our TU Delft curriculum. I am proud of them, and all the more so because they were able to do so with a limited budget and in a limited time frame by being extremely creative, enthusiastic and innovative in realising their ideas. In this booklet you will read more about 10 of the 18 best practices in which they share the tacit knowledge they have on internationalising their course/environment/programme. The lecturers have realised their projects within the framework of the ‘One Thousand Flowers in Delft’ project of OC FOCUS and were supported by Marleen Brummelink and myself during the project.

### **Grassroot flowers**

In order to encourage lecturers to pay attention to the intercultural awareness of their students within the regular classes, the One Thousand Flowers in Delft project was launched in November 2008 and rounded off in January 2010. Participating lecturers developed and incorporated small-scale internationalisation projects known as ‘Flowers’ in their teaching in order to enhance their students’ skills in working in international environments and international groups. The lecturers were in the lead: based on their own assessment of the needs of their students, they decided how to integrate intercultural skills, a worldview and responsibility for technological solutions for our ‘next door neighbours’ in their teaching. Over the years, this grassroots approach has proven to be an important motivational factor for lecturers, because it takes the challenges lecturers themselves face with international students in their classes as a starting point. The group of participating lecturers met on a regular basis to assist each other with advice and to receive educational support. The Flowers were supported financially with € 1000, which participants could spend on educational matters of their own choosing.

The central aim of the Flowers project is to make lecturers and students aware that internationalisation in education creates a positive experience and broadens the horizons of both lecturers and students. Derived from this central aim are four sub goals: the first is to realise academic integration of local and international students/staff, i.e. more intercultural sensitive students/staff; the second is to achieve sustainable integration of the international dimension at the subject or curriculum level; the third is to disseminate best practices; and finally, the fourth is to better prepare students/staff for a globalised world.



## Flower themes

Our four central themes have been chosen to emphasise the central internationalisation policies of Delft University of Technology as described by Spiekerman in 2005.

The first theme (Internationalisation at Home) is in support of the Internationalisation at home policy in which local students prepare for the international environment at their own university and acquire competencies for the international labour market. Another aspect of the theme is the desire of the University to be internationally oriented and to show an open attitude to the outside world, using the combined knowledge of the international student body and staff to prepare for an international society and working contexts.

The second theme (international projects) fits the central policy of joint education with preferred partners, in which local students follow education at a partner institution or in which students of the partner institution study at TU Delft. Within this theme, projects are realised to stimulate academic integration abroad and at the institution itself. The projects are small and explorative in nature and may be scaled up in the future.

The third theme (Internationalisation & ICT) is in sync with the ambitions of the DUT to develop more distance learning modules and to enlarge its open courseware system, comparable to the MIT open courseware system, and to collaborate with other institutions to strengthen the research within particular disciplines.

The fourth theme (international Entrepreneurship & development) reinforces the profiling of DUT as a contributor to sustainable technological solutions, specifically involving third/second world development stakeholders to increase the societal relevance of technological development.

## White cherry-blossoms on the mountains

Each of these themes contributes to internationalisation of the curriculum. In this booklet you will find an introduction to every theme in which the problems faced are described in a personalised story, followed by two or three interviews on best practices realised by our TU Delft lecturers.

Hopefully, these stories and best practices will give you some idea of what can be done to internationalise a course/curriculum. However, there are many solutions out there that can be of value in different contexts. The ideas described in this book may help you find your solution. The first theme covers Internationalisation at home, working in intercultural groups and addressing world problems from a global perspective. The second theme focuses on joint education and academic integration at home and abroad and is partly coined as a sub-theme of Internationalisation at home. The third theme is about virtual learning in cross-border project teams and how socio-political context influences technical solutions. The fourth and last theme deals with models of international sustainable and entrepreneurial learning activities, which show the impact of small-scale decisions on large population groups in other parts of the world. The best practices show a diversity in approach and solutions that might be transferred to similar learning environments at TU Delft.

	Added Value:	Examples in this booklet
Internationalisation at home	Working in intercultural groups in education and addressing world problems through content/process discussion	<ol style="list-style-type: none"> <li>1) Intercultural workshop in the 'Introduction to policy analysis' course. Discussing policy matters from a cultural perspective</li> <li>2) Sense your world; making PhD's sensitive to contextual influence on their research; discovering world views on sensor nodes</li> <li>3) A MAZE: working in teams; stimulating true co-operation in gaming</li> </ol>
Academic integration	Academic and Social adjustment of int. and local students learning to work together and to widen their horizons	<ol style="list-style-type: none"> <li>1) Keio joint education; Co-operation between Keio University Japan and TPM. 3 Japanese students in the Netherlands, 3 Dutch students in Japan. To be enlarged next year.</li> <li>2) Introduction week EMMCS at home, academic integration in the faculty</li> <li>3) Real United Internazionale: Sports competition</li> </ol>

Virtual collaboration	Learning to work in virtual international teams on a joint assignments or projects on relevant content; designing third world solutions in international teams or course assignments together with int. partner institutions' students	<ol style="list-style-type: none"> <li>1) IV, Virtual collaboration of TUD students with African students in Ethiopia and Kenya</li> <li>2) Batna Roses, Virtual Collaboration of TUD students with Algerian Students</li> </ol>
International sustainable entrepreneurship	Learning to work in a (int.) team at home and in the field on an entrepreneurial (design/research) task; preparing for fieldwork abroad in intercultural context and using entrepreneurial/social skills in a new context.	<ol style="list-style-type: none"> <li>1) Long distance research IRP</li> <li>2) Sustainable Business Game</li> <li>3) Project Education preparing a business plan in a team</li> </ol>

### Shining mountains

The world is a system in which no value prevails, in which right and wrong are determined by the way we look at the world and in which respecting each others values is required for cooperation. As one of our lecturers said so beautifully: 'Communication in intercultural settings only truly starts after the communication has broken down.'

In spite of the obstacles encountered, all the lecturers participating in the One Thousand Flowers project experienced their project activities as a learning experience and expanded not only their own horizons, but especially those of their students. In some cases the activities will be extended in a more sustainable long-term collaborative form. The skill to bring together parties who can create synergy and an increased exchange in projects, partners and ideas, is a growing commodity to truly internationalise any university. Delft University has started disseminating tacit knowledge and experience; we hope that others will follow.



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# 1

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Internationalisation  
at Home:  
The Best Way to  
Shape the Future  
is to Design it

# Internationalisation at Home: The Best Way to Shape the Future is to Design it

---

*Intercultural competence, as an objective of academic learning and life, describes changes of an individual's knowledge (cognition), attitudes (emotions) and skills (behaviour) in order to enable a positive and effective interaction with members of other cultures, both abroad and at home.*

*Bennett 1993, Dignes and Baldwin 1996, Yershova et al. 2000*

---

Internationalisation at home can be described as in the quote above. However, the best way to feel what internationalisation at home means is to visualise the story of students involved in the process. Jozemias and Bing will provide you with a foreigner's perspective of such an experience at our TU Delft. Please be aware that the story is fictional and that any resemblance with actual persons is coincidental.

## **Jozemias**

Jozemias has taken his Bachelor's degree at Kiev Polytechnic in the Ukraine. He had the opportunity to attend a seminar on sustainable innovations, presented among others by TU Delft. Jozemias was very impressed by the level of expertise of the institution. His grandparents had been saving money for the past ten years to support his Master's degree education in the west, as they felt that it would be his only chance to get a job abroad. Since Jozemias has just finished his Bachelor's, he is keen on going to Delft to continue his Master's education. His professor has helped him to register and he is fortunate enough to be able to continue his education immediately at TU Delft. He travels to Delft in the summer holidays to settle in early.

## **Bing**

Bing has a little girl named Meiying (meaning beautiful flower), whom she has left with her parents. She already has some working experience as a teacher of physics education at a secondary school in China. She has saved enough money to finally get her Master's degree and obtain a decent position in industry, so that she will be raising Meiying in better conditions than she could presently provide.

## **Studying in Delft**

So Jozemias and Bing arrive from the Ukraine and China respectively to participate in a Master programme at TU Delft. They are both determined to finish their Master's in two years. Expectations are high as Delft University is renowned for its engineering education, research groups and state-of-the-art facilities. It has one of the best introductory programmes in the Netherlands and maybe even in Europe. They could do worse; graduating from TU Delft will probably mean a good job at a fair pay in their home country. In all, the future looks bright when Jozemias and Bing depart for Delft.

The introduction programme focuses on similarities and differences between their own cultures and the Dutch culture. How do you deal with the differences, adapt to the local culture and find your way around in the educational system as well as in society? They also get the chance to build up a social network. This is how Jozemias and Bing meet; they find out that they have mutual interests and are living close together. The rest of the group is so different they didn't feel a click. Presently, they are starting their respective Master's programmes and find that these programmes are not exactly brimming with foreign students.

### Values and the educational system

Although the introduction programme is very informative with respect to culture and group work, reality in the Master's programme is that Dutch students are not very open to friendships or communication with foreign students. Jozemias and Bing tell us: 'The Dutch students keep to themselves and only if they are forced to communicate in pairs or group work, they talk to one another. Otherwise everyone sticks to his/her own Dutch friends and there is little interaction.' When asked for a reason, their teachers tell us that Dutch students indicate several problem areas. They feel that foreign students delay their project work, are unable to critically discuss the subject matter, as their English is unsatisfactory, and that they are unable to come up with new ideas. Furthermore, they do not meet deadlines, are often uncomfortable accepting female guidance and finally they hardly ever take the initiative. The teacher defends the Dutch students by saying that foreign students choose to study here at TU Delft and are expected to learn how the system works and to adjust to the Dutch way of working.

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*Our daily lives are governed by shared, implicit and unconscious expectations of behaviour of ourselves and others of which we may be dimly aware.*

*Kikoshi and Kikoshi 1996, p.19*

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Initially, Bing is initially shocked by the teacher/student relationship. Students interrupt the lecturer to ask questions! She considers it disrespectful of the teacher's expertise. Moreover she expects the teacher to outline and share the knowledge Bing is supposed to acquire. Yet the lecturer seems to like student questioning, moreover he encourages all of them to ask questions and take an inquiry-based approach towards studying. Having overcome her initial shock she realises that she will have to make a major change in her study strategies, and to learn to consider question asking a useful tool. However, she still has to find out how or when to bud in and ask her questions in front of an entire class without losing face. The stress of having to face the lecturer and the class to ask a question is too much, so she is using the breaks to ask all the questions that have come up during the lectures.

Jozemias complains that 'the lecturer discusses only Dutch examples and applies these examples to a Dutch context. Sometimes these examples are entirely incomprehensible as their context is unclear. For instance, the other day the lecturer was talking about the leaking tram tunnel in The Hague and why it was such a hassle politically. I didn't understand why the cause of the leaking was so obvious to the lecturer. Let alone the issue of politics influencing the decision to repair the tunnel with material x or y. How can we ever get a feeling for certain techniques if we do not know how to apply them appropriately in a particular context! Only after the lecture I found out that The Hague is below sea level and that the groundwater level is very high.'

### Culture shock

Bing and Jozemias see less and less of each other as the semester progresses. They both feel lonely, not being able to overcome the gap with the students around them and unable to share experiences. Both Bing and Jozemias are developing an antipathy towards the Dutch, there seems to be nobody there to get them out of their isolation, they are confused about what is expected of them and they hate the language. They feel miserable - should they go home or bear it?

Unless students develop close social relationships within a certain period of time, their readiness for learning will be affected negatively, along with their consciousness of relevant learning tasks and their academic performance.

Both Bing and Jozemias decide to join a group of fellow countrymen. At least in this environment they are understood and can complain about the weather, the punctuality, the provocativeness in the student-teacher relationship, the fact that everybody is called by their first name, the bluntness of their fellow students and the stupid grading system based on quality instead of hard work. There are so many things to stereotype or blame... Bing misses her parents and her little girl more than anything and Jozemias misses his old social life and spends a considerable amount of time chatting with his friends back home.

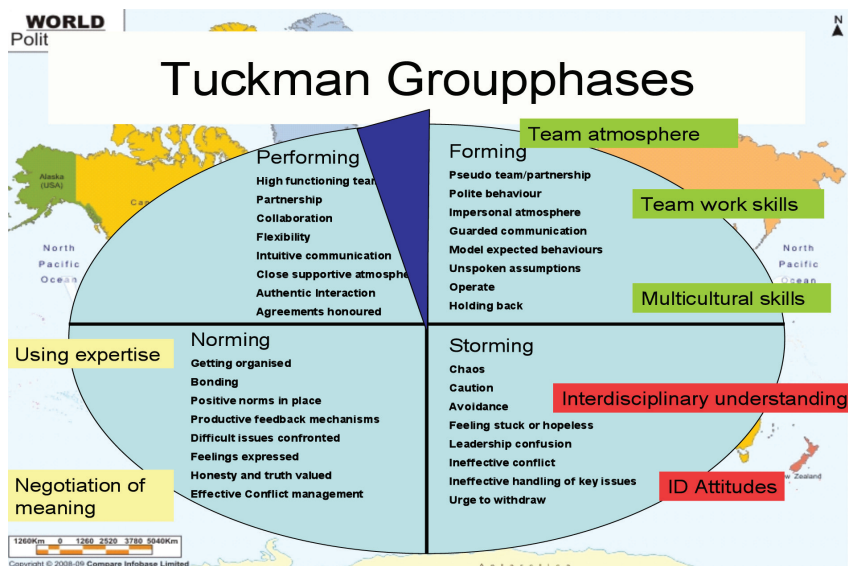


### Turning point

On top of it all, they are asked to relocate as their housing is being renovated. Both are placed in a mixed group of foreign and Dutch students. At first, it makes them feel even more frustrated and angry than they already were. After a while, however, they start to feel guilty towards their families, letting them down if they are unable to perform. They also start to observe the Dutch students in their homes and learn more about their way of doing things. It seems as if they are doing little role-plays with the Dutch students and somehow this helps them to better understand the Dutch students. Jozemias and Bing both decide to take a course at another faculty to determine whether they are at the right place.

### Growing understanding and the teachers' role

For Bing, the new semester starts with a teacher who explicitly states the rules of social interaction within the educational setting. Everyone has to contribute by analysing the paradigms of the field with respect to the situation in their home countries, while at the same time reflecting and discussing on the applicability of certain techniques in their home countries. In teamwork situations, they are asked to work together with students from different nationalities. The teacher points out the added value of international teamwork: confronting different views and opinions based on different cultural values and cognitive baggage should allow for more innovative and creative solutions. Although this seems simple and straightforward enough, it is not always easy to be open, willing to listen and to share opinions. However, if students fail to solve their communication problems, their results are likely to be lower than those of homogeneous groups. The teacher demonstrates the relevance of working together and most of the students are willing to make the effort. Obtaining insight into the phase the group work is in (shown in the graph below) turns out to help overcome some of the communication problems and allows students to make interventions to overcome the intercultural barriers. For instance, in the forming phase to explore differences in cultural perspectives in the team and to establish a code of conduct, in the storming phase to find out what team members need in order to feel safe, check inferences, and in the norming phase to celebrate small and big achievements.



*The Tuckman group phases are a tool to identify the phases that students go through when working in a team. Determining the relevant group phase can help both students and teachers to identify suitable interventions. Tuckman distinguishes four group phases: forming (getting to know one another); storming (debating group communication rules); norming (division of tasks and determining leadership) and performing (having determined upon a method and being on task and collecting data). With the team communication firmly established, group members can focus on the contents. Usually, an evaluation/reflection or rounding off phase is added to wind up a team.*

Jozemias' new course starts with the announcement that a sports competition is set up for all students. A tournament with soccer, badminton and volleyball puts him in touch with his fellow students, who are able to explain a lot of the expectations that lecturers have with respect to students in general. They are expected to take the initiative, to critically reflect on the facts and to deal with open-ended assignments in a co-operative fashion. By discussing the way the Dutch students deal with these expectations, Jozemias finally starts to understand the desired behaviour. As Jozemias gets to know his fellow students better, the barrier to speak up is lowered and he is able to bring forward his views on the relevance of certain international standards for his field of study. Sensor nodes in the Ukraine are certainly not at the forefront of people's minds and he has sincere issues with the societal responsibility of introducing such technical gadgets if people are barely able to find food and shelter. Moreover, corruption would make a technical gadget difficult and expensive to obtain, even if it was accessible at low costs in other countries. His concerns are shared by his fellow students, to the extent that other students open up about the situation in their countries, after which an interesting debate ensues. The lecturer is open to discussion and even able to add different viewpoints, boundary conditions and impact on the design requirements.

**True internationalisation at home**

Bing and Jozemias have finally started to make friends and to understand their fellow Dutch students. Their roommates have even invited them to spend weekends or holidays with their families, as they have come to understand their loneliness. They feel they have a mutual interest in getting to know one another better as they are more and more deliberating content from a global perspective and remain open-minded to doing things differently, even if they do not always agree. Moreover, Jozemias and Bing feel that they have adjusted both academically and socially to the university environment.



# The Sweet and the Wrapper



What really shocked Niki Frantzeskaki, Alexander de Haan and their colleagues at the Faculty of Technology, Policy and Management, was how students would remark at the end of their Policy Analysis Master that the methods they had been taught might work in an ideal or well-structured socio-political system, but surely not in their own countries!

They came up with a reflective workshop to convey to their students that scientific policy analysis methods are universally applicable - even if assumptions, policy-making styles and policy communication practices are different in every cultural context. According to Frantzeskaki, the added value and the learning objective of the workshop is for students to realise that the complexity of communicating the outcomes of the analysis differs from the complexity of conducting the analysis itself. Students have to learn how to adapt their communication strategies to the context, without having it affect the contents of their message.

The workshop has been held twice already, and will be continued unchanged. The set-up of the course is case-based. Students apply their classical research and analysis methods to a case. Subsequently, they are asked what the appropriate policy analysis style would be in their own culture and what types of changes they might suggest. Furthermore, they have to prepare a short story beforehand, based on their own experiences or on a newspaper clipping, to illustrate the existing policy style in their country. They also have to fill in a standardized questionnaire (the Hofstede questionnaire, see the box below) to discover how their country 'scores' on the different cultural dimensions.

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*Gerard Hendrik Hofstede (born 3 October 1928, Haarlem) is an influential Dutch psychologist who studied the interactions between national cultures and organizational cultures. One of the five dimensions of culture distinguished by Hofstede is the Power Distance. The Power Distance is the extent to which the less powerful members of organizations and institutions (such as families) accept and expect that power is distributed unequally. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders.*

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In cultures with low power distance, such as the Netherlands, people expect and accept power relations that are more consultative or democratic. People relate to one another more as equals, regardless of formal positions. Subordinates are more comfortable with and demand the right to contribute to and critique the decisions of those in power. In cultures with high power distance, such as Malaysia, the less powerful accept power relations that are autocratic or paternalistic. Subordinates acknowledge the power of others based on their formal, hierarchical positions.

Even though the students are introduced to six different policy analysis styles, ranging from the 'hard' rational style to 'softer' participatory styles, their assignments typically show mainly two varieties. Students from countries with high power distance define the Process or Client advice policy styles as the dominant styles in their countries, while students from countries with low power distance indicate Participatory and Interactive policy styles as prevailing. By contrast, upon selecting a more desirable policy style, students tend to pick the opposites! Students from countries with low power distance recommend a shift towards a more rational policy style – perhaps because they are used to social inclusiveness and participation and would sometimes hope for a little tougher, more decisive approach. The participants from countries with high power distance report that the dominant practice is to advise strategically in policy domains. They would like to see a shift towards a participatory and/or interactive policy style.

In class, students present and discuss their own stories in relation to their particular backgrounds. The ideal group consists of five students, Frantzeskaki says: in groups of seven, some students will lean back and fail to participate; in smaller groups the interaction is less varied.

One hour to discuss the assignments has proved to be sufficient. Frantzeskaki often enjoys the second hour of the workshop even more: discussions start to flow away from the original topic, running to issues that are relevant to the students and their countries, such as politics or corruption. She is still pleasantly surprised when students, in doing so, use the language of the course to reflect on these issues.

In working with multicultural groups, Frantzeskaki has noted several problems that seem to pop up time and again. First of all, if you let the students decide for themselves, the groups will not be multicultural to begin with! Students tend to form groups with students from their home country and to speak in their own language. Not only is supervision and intervention made difficult, or even impossible in this way, the group also excludes the stray student from another background. Typically, only one student of the dominant group will communicate with either the professor or with the student speaking another language. After reading up on the subject, Frantzeskaki decided to take the initiative and form multicultural groups early on, and to explain the broader learning objectives of the workshop in class.

Temperaments sometimes run high, especially in groups in which students from cultures with high power distance and students from cultures with low power distance are mixed. The 'lows' typically tend to jump right in to discuss the problem, while the 'highs' hang back a little, wanting to think things through first. The 'lows' feel that the 'highs' are not participating and call them lazy, while the 'highs' feel that they 'lows' have come to class unprepared and talk about the problems in an unstructured manner.

Similar problems arise in groups with students from male-dominant (masculine) societies and female-dominant (female) societies. 'It can be a battlefield,' Frantzeskaki observes, 'the whole process may turn into a fight for the power.' In her search for solutions, she has decided on a threefold approach. Firstly, to encourage the students to set ground rules for participation and discuss how they will manage any conflicts. Secondly, to explain to the students what their options are when a conflict arises. Thirdly, to observe group dynamics in order to pick up on the signs before the situation escalates.



**Assignment** (*this is an **individual** (not group) assignment*):

Every student has to prepare a two-page analysis and presentation linking the policy style that might be adopted by the actor (assigned to the group) in the hypothetical case that the analysis was performed in his/her country. In this way, novice policy analysts will realize the impact of the context in the communication of the outcomes of their analysis for different cultural settings.

What we expect from you as analysts is a reflection on policy styles that might prevail in your country and the revealing of possible links between the Hexagon of Policy Styles and the dimensions of cultural diversity. You are asked to provide:

1. An opening paragraph that shows your reflection on Hofstede's dimensions for your country (1 paragraph – max250 words)

If you fill-in the questionnaire of Hofstede and compare the dimensions measured for you with your country's scores found in Hofstede's book, you can reflect on differences and similarities. The material provided in Intercultural Management course will suffice for this task.

2. A short elaboration on the prevailing (most typical or regularly adopted) policy style found in your country.

Here, you are asked to discuss what will be the policy style you might adopt OR you problem owner might adopt IF the outcomes of the analysis you have completed would be communicated in your country. For this task you need to have read the paper of Mayer, 2004.

3. A ranking of the policy styles indicating the most typical to the least typical for your country giving a score from 6 to 1. You need to include the following table and provide your ranking:

**Policy analysis style Ranking**

Rational style

Client advice style

Process style

Interactive style

Participatory style

Argumentative style

Ranking scale: 6 for the most typical .....1 for the least typical

- Please indicate the most typical/frequent and NOT the desirable/preferable policy style.

4. Indicate what a desirable policy style is for your country. Here we ask your personal opinion as a future analyst!
5. Empirical justification: The fifth task of this workshop is to provide a short story (a personal experience) that justifies the policy style that you characterize as typical for your country. In case you do not have a personal story to share, then try to provide a story of the news of your country that corroborates your statement.

You are expected to deliver a short story (up to 250 words) on Wednesday that you will present and discuss with your group members. Please make print-outs of your story and provide them to your group colleagues so as to exchange stories and experiences.

For students, learning to work in multicultural groups is definitely one of the challenging aspects of this workshop! However, the students are not the only ones to benefit from the interaction. 'We have become so much more aware,' Frantzeskaki says, 'of how students from different cultural backgrounds require a different approach!'

She distinguishes between three types of multicultural groups: the 'balanced-power group', in which no clear leader emerges. It's an easy group to moderate, but on the downside, they are sometimes easily satisfied with mutually agreed-upon results. Such a group may respond well to stimulation, for instance by being shown the results of a team from a previous year.

The 'power-differentiated group' has a clear leader. Some team members may fall silent (slow riders) and others may just lean back and leave everything to the leader (free riders). This may be solved by appointing different leaders for different tasks. Such a team typically requires more attention from teachers.

The third type is the 'self-steered group' – every professor's dream. All students are highly motivated and dominant, and team members take turns in taking the lead. The team may need extra work (for extra credits) in order to keep them motivated. If the group is underperforming, the leader of the specific task can be made responsible for the outcome.

Finally, the lecturers have learned to recognize how students' cultural identities are reflected in their assumptions and arguments. They have adapted their grading practices accordingly, especially in cases where warrants or assumptions of policy arguments have a cultural 'flavour'.

In the end, lecturers still have to be explicit about the requirements, treat all students equally, and yet be sensitive to the differences between them. Or, as Frantzeskaki puts it: the contents remain the same, but you may have to put a different wrapper around them.

### Lessons Learned:

#### Tips:

- Make students aware of the differences in teaching style and student behaviour during the first meeting of the course
- Be careful whom to address initially with reflective or direct questions
- Adapt assessment models to deal with culturally flavoured answers

#### Tops:

- Reflecting on the application of tools/methods applied in their country makes students more interculturally sensitive
- Cultural diversity is maintained and respected from the first day onwards
- Power differences are mellowed out at an early stage in the teamwork process when addressed immediately



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# It's All About Interaction



It is not always easy to find funding for innovative ideas, so you have to develop a certain sensibility in this area, Rob Kooij from the department of Telecommunications (EEMCS) and Senior Scientist at TNO says. When he learned about the Flowers project, he jumped at the opportunity and over two years submitted several projects. We talked to him about two of them: Sense Your World and A MAZE.

## Project Sense Your World

Sense Your World was the first 'flower' and even though the actual project is finished, Kooij is still involved in the spin off and exploring new possibilities for his concept. The appeal of the project is its apparent simplicity: telecommunication PhD students from all over the world take a video camera and a sensor node when they go home to visit. The sensor node is a high-tech item: sensor nodes are used to gather and distribute all types of information, for instance about temperature, motion, sound, vibration, etcetera.

They interview a parent or grandparent, someone from another generation, in their native language. They ask them questions about their own education and how they feel about the education of the next generation. These questions were submitted by Marleen Brummelink from OC Focus.

They then proceed to inquire how familiar their relative is with certain modern appliances, such as computers and cell phones. Finally, they show them the sensor node, ask them what they think it is and how much something like that would cost. The end product is a website on which you can click on a country and see its video, subtitled in English.

The purpose of the project was twofold. First, to make PhD students aware of consumers' different levels of familiarity with new technology and applications. The market for wireless sensor endpoints is expected to rise to 5.3 billion USD in 2010 for some 41 million appliances. For such a boom to occur, the applications have to be well-known and desirable to people. Secondly, to get students to realize that they are part of a global community here at the TU. Increasing students' understanding for each others' backgrounds may certainly bring them closer together.

Kooij is really enthusiastic about the results. To see someone interviewing their relatives and interacting with them almost formally, yet at the same time intimately, is quite special. The technical aspects of the project took longer than they had anticipated. 'It was exciting to get together with people from other disciplines to solve technical issues, such as the subtitling process. It was more work than we expected it to be, but it was fun to learn a new skill.'

Moreover, he sees endless possibilities to expand on the concept. At present, he is plugging the project to colleagues in the United States: 'Wouldn't it be great to have students from other countries submit their own clips? I would love to see the project grow. In that case, we might have to pick a different, more generic object, though. There are some 200 countries in the world, and it would be wonderful to have contributions from each one of them. You could perhaps do something like this under the flag of the UN, for instance within the framework of 2010, the International Year for the Rapprochement of Cultures...' Renate Klaassen has already contacted a documentary filmmaker to work on a compilation, and Kooij is thinking of approaching the HKU or Grafisch Lyceum in Rotterdam in order to take it all a step further.

Interview Uzbekistan



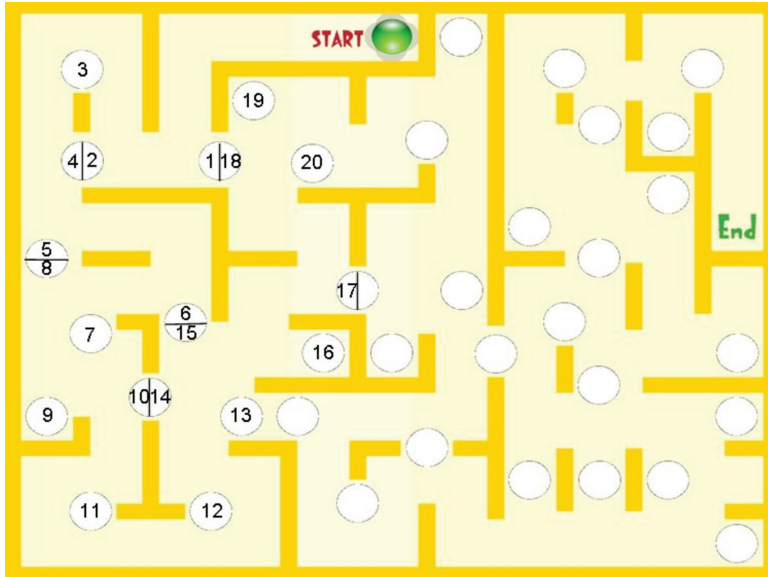
Sensor networks, i.e. networks consisting of connected sensor nodes, are used in many industrial and civilian application areas, including industrial process monitoring and control, machine health monitoring, environment and habitat monitoring, healthcare applications, home automation and traffic control.

<http://www.nas.its.tudelft.nl/people/Rob/sense/syw.html>

## Project A MAZE

A MAZE is an interactive game, played by four people who have to work together to win. That is part of its charm: the purpose is the interaction and cooperation between the players; the competition comes from other teams.

It is based on the children's game of a maze or labyrinth in which you have to steer a little iron ball across a wooden maze by turning on the handles on the sides. The challenge lies in preventing the ball from falling in one of the holes in the maze. If that happens, you have to start over.



The game was adapted in such a way that four players each control one direction of the ball: left, right, up and down. They are each given a doctored cell phone that communicates with the computer via Bluetooth. Four SonyEricsson cell phones, running the HID protocol, are used as interfaces.

The game was tested at a DTC (Dispuut TeleCommunication) Event that was held on 20 November 2009. Around 20 people participated, both staff and students, from nine different countries: the Netherlands, India, China, Spain, Ethiopia, Serbia, South Africa, Iran and Macedonia. The game was played by 10 teams in all, so that every player played for at least two teams.

They decided to couple the fun with a small-scale study, so five of the teams were homogeneous, with all four participants coming from either the Netherlands, India or China, and five teams were heterogeneous, with participants coming from different countries. Three tentative conclusions were drawn. First of all, the performance of the homogeneous teams is better than that of the mixed teams, in the sense that their average score was higher and that the best team was homogeneous as well. Of course, this was a small-scale test and to put it in scientific terms: the difference in performance was not significant, as the two-sided t-test revealed a p-value of 0.33. The test was far too small to look for differences in leadership styles, the influence of language aside from culture, et cetera.

Team	Type	Run								mean	max
		1	2	3	4	5	6	7	8		
1	homogeneous (Dutch)	5	2	9	1	2	5	16	1	5.1	16
2	mixed	1	1	2	2	2	2	2	1	1.6	2
3	homogeneous (India)	2	2	2	5	5	3	5	1	3.1	5
4	homogeneous (Dutch)	2	3	5	2	1	1	9	10	4.1	10
5	mixed	2	5	2	3	2	1	2	1	2.3	5
6	mixed	3	1	3	1	2	2	3	2	2.1	3
7	homogeneous (China)	5	2	5	3	1	9	6	5	4.5	9
8	mixed	3	10	1	13	2	5	12	2	6.0	13
9	homogeneous (Dutch)	2	12	2	2	19	10	1	10	7.3	19
10	mixed	2	5	3	10	1	3	12	11	5.9	12

Even so, according to onlookers, there were marked differences in communication styles. Both the Indian and the Dutch team seemed to function without noticeable leadership. Every player had a clear sense of his own position as equal part of the team. Equality is an important feature of the Dutch culture, in which negotiation and compromise without dominance, the so-called 'poldermodel', are the natural way of doing things. Apparently, the strong democratic culture of India, with its many diverse cultural and religious groups, inspires a similar type of teamwork.

In the mixed teams, on the other hand, a natural leader emerged from the outset to run the team. They needed to talk more to map out their strategy and collaboration, for internal competition hampers good results. Even so, the Eastern European members of the mixed teams all displayed strong, self-reliant characteristics. Definitely food for thought – and sociologists!

Secondly, the data show a clear learning effect. All the teams had a chance to practice for two minutes. Each team then played eight runs, and the results of the second four runs were usually much better. Every one played for two teams, and the performance of their second round, so to speak, was better than that of the first round.

Finally, in spite of the learning curve, concentration was an issue for all teams, and their performance sometimes dropped in the final runs.

The first version of the game has been demonstrated at the Open Days of TU Delft and during the Science Days of the NEMO Science Museum in Amsterdam. All the enthusiasm of the participants has left Kooij brimming with new ideas. 'What if we designed a game that would work without prepared telephones? That could be played in public waiting rooms?' He is excited about the new technical possibilities and about bringing people from different disciplines together. It is all about interaction.

<http://www.nas.its.tudelft.nl/people/Rob/amaze/>

## Lessons Learned

### Tips:

If you run a similar project

- be sure to delegate the tasks you are not good at yourself
- be sure to make it a team effort
- work across departments, and even better, across faculties!

### Tops:

- Students are appreciative when they get a responsible task within the project
- Engagement of my own department in the project created synergy
- Spending time on creating visibility for the project paid off!



### Contact

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Academic, Social and  
Personal Adjustment

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## Academic, Social and Personal Adjustment

Over 60% of Delft University's staff and students are born and raised in a country other than the Netherlands. Does that make Delft University of Technology a truly international university?

Academic, social and personal adjustment of the students and staff are important predictors of their well-being within our institution and may enhance or harm their academic motivation. Key issues in academic adjustment typically involve teacher/student relations, group work, individual responsibility for academic problems, plagiarism, the assessment system, and language problems. If students are supported and aware of how the system works, it will become easier for them to adjust academically and to benefit from the training provided.

As moral support increases, homesickness will decrease. As connections, interaction and friendships with local students grow, feelings of isolation and alienation will diminish. As local friendships become stronger, academic adjustment will become easier.

With respect to personal adjustment, the difference between one's home culture and the receiving culture is an indication of the initial problems students/staff may experience. As the disparity between the two is larger, students/staff are more likely to cope with signs of depression. It is almost as though leaving everything behind induces some kind of mourning process even though their stay is temporary. If support systems to enhance academic and social adjustment fall short, these health problems may become more serious and affect a person's well-being at the cost of functioning effectively.

So, in order to be a truly international university, these three elements need to be addressed. However, reality is more resilient than all of our good intentions.

When making the transition to our country, staff members and students alike experience a culture change in which new social standards and customs have to be appropriated in order to make contacts within the predominant culture. Often the personnel of the hosting institution are largely unaware of the home country and culture, the differences in language, non-verbal communication and values. Support is varied and often not immediately found within the institution, even though many support activities are arranged and catered for.

More specifically, a multinational study shows that students have difficulties with the cost of living near the institution, dating students from the host country, and being far away from friends and family. Other students report difficulties with writing papers, getting used to college food, getting involved in club sports/teams and making contact with staff members and local students. Overall, the 2000 respondents in this particular study reported the least difficulty with meeting and making friends with other international students. The latter is especially true for making friends with international students from their own culture.

For staff and students of foreign origin to feel at home, social, academic and personal adjustment is required. Academic adjustment is the extent to which one can live and operate effectively in the organisational/educational system & structure and achieve the individually desired goals without flouting the goals of the system. Social adjustment focuses particularly on the sense of belonging to a certain community and on being proud of that community. Naturally, students and staff members will also have to adjust personally.

However, academic and social adjustment depends on the attitudes of both the newcomers and the receiving staff and students. As newcomers in foreign country, we tend to adopt different coping strategies. Either we want to participate in the new culture or we do not want to participate in the new culture.

We want to maintain our own cultural identity or we are open to changes to our cultural identity. If we model these dimensions of John Berry, we find the following:

	Maintenance: Yes	Maintenance: No
Participation: Yes	Integration	Assimilation
Participation: No	Segregation	Marginalisation

- *Integration*: we want to participate yet also maintain our cultural roots
- *Assimilation*: we want to participate and not be recognized as foreigners
- *Segregation*: we want to keep to our own and having nothing to do with the hosting culture
- *Marginalisation*: we're fed up, both with the host culture and with our own culture

Staff members at the hosting institution are often known to feel that 'they have decided to come here, so they should adopt our rules, values etc.' (assimilation)

Thus the only resort for people who do not want to lose their identity entirely is segregation, since the hosting staff is not open to integration. A recent small-scale research in Delft has shown that many foreign students look for students from the same country to get along with (segregation). Many foreign students only get in touch with other students within the classroom environment. For true international learning however, we would like students and staff to be willing to invest into their relationship and to learn from the differences in their world perspectives and experiences.

Perhaps it is due to the fact that our system is not open enough yet to receive all these foreign people or perhaps people's loyalties stand in the way of true contact.

As individuals, we become members of many groups in our lives, since we belong to a family, a profession, an organisation, religion, age group, have children or no children, a gender, a nationality etc. As humans we want to belong to a group and identify with a group. Yet our loyalties shift depending on the context we are in and depending on the priorities we give them. You may be a female professor in bio-chemical engineering. At a conference, you may feel that you are first and foremost a professor in engineering, yet your colleagues may look at you as a woman first.

When we find ourselves in a new situation, we tend to identify with one or more roles with particular loyalties. If a particular role requires decisions that conflict with our other loyalties, we face a dilemma.

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*When asked to meet during prayer time, I will say no to a professional meeting. What meeting could be more important than a meeting with God/ Allah/ Buddha?*

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If we think we're playing one role and others think we play a different role, how can they 'get' the intended message?

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*If a general practitioner invites us to undress for an examination in his doctor's office, we tend to do so. Most people will probably act differently if the location is different.*

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If our roles and matching loyalties are not known to our communication partners, how can they read our behaviour?

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*Once a student asked me whether he could register for the exam of sa123. When I told him I didn't know the course, he looked at me as if I were mad. I had to explain I was not the secretary.*

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Communication patterns are not the only issues causing miscommunication in intercultural situations, so are the values and loyalties of both foreign and local students and staff members.

What does all this mean for the personal, social and academic adjustment in education?

If the University succeeds in creating a desire to belong to its community, students and staff will be likely to develop some sort of loyalty to the institution. This means that students and staff have to learn about each other's loyalties and have to explore an integrative set of institutional values based on inclusiveness. We have to agree about the extent to which we can differ and to learn where to find our common ground. We have to be open to differences and learn from them. We have to make the rules and values of the institution visible to all players in the institution in order to create a level playing field, yet remain flexible towards new experiences. The stronger our loyalty to the institution, the more easily will we be able to accept and overcome the communication differences within the system.

It means carrying a TU Delft attitude into the world and yet be open and learn from other systems. It means institutional branding in every vein of the institutional body.





# To Keio and back

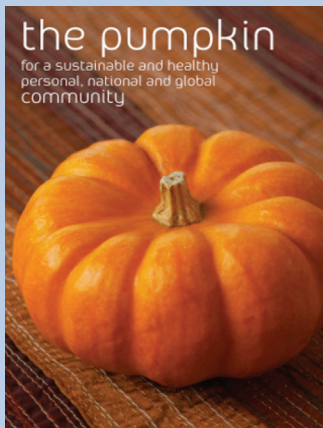


Toke Hoek (International/Study Abroad Officer at the International Relations Office of the Faculty of TPM) is involved with internationalisation in the most literal sense: organising the exchange students' programme between Keio University (Tokyo) and Delft.

Last semester saw the first round of an exchange between Keio and Delft, when three Japanese students came to Delft and three Dutch students went to Keio. The exchange is for the duration of one semester and can be fitted within the optional part of the Master's programme of the SEPAM track.

The exchange was instigated by the deans of both universities, Toke Hoek says. The Keio Graduate School of System Design and Management is comparable to the Faculty of TPM. It can be quite a puzzle sometimes to find two faculties that deal with the same subject matter, have sufficient overlap, and yet can offer students additional courses – and in English too. 'As important and enticing as the cultural exchange may be, you want it to be a worthwhile academic experience as well.' This first year, the study programme in Keio was still quite limited, and so between the three of them, the Dutch students were able to cover all courses and the extracurricular project as well. The programme is to be expanded this year.

The project (see below for an example) was organised by Keio University itself in cooperation with external parties. The project was already running in English and a large part of the staff and students had an international background, so the language was less of a problem here. That was not always the case, as the proficiency levels of many staff members and students left something to be desired.



### Extracurricular project:

ALPS. The final presentations of my design project at Keio was held last weekend. Our team created the Pumpkin App, an iPhone Application that keeps a record of your eating habits and exercise history. Moreover, you may turn it into a competition with your friends, which will help you to improve your habits. The loser of the battle is supposed to donate a certain amount to our Pumpkin Business in Africa. In 6 months we turned a vague theme into a complete business model, by using different methods.

*Written by Annemarijn Jelsma*

It goes without saying that this Flower project was education-oriented. The Faculty of TPM wanted to set up a well-structured programme with another university from scratch and document its findings and those of the students along the way. The students took all the courses that were offered and participated in the project. They were asked to record their experiences extensively, for instance by reporting on the level of the courses, the differences with the education practices at Delft and the examination system. 'One of the things the students noted,' Hoek says, 'was the personal approach at Keio. A lecturer or other staff member is assigned to every student, to help them with any problems they may have and to monitor their progress.' In addition, the students kept a video diary and wrote a blog on their social life and adventures in Japan. They had quite a following at Delft and were well read! Their experiences will be used to prepare future exchange students and to improve the contacts with Keio University.



*Staff and students at Keio University Japan*

The departments of education of both universities kept in touch throughout the semester as well; they held a number of videoconferences on the curriculum, the availability of courses in English and future expansion of the exchange programme. This first year the programme was available for SEPAM students only; hopefully, it can be extended to the EPA and MoT tracks.

When asked about the pitfalls in organising such an exchange, Hoek says that it often comes down to language issues. As high-tech and modern as an institution may be, when the number of courses offered in English is insufficient or when the number of English-speaking staff members available to coach the newcomers is too low, it may be better to put the cooperation on hold for a while. The same applies to the Japanese students coming to the Netherlands: they have to pass an English proficiency test before applying. The standards are raised this year, so this may yet prove to be a problem for some students.

In the meantime, Mr Balkenende (Prime Minister) and Mr Plasterk (Minister of Education, Culture and Science) visited Keio University in October 2009, where an official cooperation agreement between both universities was signed. Both parties want to increase their cooperation, not only in student exchange programmes, but also in researching the 'earth system' by studying earthquakes and floods in relation to technological development and its social and governmental embedding.

### **Tops and Tips from TPM students who went to Japan:**

#### **Tops:**

- Students and teachers are always willing to help you with issues and problems
- You can participate in great research, join a research lab that fits your interests
- You experience first hand the dynamics of working and studying in a completely new environment

#### **Tips:**

- Don't get frustrated when things are not the same as back home, try to understand the Japanese culture
- Listen and learn from your peers and work together
- Enjoy the Japanese way of life!

*Derk Busser; TPM student experience in Japan*

#### **Tops:**

- The practical work done in the Systems Engineering course (building a robot vacuum cleaner) was a welcome addition to the more theoretical approach I was used to.
- The involvement of the lecturers with their students.
- A personal student mentor who helps with practical matters.

#### **Tips:**

- Take up an ALPS project (for an example, see above) simultaneously with your courses at the Business School.
- Offer more courses in English – this might improve the proficiency of the Japanese students as well.
- Offer all information (Blackboard, registration forms, etc.) in English.

*Annemarijn Jelsma TPM student experience in Japan*

### **Lessons Learned Toke Hoek**

#### **Tips:**

- use your exchange students as ambassadors for your university
- intercultural aspects are an important part of the process

#### **Tops:**

- exchange students are a source of information, both abroad and at home



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# Real Internazionale United



Jos Weber (Department of Telecommunications, Faculty of EEMCS) is a self-described sports fanatic – from football to ice skating to cycling... – and so, when he first heard about the One Thousand Flowers project, he felt that a sports event would be the perfect way to bring students together.

Nowadays, over 80 percent of the students who take their Master's in Telecommunications come from abroad. Students used to come mainly from China, Pakistan and India, but the number of students from Africa is rising. To illustrate the changed population, Weber says: 'Students used to come see me after a test if they had scored a five, trying to talk me into giving them a six. These days, students come to see me if they have scored a seven or an eight, sometimes in tears, because they really need a nine. They often want to graduate cum laude, because they are here on a scholarship or because their families have made sacrifices to get them here. Besides, they are used to excelling, they were among the best at their old colleges.'

Weber also noted changes in the dynamics of the lectures, where the number of questions asked dropped after the lectures were given in English. 'At first I thought that the language was a barrier, but after taking a course in teaching multi-cultural groups, I realized that it was more of a cultural barrier. Students save their questions for the break.' It was noticeable both inside the classrooms and in the hallways of the faculty: students would cling together according to their background. Weber was one of the people who took the initiative to break down some of those barriers. 'They could learn so much from each other! Dutch students tend to be a bit lazy sometimes, but they do come up with new ideas and love to take the initiative. Chinese students, on the other hand, are very diligent, but in the tests they often reproduce the contents of their books. A mix might do them all a lot of good!'

Weber planned a number of sports events for the Telecommunications department. At first, the idea was to involve only the Master students, but later on, he decided to include the PhD students and staff members as well. The project was introduced during the Introduction week at Duinrell. Two of the participating students immediately stepped on board to help organize the events. A couple of students from DTC (the Dispuut Telecommunicatie) joined in, as did a PhD student and a secretary of the Department. In all, Weber had a team of eight people. They took an inventory of the most popular sports and planned both an outdoor and an indoor activity.

The outdoor activity was a football tournament, in which 40 people from 16 different countries participated! 'Of course, we stressed that participating was more important than winning, but once they were on the field, every one became quite competitive.' The winning team was half Italian and they took the cup home.



*MSc 1 United*

*MSc 2 Internazionale*

The indoor event was even more popular, as almost three quarters of all Master students took part, 60 people from different 20 countries in all. They played volleyball, badminton and table tennis. This time, the organisers came up with a prize for everyone: a special commemorative pennant in white and blue (the colours of TU Delft) with the words 'Real Internazionale United' printed on it. 'Of course, "Real Internazionale United" refers to Real Madrid, Internazionale Milan and Manchester United, but we also meant for it to sound like "Really and Internationally United"', Weber says. In the good old Dutch tradition, both events ended with a so-called 'third half', with beer and bitterballen.



The feedback from students is very positive. In the college rooms and hallways, Weber has observed that students are mingling much more than before. They even get together in the weekends and for outings. It is, however, too early to say whether they will team up more in their studies as well, because the courses in which cooperation is required do not start until the next semester.

Students are already asking for the next activity, but it is unclear if and when it will be held. Even though the costs are not too high and the organisation becomes easier every time, it is getting increasingly difficult to find funding for such activities. Of course, Weber tries to encourage the students to set up activities of their own accord, but for some students, the idea is just too daunting. It would be ideal to make it a regular part of the curriculum: just include a couple of sports events at the beginning of the Master phase to help the students find their slot within in the larger TU Delft community.

<http://www.telecom.ewi.tudelft.nl/sport>

## Leason Learned

### Tips:

- The TU Delft Sports Centre provides some great facilities (incl. catering)
- Rather than having just one award (e.g. a big cup) for the winning team/person, it is better to have a small souvenir (e.g. a pennant) for all participants
- In order to compose balanced teams, ask the participants to roughly indicate their level/skills

### Tops:

- Sports really unite international students!
- Sporting together ---> studying together.
- It's big fun to have both students and staff participate in the same event



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# Introducing the culture clash



'We were still only toying with the idea of an introduction week for our Master students when the Flowers project came along. It was not so much that it helped to carry out the plan, no, it pushed us to decide that we wanted this plan, that we were really going to do it. Submitting our application was really the first step of the whole process.'

The University has its own introduction week for foreign Master students, but Dagmar Stadler (Faculty of Electrical Engineering, Mathematics and Computer Science) felt that something was not right: 'If you organise additional events for foreign students, you keep reinforcing that they are in fact a separate group. With the influx of foreign students in the Master's, we wanted to come up with a programme for all new Master students, foreign and Dutch.' Initially, the idea was to offer an introduction programme for all Master students of the faculty of EEMCS, but that was easier said than done. It was not easy to get all the departments on board and as issues of time and location became more complicated, Stadler decided to turn the project into a pilot and start off with the departments of Telecommunications and Media and Knowledge Engineering. 'We thought that we would gradually expand over the next few years, but the response was incredibly positive and we are going 'faculty wide' this year!'

The group consisted of 42 students, half of whom came from abroad. The size of the group was just right: students got to know each other within a day, and they mixed up pretty well, both over national borders and over department borders. 'The programme for the week was very full,' Stadler admits, 'but the atmosphere was terribly relaxed and it did not feel like hard work at all.'

On Monday morning, the group was transported by bus to Duinrell, an amusement park with cottages in the vicinity of Delft. The Director of Education of the Faculty introduced the week's project with a lecture on climate change and the sea level rise. Divided into groups of five students from both tracks, the students started to work on their assignments right away. The week was set up like that: lecturers from the University came over in the mornings, while students worked on the project in the afternoons. The groups were given fake money that they could spend on internet time or on a consultation with an expert. On Thursday morning, the groups presented their poster and pitched their proposals to a jury consisting of the Master's coordinators and a PhD student.

The fact that the assignments were relatively open was a problem for some teams; their discussions would run wild and loose focus. In the evaluation that was held afterwards, some students commented that they would have liked to spend more time on technical solutions and less time on brainstorming. It's one of the lessons Stadler has learned: next time, the groups will all have to deliver a 'wrap up' on their progress at the end of the day, tell the jury what they have been working on and perhaps be given pointers for the next day.

In the evening the students played a card game called Barnga – it was a big hit. Students were divided over ten tables with four players. They were handed the rules of the game and were allowed a practice round, but after that, talking was prohibited. The game itself is fairly simple, a bit like hearts. After every round, the winner of a table would move clockwise to the next table and the loser would move to the next table on the other side. They played a new round, still without talking, and found out that it did not work! Slowly it dawned on them (or in some cases it did not) that every table played by different rules: on one table it was ace low, diamonds trump, on the next ace high, hearts trump, on the next ace low, no trump, and so on. Chaos ensued and the students got angrier and angrier; they displayed every emotion you would expect in a culture clash! 'Some of them got really mad with each other. When I told them that every table had been playing along its own rules, they turned to me. It was a great lesson in cross-cultural cooperation, in understanding what happens when people act on the basis of different sets of rules.' According to their evaluation forms, most students enjoyed the game and the process, even though one of them wrote that 'the intro game should be used to get to know each other better, instead of confusing them!'

Looking back, Stadler feels that the students would have liked to spend another night on the same theme. 'This night was all about confrontation, about realising what others go through and about preparing the foreign students for what lay ahead. We could have used a night spent on the theory of intercultural awareness or on discussion. This is definitively an aspect that will be included the next time.'

The sandcastle-building match on Wednesday night was cancelled because of the weather. The students took a pub quiz instead, organized by the Telecommunications Dispuut.

Overall, students were quite enthusiastic about the week, but one of the recurring comments was that they would have liked more time for leisure activities and sports, and 'more fun!' in general.

The students were lodged in the cottages on the grounds, with five students in every cottage. They had breakfast and lunch in their own cottage. Dinner was served in the park's facilities on Monday and Tuesday, but on Wednesday, every group was given 30 euro to cater for themselves. Some groups ordered takeout, but others really dug in and prepared a five-course meal, with a course from every country.

'This group of Master's students is essentially different from other years. They work together and mix socially. Of course, it helps that the Telecommunication department has organised additional activities since, the sports events in particular. We asked the students to fill out an extensive inquiry when they came in, handed them ten short questions at the end of the introduction week and we will be repeating the same extensive inquiry in January. Jos Weber (Real Internazionale United) and I will be evaluating our projects together.'

In 2010, the programme will be repeated for the entire faculty, and Stadler expects a group of some 275 students. Scaling-up will not be so simple, Stadler thinks. With so many students, you will have to spread the group over different locations. Even so, the social control diminishes as the groups increase. Last year, students all knew one another, if someone was missing (or rather, sleeping in), his roommates would go get him. The locations may not be as close to Delft this time, which means that the lecturers and the organisers will have to travel further.

The costs of the programme were lower than Stadler had budgeted for. 'We did not use external help, and the students paid a contribution of € 40 each.' (A couple of students commented in fact on the expenses – and complained about the price of beer in the pub.) Two PhD students developed the format of the project. The Master's coordinators played an important role. 'They judged the final presentations, and they were at the park every day, which was great, because it showed the foreign students in particular who they are, what they do and that they are very accessible.' In addition to the coordinators, Stadler and one of the Academic Counsellors, the team consisted of a graduated student and a PhD student who assisted during the daytime, and two student assistants who stayed the nights as well.

Some other faculties have their own introduction programmes. The Faculty of TPM, for instance, has a similar programme; in fact, their blueprint was copied by EEMCS, although the focus of the EEMCS programme is more on content. The Faculty of ID has a two-day programme, where students do not stay over and which is purely social.

### Lessons Learned

#### Tips

- pay ample attention to the communication: inform students well in advance and prepare a reader with information about the lectures, the project, the house rules of the accommodation, food and drink, etc.
- make sure that students are teamed up in different groups for different activities, so that they all get to know one another.
- keep the groups small. If necessary, create sub groups – it will help students to make friends.

#### Tops

- Students very quickly learned a lot about other cultures
- Integration of Dutch students and international students was realised
- Student expectations about teacher/student relations became clear during the week



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# 3

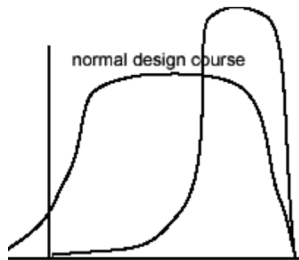
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## Virtual Collaboration: The Learning Curve of Frustration

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## Virtual Collaboration: The Learning Curve of Frustration

Imagine that you have recently returned from a conference that you enjoyed immensely. You have exchanged many ideas in the area of your research and discovered you are teaching a similar class as your foreign counterpart named Harban in another part of the world. Together you decide that broadening the horizon of your Master students and adding a different perspective to the technological assignment must be attractive for students in both countries. Moreover you have heard of similar initiatives in your universities where an increase in student learning results was very dramatic, as is shown in the following graph:



International Virtual design Course at  
the Industrial Design Department,  
Graph by Niels Moes

Back home you break the news to your supervisors. Your supervisors are very enthused about the prospective co-operation: the sections both have complementary research expertise that they may now fruitfully and safely exchange. Moreover, this could be the start of a strong international bond in terms of joined research, funding etc, etc. Elated you both continue with this exciting project.

### Setting up a virtual class

In mutual agreement you decide to provide a set of lectures in each country in the area of expertise of either lecturer. These lectures are to be followed by the students of the partner institution. Students are then brought together in a kick-off meeting in which everyone presents him/herself to the entire group by means of video-conferencing. After this first meeting, students of both universities will work together on a joint online assignment in mixed teams. You and Harban proceed to market the joint class and once a sufficient number of students have registered on both sides you are ready to start with the real work. Before long, you have arranged and tested a web-application, constructed an assignment that both student bodies will be able to deal with, and you have arranged for the virtual kick-off meeting. The meeting is a success, everyone seems to be inspired, very enthusiastic and ready to proceed - most of all you and Harban who have already divided the student body for prospective research work.

Alas, as nice as it started, as dismal it is after a few weeks' time. Nothing seems to work as planned!!

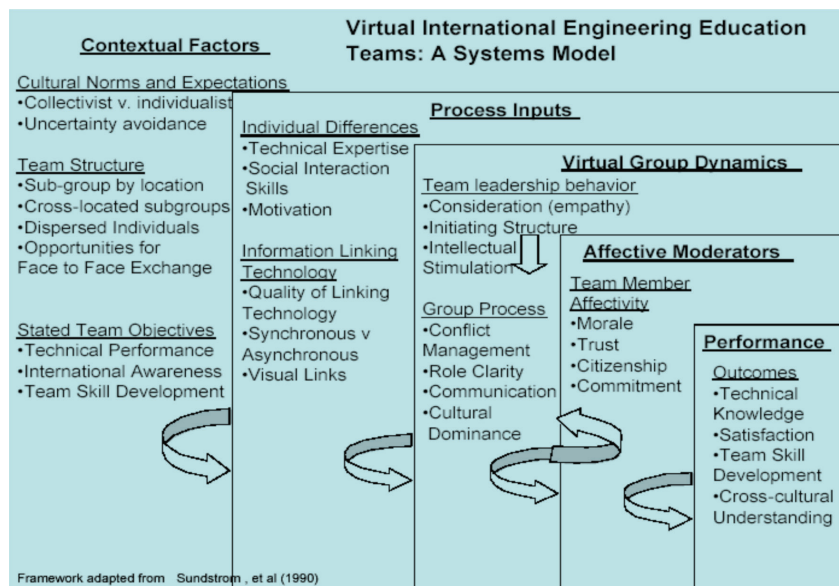
### Difficulties encountered

The web application, even though it has been tested at your university, does not seem to work on wired internet in the partner institution. Your students are unable to follow the lectures of the joint partner, due to limited or failing connections. The students in your partner institution do not have eight-hour access to the internet due to local power break downs. There are administrative problems with the computer rooms, moreover students need to travel quite some time to get to the university's premises and the time differences make it impossible to do virtual chats, even if all the wired/wireless internet lines are working. On top of it all political riots prevent students in the partner institution from reaching the university. Once everything has quieted down and your partner has arranged a private computer room during two days of the week in which the students can do their work, when all the lectures have finally been downloaded on Collegerama and may be viewed on both sides of the world, your spirit rises again with the prospect of success. Now the waiting is for the mid-term break to be over.



The teams, however, are still not communicating properly and fail to get the assignment done. On the one hand, your students are complaining about the non-response of Harban's students. Their language proficiency is insufficient and their prior knowledge seems to be quite different from that of your own students. As the students do not depend on each other for coming up with a final team result, they start to do the work on their own. On the other hand Harban's students complain about the bluntness of your students, their lack of seriousness about the work to be done and the misinterpretation of the assignment. They feel the problem definition made by your students is entirely off track and moreover they do not dare to express their view for fear of offence and deterioration of the relationship of Harban with you. Finally, students on both sides wonder what the added value is of working in an international virtual team. All they have learned so far is that the communication is not working and contents are not even discussed yet.

Just as Harban and you are at your wits' end on how to proceed, a colleague brings a workshop on international and virtual teamwork to your attention. Harban is flown in immediately and both of you follow the workshop. In the workshop you realise how utterly unprepared you were when you started the project. The workshop leaders first present a systems model for working together in virtual teams:



*A Systems model of key factors influencing the dynamics and performance of international Engineering Education Teams*

*Explanation of the Systems model: Contextual factors include cultural standards and values, as well as the expectations of each team member with respect to the team, the structure of the project team and the implicit or explicit goals that should be achieved and that will influence the teams' performance. Process inputs shows the background variables influencing the teams' performance and the resources needed to realise the virtual group work. Virtual group dynamics determine the patterns of communication with respect to leadership, decision-making, role division, etc. Affective moderators refer to factors that influence the attitude and mood of participants. Finally, the performance outcomes are those desired at the end of a collaborative endeavour.*

*McHargue, C. & Baum, E. (2004)*



### A systems model helping to solve some problems

As Harban and you analyse the systems model, you come to the conclusion that your student teams do not have a common interest in realising the results, they have different values and standards with respect to interaction and no definite idea of what is expected of them, other than fulfilling the assignment. They have not agreed upon a working procedure, role division, leadership, commitment, etc. You also realise that the students have hardly gotten to know each other and have no common space to meet informally and to share their mutual interests. Meetings have been left to the students' initiative as you presumed they had plenty of team/project work experience.

Even so, one of your teams has done exceptionally well up till now. When looking more closely into the functioning of this group, it turns out that they have found a helpful colleague who has moderated the group process of this team. Each team member had stated the benefits he/she expected from the teamwork, and task division has been based on the interests of each group member. To come to a relevant result they have had to work together, they have been stimulated to share their experiences, and pressed to paraphrase and interpret the intentions of the other team members when they did not understand. They have discussed what they expected from each team member, agreed on how to work and committed to that. One leader was appointed to set the team's targets and make sure decisions were made by agreement of all. The leader was appointed on the basis of interest and was changed by the team if so desired. Each contribution was positively reinforced, which stimulated the exchange of open questions and trust building. Some team members even phoned with each other by lack of other video conferencing options. Before the deliverables were drawn up, a common format was agreed upon and in each virtual progress meeting, one issue was discussed to avoid unnecessary complexity. Finally, the group members shared a common passion known as *slebbeloren*, meaning they love looking for scratch material anywhere that they may use to build discovery instruments for scientific observations. Group members have used all the virtual media available to exchange ideas and come up with the best catch. Coffee drab for developing photo's, anything goes.

### Future choices

Based on these findings you and Harban decide next year to appoint a trained moderator for each team to moderate and stimulate exchange, set rules on the group process, and review the assignment in respect of the task division. Before the official kick-off meeting, an informal kick off will be held to exchange profiles and get to know one another better in terms of hobbies, interest, standards and values, personalities etc. Performance outcomes will have to include intercultural learning as well. Participating students will have to make an entry test on contents and language proficiency, in order to better match the group members. Finally, you will be much more explicit on the targets and deliverables that have to be submitted in the course of the entire process.

You end up making a checklist and are determined to make your class a success in the next round.

<b>Preparation Checklist:</b>	
Prepare (web) tools for communication	
Set targets straight at the beginning	
Arrange for a group moderator	
Divide the group roles	
Communicate a practical operation plan	
State rules for collaboration	
Choose the pedagogical tools/deliverables/assessment	
Have the students start on the simple elements of their assignments	
Be explicit about your expectations	





# Conflicting contexts



The Intercultural Virtual Seminar 4 Africa was preceded by a workshop on Cooperation in virtual teams. It was meant to prepare students and lecturers alike for the intricacies of working together online, but cooperating in virtual teams with students from another continent proved to be even more of a challenge.

This flower project was organized by Wim Ravensteijn and Otto Kroesen (Section T&DO, Faculty of Technology, Policy and Management) and its aim was to connect students from TU Delft, Tangaza College in Kenya and Mekelle University in Ethiopia. The students were to work together on-line as a group on finding low-tech solutions for local problems. Nine students in the Netherlands, eleven students in Kenya and eleven students in Ethiopia participated in the seminar.



Tangaza College  
Nairobi, Kenya



Mekelle University  
Mekelle, Ethiopia



Technical University Delft  
Delft, The Netherlands

## Technicalities

Of course, they experienced the technical difficulties they had been expecting – and then some. The internet connection was often too poor for chat sessions, particularly with Ethiopia where the power supply was unreliable to begin with. Even normal e-mail messages with attachments would not get through. The political situation in Ethiopia is sensitive and Skype was not allowed.

Furthermore, Ethiopian time is different from any other time-telling system, and this took some getting used to on both sides. The connection with Kenya was slightly more stable and, more importantly, Kenya is overall more accessible to the west and to western ideas. At any rate, it turned out to be impossible to get the whole group on-line at the same time. Discussions about these technicalities, relevant as they were, often seemed to push discussions on the content to the background.

In retrospect, the assignments were not structured or concrete enough: students had to find out for themselves how to deal with quite open assignments. The poor communication possibilities made their cooperation ever so much more difficult.

### Cooperation

Africa truly is a world apart – in every respect. In the workshop, the workshop leader had stressed the importance of setting clear rules and being more explicit on-line than you would be in normal conversations. However, as Otto Kroesen found out, in Africa even the most explicit agreements are 'nothing more than good advice.'

There were many problems involved with planning. As Kroesen explains it, planning involves having your future goals influence your present actions and disturb what you would otherwise be doing. As such, it is clearly a western concept: the African way is to live in the present and to have the present influence your plans. Even though this is clearly overstated, it helps to understand some of the miscommunication between the participants.



*Picture: A community-based organisation in Kenya that deals with the collection of garbage from different estates and that separates plastics, glasses, bones and polythene paper.*

Another topic that caused some problems was the analytical method of problem solving. It is a typically western invention, yet indispensable in dealing with western technology. The Ethiopian political culture in particular is quite authoritarian and obedience used to be an essential quality. Independent thought and taking the initiative are new to many Africans and something they are still growing accustomed to. So is dealing with criticism, for that matter, especially learning to criticize your superiors.

An evaluation carried among the participants shows that students from Delft generally took a broader, more theoretical perspective, while the African students wanted to solve more practical problems. Of course, the fact that the Dutch students were in the Master phase of their studies, while the Kenyan students were working on their Bachelor's may have something to do with this as well.

It's evident that the lives of Dutch and African students are very different and this will certainly influence their views on suitable methods as well. For instance, the Delft students came up with a game to get to know the preferences of the Kenyan people in a playful manner, but it did not work, since the students in Kenya were reluctant to implement the game and the target group felt it was childish. It even got a bit painful, when people were asked to stick pictures on their radio's, refrigerators or other appliances since such items are not available in slums without electricity.

Nonetheless, some of the results were positive and even unexpected. For instance, Dutch students came up with the plan of setting up street markets in Kenya at specific hours during the week, just like they are organised in The Netherlands. The concept was unknown in Kenya, but the Kenyan group ran with it and discussed it with the municipality, who gave

permission. At this point, they are negotiating about the fees to be paid by the stalls.

Other plans included treating malaria nets with herbal pesticides, which would be much more environmentally sound than the products used now. The introduction of such nets would require a training programme and an awareness campaign. Still another team worked on an alternative for breastfeeding (particularly for HIV infected mothers) based on indigenous crops. The idea is now pitched to the Minister of Health.

Moreover, the project yielded some unexpected benefits in the form of the discussions with students from Ethiopia, Cameroon, Ghana and Nigeria who were studying in Delft. Their take on Africa, development issues and how to make some progress there was in line with what you might call the essence of all development issues: the capacity problem.

### Lessons learned

Otto Kroesen visited Ethiopia and Kenya in January 2010, to make plans for a continuation of the project. Long-term commitment is key, he says, for several reasons. Individual projects are likely to be ineffective, and they are definitely not sustainable. Moreover, without strong personal relationships, misunderstandings and irritations are hard to overcome. The goal is to use the same methods on both sides in order to create a common knowledge base.

With regard to the seminar, the plan is to have students work in twosomes: a student from Africa with a student from Delft. This would take care of most of the technical problems, but there is more. Chat sessions have proven to be less effective than expected. A team of two could work on a specific problem and do the research together. The student from Delft might take care of the framework, while his colleague from Kenya or Ethiopia would find the data and take care of the calculations – or vice versa.

### Plans for the future of the seminar

- provide a reader with general reading material with both general and specific information. William Easterly's *The White Man's Burden: Why the West's efforts to aid the rest have done so much ill and so little good* might be included.
- have the students introduce themselves and their lives in 'you tube' style clips.
- sort out the means of communication in advance of the seminar. Pick websites to which documents can be uploaded and on which comments and documents can be posted.
- prepare 'project letters' from the Ethiopian and Kenyan perspectives elaborating on more concrete and feasible assignments, the themes of the seminar (energy, health and water), the starting point of the research and problem definitions in these fields.

### Lessons Learned

#### Tips; Pointers from the workshop given by Jeroen van der Velde:

- prepare the communication technology with the three institutions involved well in advance
- teams have to define their way of cooperating within their own team
- teams have to define their way of cooperating with other teams
- general guidelines for cooperation need to be established
- actions that have been agreed upon must be supervised and monitored
- tutors have to agree and cooperate as well
- prior instruction is required with respect to all these aspects

#### Tops:

- Some valuable project results were realised despite adversities
- Dutch and African students learn from each other and at the same time become more sensitive to the fact that their values and lifestyles are completely different
- Students develop a sense of interdependence, co-development for technology and society and responsibility for the planetary world they live in



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# Batna Roses

## Distance learning and on-line cooperation in TU Delft and Batna



Wiebren de Jong and his Algerian colleague Belcacem Adouane faced a number of challenges when they first experimented with long-distance cooperation – from connectivity problems to cultural and linguistic mix-ups – yet they are still enthusiastic about the possibilities and look forward to the second round.

### In theory

The Flowers project was just the push Wiebren de Jong, assistant professor at 3mE, department of Process and Energy, needed to realize his plan of cooperating with one of his former PhD students, Belcacem Adouane, now an assistant professor at the University of Batna (Algeria). They came up with an adaptation of the existing course in Fuel Conversion, part of the SPET Master track. They wanted to use modern virtual classroom tools to lecture from Delft and Batna simultaneously, and later on to have the students form cross-border teams to work out assignments on small projects.

The projects were in line with the learning objectives of the course and relevant to the situation in Batna: students were to design small-scale renewable energy conversion systems. Two groups worked on the fluidised bed combustion of biomass (a project closely related to the activities of two Dutch companies) and one group worked on the combustion of landfill gas. The last group came up with its own project on liquid fuel combustion; it was part of a larger project (see <http://www.novabike.nl/>) in which motorbikes running on a blend of bio-ethanol (E85) and petrol race each other.

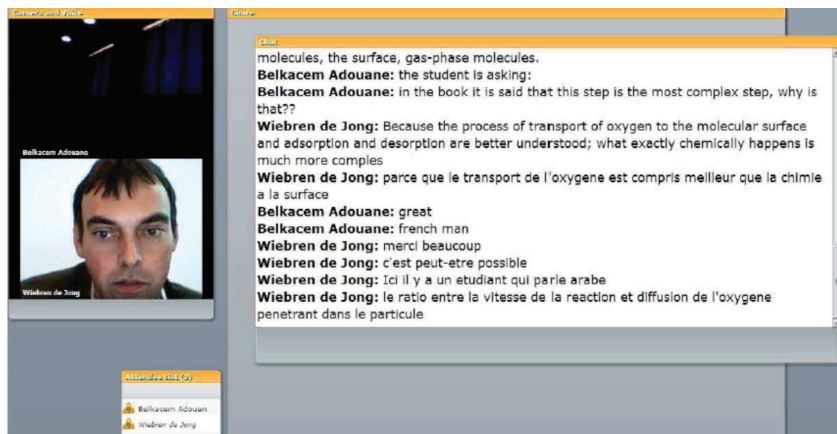
Moreover, the course would offer a suitable introduction to working in international teams using distance communication tools. As De Jong says, 'This was all new to students, yet it will probably be an important aspect of their professional lives. It is such a difference, working with people you meet almost every day in real life, or, as in this project, working over a long distance.'



## In practice

The summer was spent selecting and testing the Adobe Connect Pro tool. Students in Delft and in Batna would be able to follow the lectures on large screens showing the lecturers, slides and a chat box. Two backup plans were discussed and accepted, one using Skype and one using Collegerama.

The term started without cameras, with information meetings on both sides explaining the logistics and objectives of the course. The first joint lecture started out by having the students from both sides introduce themselves, 17 from Batna and (eventually) 9 from Delft.



In spite of all the tests that were run during the summer, the broadcasting sound proved to present a big problem. From the second lecture onwards, the team experimented with several types of internet connection, but the broadcast from Batna functioned properly only during dynamic interaction – hardly the ideal lecturing climate. Skype yielded the same results. From the fourth lecture onwards, plan c was put into effect: Collegerama 'live streaming'. It has high quality video images and sound, but works only one way, from Delft to Batna. Students in Batna were able to follow the lectures with a small delay of some thirty seconds. The lectures were followed by chat sessions using the Surfgroepen tool. During the final session, the various groups presented their 'work in progress' in a videoconference.

In addition to the technical issues, the students ran into some other problems as well. The English proficiency level of the Algerian students turned out not to be very high. Every team had at least one member who spoke and understood English reasonably well, yet on the whole, communication was difficult. A contributing factor was of a more cultural nature: the Delft students complained about the fact that their Algerian team mates responded very slowly or sometimes not at all to their e-mails. As one group commented in the survey held at the end of the term: 'If we asked them a question (either project-related or technical), we rarely got an answer. "Ok" is not an answer.' In the end, three out of the four teams split up, both sides finishing their work separately.

When asked what made this fourth team successful where the other teams fell apart, Salah Shawaz, one of its members, writes: 'We had a hard time communicating throughout the week because of our different schedules. So what we did, was calling them during the weekends, every week for over an hour! It helped to keep everyone involved in the project. Even so, it was sometimes complicated, because everyone has other things to do in the weekends, both in their private lives and with their work for other courses.'

'The experiences from this past year are interesting enough to want to continue the project,' De Jong says. 'However, we will have to do more in the way of providing information at the start of the course, on both sides. What can you expect, how do you organize the communication between members of the group? To be honest, we did not know what to expect and our preparations focused mainly on the technical aspects of the tool and on the didactics of the course.'

In the survey, students made various suggestions for improvements. In order to improve communication between students, an additional videoconference might be organised right at the beginning of the course in order to facilitate and stimulate face-to-face contact between the groups. A virtual progress meeting in the middle of the lecture series might help to keep the lines of communication open.

In Delft, the course might be advertised more intensely well in advance of the new term, so as to attract more MSc students.

As a by-product of the project, the contacts with Batna University have intensified, De Jong says. 'This was a good way to find out more about the academic level of the students from Batna. We may expand our cooperation – the people in Batna are definitely interested! In July 2009, the head of the Department of Physics, Faculty of Sciences of the University of Batna paid a visit to Delft and a small group of informaticians is planning a visit in order to discuss the use of long distance learning tools with Kees van Kuijen from the IT department.'

### Lessons learned

#### Tips:

- Arrange additional support from the supervisors at an early stage in order to stimulate and moderate the cooperation between student groups in the Virtual classroom.
- Get to know each other; this can be enhanced by additional videoconferences early on in the project.
- Regarding virtual classroom lecturing: exercise, persevere, continue, and never give up!
- Work out the project with the students before launching it online.
- Make sure language barriers are overcome before a project is launched.
- Explain thoroughly to the students how the course is set up and facilitate face-to-face contacts as much as possible.
- Establish a strong, intensive working relationship with the technical support department if you intend to use new distance learning tools.
- E-learning is complicated by all kinds of technical issues, so you need to decide which tool to use in advance, rather than try out different tools over the semester; e-mail contact between students is for example not as efficient as skype/chat.

#### Tops:

- We set up a very good working relationship with Batna University as our expertise was very complementary
- Our working methods became more interactive
- Videoconferencing seems to work well for sharing presentations on progress or results



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# A virtual Ban Topa



Ban Topa is the Antillean word for a meeting, a place where people from the village come together to chat and to exchange ideas – and that is just what Dirk Verhagen was looking for when he came up with his interactive web application.

Dirk Verhagen graduated from TU Delft in Urban Design two years ago. Today, he is a guest lecturer with the Delft Centre for Entrepreneurship and he has his own urban design bureau in Rotterdam. He coaches students who do traineeships in developing countries as part of the Minor International Entrepreneurship and Development. He felt that something was lacking in the communication with the students, both locally and with their teachers at the TU. 'It's one thing to have students study local circumstances, but it's quite another to find out what is valuable to the people that the project is meant for in the first place.'

For his One Thousand Flowers project, he came up with the idea of an interactive web application. The goal is to improve communication between the students who are trained in a developing country and the local residents, administrators and ngo's. At the same time, it's a great tool to keep their lecturers at TU Delft abreast of their activities. Information such as interviews, responses from residents, or workshop data can be uploaded and shared easily, you can add polls for people to fill in and there is ample room for comments. Finally, it's a great place to safeguard the continuity of projects. Information can be accessed by the present project team, but it will also be stored for future use, either by the original client, by other teams who face similar issues, or even by other companies or governments.

The web application is based on Google Earth and was built by students from the TU Delft. In the end, it is a just a combination of a number of existing programmes layered into one application. 'A lot of these programmes can be used for free, although we have to include the Google logo.' When you go to the website, you'll see aerial photos of the projects with little markers all over them. All interviews and other information can be found by clicking on these markers.

'For the project in Sint Maarten in 2008 we made a precursor to the present application. We organized workshops in housing estates and worked with aerial photos on which we would stick little stickers. The info we gathered there was incorporated into the first test website. People could leave their comments on the website, but it didn't get more interactive than that,' Verhagen explains. The response was positive and for the students who were in the field this fall, it has become a method to gather, structure and share the information with the people it concerns. As yet, the web application is not fully functional, so students from all different projects have been filling blogs with their findings, interviews and plans.

This last term, Verhagen's students have been working in Curaçao. One of the projects concerns the plans for a sports park for able-bodied and disabled athletes at Cas Grandi. The students have made a spatial analysis of the area: what are the strengths and weaknesses of the location? In addition, and equally important, they organised Ban Topas (meetings), involving the Cas Grandi residents and explicitly asking for their input. After all, plans that do not take local ideas, wishes and sensitivities into account, are bound to fail. Their blog can be viewed at <http://cas-grandi.blogspot.com>. The idea is to have students upload all information on the site when they return from their stay at Curaçao and use it for their final presentations.

The web application has been developed especially for this minor. It may yet be expanded with, for instance, gps tracking or by adding streetview programmes with a running commentary. Once the programme is functioning properly, Dirk Verhagen feels it may very well be used for other international tracks as well. It will be interesting for students to see which other projects are carried out in the vicinity and who knows what their synergy will produce!

<http://www.spacelab.tudelft.nl/stmaarten/final/flex/StMaarten.html#app=c9b9&bfc4-selectedIndex=0>  
<http://map.dce.tudelft.nl>  
<http://cas-grandi.blogspot.com/>

## Lessons Learned

### Tips:

- Use the different internet programmes available as a tool to exchange information with others
- Make sure all information shared is well-structured and organised
- Make use of new and free online technologies available in the research projects
- When using an online platform students need to be aware of who they want to exchange research material with, why they use it and also how they should communicate the collected data.
- Visibility of the research material is good for the continuation of a project: on the one hand students can easily continue with an existing project and on the other hand the client knows where to find the 'right' and structured material

### Tops:

- The possibility to involve more stakeholders in a research project by using an online platform; an online platform keeps other departments and teachers involved in all research projects
- The increase in awareness of people with respect to the benefits of an online platform like this one
- The options to share information online if you know who can and may use your information



### Contact

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# 4

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International Sustainable  
Entrepreneurship:  
When the Walls Come  
down, International  
Markets Open up

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## International Sustainable Entrepreneurship: When the Walls Come down, International Markets Open up

Increased global competition means that European countries will no longer be able to compete on cost and price; they will have to produce higher quality, more innovative products and services, delivered by higher skilled people. In every single EU country, unemployment rates systematically vary with qualification levels. The employment rate for those with high skill/education levels across the EU as a whole is approximately 85 %, for medium skill/education levels 70 % and for low skill/education levels it stands at 50 %.

Demographic trends show that fewer young people will graduate from schools and universities, and the only growth of the labour force is likely to be found amongst those aged over 50. The numbers of over-65s in relation to those aged 15-64 will increase from 26 % in 2008 to 38 % by 2030.

Clearly, with an increasing old-age dependency ratio, those in work also need to become more productive in order to support those outside the labour market. Encouraging creativity and entrepreneurship throughout the learning process is fundamental for future growth. In 2008, the Netherlands gained 537 billion dollars from export activities. Yet with the increasing globalisation, staying on top requires competent students with high-level skills, both in technical areas as well as in entrepreneuring. The table below shows the emerging skills and competences that need to be developed to keep the competitive edge in Europe and beyond.

### Emerging skills and competences: per sector

Service sectors	All sectors	Production sectors
<ul style="list-style-type: none"> <li>• Intercultural skills;</li> <li>• Conflict solution;</li> <li>• Multiskilling;</li> </ul>	<ul style="list-style-type: none"> <li>• ICT and e-skills;</li> <li>• Health and green skills;</li> <li>• Entrepreneurship and innovativeness;</li> <li>• Team work;</li> <li>• Self management;</li> <li>• New combination of skills and competences;</li> </ul>	<ul style="list-style-type: none"> <li>• Skills/knowledge related to new materials and processes;</li> <li>• International</li> </ul>



The entrepreneurial climate of a country and its development can be based on three indicators:

- The number of entrepreneurs as percentage of the working population: in the Netherlands, entrepreneurs made up for 11.4% of the working population in 2006, with an average of 12 people per enterprise;
- Birth and death rates: the number of entries and the number of exits as percentage of the total number of enterprises in a country; and finally
- The Total Entrepreneurial Activity Index (TEA) is 5.3% for the European Union (2006): the number of people that are active in setting up an enterprise or who own a recently set-up enterprise per 100 individuals between the ages of 18 and 64.

The percentage of entrepreneurs in the working population can be influenced either by a change in the number of entrepreneurs or by a change in the working population. To realise entrepreneurial growth, students need learn how to transfer new technology, science, and other know-how efficiently to new and growing firms.

*Imbedded in the distinction between an invention and an innovation is a process whereby inventions become applied. This process is central to what we call entrepreneurship*

*Audretsch et al., 2002*

The most important phases in the life cycle of new firms are:

- Preparation: there is only an innovative idea to set up an enterprise
- Start-up: the enterprise is established
- Expansion: breakthrough resulting in growth and development
- Consolidation: there is still growth, but the growth is more mature
- Diversification: the size of the enterprise stabilizes
- Decline: obsolescence of the enterprise, sometimes shrinkage

Delft University of Technology may specifically play a role in the initiation phases of new businesses: the preparation and start-up. Yet internationalisation is shown to be a key factor to the growth and competitiveness of small entrepreneurial firms that are in the expansion and consolidation phases. As many as 12% of CEO's of the Deloitte Fast Fifty companies mentioned internationalisation as a critical factor that contributed most to company growth in 2006.

Indeed, small firms quote their perceived lack of skills to tackle internationalisation as one of the main reasons for staying national. It is clear that the professional experience in an international context or the level of international exposure plays a key role in going international as an entrepreneur, as 'Internationalisation breeds internationalisation', so to speak.

A successful and sustainable internationalisation requires an internationalisation strategy and the acquisition of a series of capacities, abilities and resources prior to or during the first steps of internationalisation. This calls for early interventions, preferably in the educational system, to actively promote greater exposure to the international environment and to demonstrate the benefits of an international orientation.

### What can WE do to breed international sustainable entrepreneurship in Delft?

#### **Do we ask our students to design products for future and/or far away markets?**

For example by asking students to develop innovative products and to introduce their new ideas, and by requiring them to make a strategic product plan for a business start up, finalised with a design and prototype and a plan for market introduction.

#### **Do we invite industry/business to share in the product development?**

For example by inviting businesses/industries that seek expansion to provide a problem definition of a technical nature, which can be solved by technological solutions. We could then form a number of teams to competitively work on a technological solution, provide them with the necessary expertise, and ask the company to make test/experimental facilities available in so far as they are not present at the university.

#### **Do we ask TU Delft to financially support good ideas?**

The technical universities in the Netherlands have been asked to create an entrepreneurial zone around their universities in cooperation with the local communities. This could involve marketing scientific discoveries and inviting students to realise a strategic business plan to market science in the Netherlands and abroad.

Many examples could be thought of and indeed many excellent examples have already been realised at Delft University of Technology.

How do we prepare students for international entrepreneurial activities? Successful entrepreneurs stand out because of their insightful, creative and forward thinking, because they tend to have a high tolerance for uncertainty and are self-confident in their decisions, they cultivate relationships with resource holders, are trustworthy and very good communicators, and finally they can paint a vision and persuade others to join them.



*I have a dream*

*Martin Luther King, jr.*

In addition, Delft University of Technology has the desire to help solve societal problems, to make our society more sustainable, to contribute to the well-being of present and future generations, not only at home but around the globe. Social responsibility means focusing not only on profit and expansion, but also on being a responsible engineer who takes the planet and the people into account. This view requires staff and students to consider the impact of entrepreneurial endeavours on the environment and on the stakeholders. The resulting challenges include integrating environmental, health, and safety concerns with green product design, lean and green operations, and closed-loop supply chains.

To realise an attitude that is conducive to entrepreneurship, students are exposed to the entrepreneurial perspective, for instance by writing business plans, making case analyses, or researching businesses in the field; in short, students are required to demonstrate how they will employ the concepts in their own work. Students need legislative knowledge as well as technical skills in the areas of security & safety, electrical or mechanical engineering, construction and any other area relevant to product development or process optimisation within (new) enterprises. Practical fieldwork or industrial experiences to build domain knowledge should be encouraged.

Learning environments typically provide a high level of uncertainty, are team-based, multidisciplinary, and negotiation and communication intensive. Students will have to acquire project management skills, such as communication and problem-solving skills. They will have to demonstrate this by taking the initiative, and by developing creativity and analytical skills. The shadowing or mentoring of students by professional entrepreneurs may reinforce the entrepreneurial attitude needed to succeed in business start-ups. Stress management and flexibility will certainly be reinforced by the presence of real life entrepreneurs.

International & Sustainable Entrepreneurial teaching is no easy matter. Best practices such as demonstrated in these Flowers as well as other initiatives deserve our full attention, to uncover tacit knowledge that may be successfully transferred to others, all to the benefit of the university and the world.

Are you the International Entrepreneur we are looking for ;-))??

<b>Creative entrepreneurship mindset</b>		
Overview	The candidate at this level systematically applies creative thinking strategies in his/her problem-solving and is a motor of innovation. He/she is at ease and shows no visible signs of stress in ambiguous and uncertain situations.	
Think creatively	I look for innovative solutions with a long-term vision	
	I am actively creating new opportunities for improvement	
Tolerate ambiguity	When ambiguous situations arise, I am comfortable that I can deal with them, even when I am personally challenged	
<b>International leadership mindset</b>		
overview	The candidate at this level sets ambitious personal and professional goals. Actively motivates and stimulates others to achieve these goals. Stays focused on objectives while demonstrating flexibility in his/her approach. Strives for continuous improvement and accepts failure as a learning opportunity. Feedback is used as a tool for continuous improvement. Values diversity and maximizes the various qualities present in a multicultural team in order to maximize performance.	
Be personally responsible ('accountability')	I make decisions and choices, knowing the risks of the decision or choice	
	I take responsibility for own mistakes	
	I use feedback to improve my work	

Empower and inspire others	I create positivism and enthusiasm for new ideas and plans in my team	
	I am a good example for my team in making use of the diversity in my team	
	When I select team members, I aim to select a wide range of different qualities in my team	
Have a solution focused mindset/be proactive	I take difficult decisions, even when the outcome is unpleasant	
	I am flexible, but I keep the goals in mind	
<b>Negotiating and influencing on an international stage</b>		
overview	The candidate at this level is capable of obtaining added value from the negotiations and getting commitment and involvement from the key stakeholders from different cultures in the negotiation process. Demonstrates a high level of sensory acuity and a capacity to fully integrate others' concerns; he/she is able to react rapidly to act accordingly. Is able to calm down others in high-tension situations in order to make the situation more manageable.	
Show sensory acuity	I apply appropriate listening skills and strategies to sense and read my counterpart's reactions and I balance emotion with reason to further the relationship even in potentially conflictual situations	
Balance progress on objectives with understanding others' concerns and motives	I am able to take into account multiple perspectives when deciding on the best negotiation strategy and on what winning and losing means to my counterpart.	
	I accept and work with different attitudes to time and deadlines.	
	I consider setbacks a matter of course when working with other cultures.	
<b>Knowing yourself and others</b>		
overview	The candidate at this level is able to identify the factors that have an impact on his emotions, and to isolate and control them. He is able to foresee other's reactions based on their mood and personality. He is able to stay calm and take coherent decisions even in high-tension situations. He knows his own abilities very well and is able to organise his work in order to play to his own strengths and ask for help when necessary.	
Be emotionally intelligent and use all senses as valid information sources	I am attentive to verbal and non-verbal behaviour, to the communication context and to interpersonal relations.	
	I am resilient and able to deal with stressful feelings in a constructive way.	
Suspended disbelief about other cultures and belief about one's own culture	I enjoy interacting with people who think differently and I have a high degree of sensitivity to interpersonal relationships. But I also maintain my personal beliefs and identity when challenged.	
<b>Intercultural communication</b>		
overview	The candidate at this level fully accepts the 'other' as a coherent individual and uses decentring skills to maximize communication. He can identify and adapt to different communication and behaviour conventions or negotiate new discourse rules to avoid misunderstandings or solve them when they arise.	
Understand others' concerns and motives	I am able to decode other people's communication according to their cultural background	
	I am aware that there are different culturally related perceptions.	
	I am able to see the point of view of others	
Build mutual trust	I can deal successfully with ambiguous and conflict situations that are related to different communication conventions	



# Coaching with a Passion



Together with Esther Blom, Boukje Vastbinder is involved in countless projects, among which a fair number of Flowers. To split the two of them up seems a bit artificial, as they share a room at the TU Delft, their work with the Delft Centre for Entrepreneurship and a great enthusiasm for coaching students in projects around the world.

## International Research Projects Delft

International Research Projects (IRP) is a national initiative that can be adopted by every university. During their summer holidays, students go abroad to do research for commercial companies. Where should an engineering company set up office? What type of railway monitoring would work in India to prevent accidents? How do you plan the world's largest windmill park in Brazil?

The companies pay for their stay, and the students can bulk up their CV and gain international experience. Every year, a different country is targeted. In 2008, Delft students went to India, and in 2009, 24 of them visited Argentina and Brazil. This year's destination is South East Asia, and 18 new participants have already been selected. IRP is not linked to a specific faculty, but experience shows that a fair number of Industrial Design students participate.

Vastbinder and Blom got involved last year, when students asked them to help them prepare for their work abroad. The research projects last eight weeks at the most, and it is therefore crucial to work ahead, or you will lose valuable time at the site. The coaches developed a series of lectures on different subjects. How do you finance your project? And your prototypes? Students usually have to find their own clients – who will have to be willing and able to pay them too. How do you deal with cultural differences? And how will they affect your project? 'We refer to Hofstede and introduce other theoretic concepts as well,' Vastbinder says, 'the lectures are not purely practical.' Students have to consider the impact of their work. They have to be realistic and ponder on the negative impact as well. They have to become familiar with different methods of analysis. All this in addition to their preparation for the actual projects!

'We tailored the lectures to the Latin-American situation, but with some modification, we will be able to use them again this year. We could even give them to other groups of students. The One Thousand Flower project came along in time for us. Thanks to the Flower, we could give the lectures in the evenings, as the students had to attend them in addition to their regular courses. We concluded the series of six lectures with a social event, it was quite a success.'



**TU Delft** Delft University of Technology

**DCE** Delft Centre for Entrepreneurship

**International Entrepreneurship & Development**

**Uitnodiging Eindpresentatie Minor**

26 januari 2010 (vanaf 12:00)  
YES!Delft Businesslounge,  
Rotterdamseweg 145, Delft

Een semester lang hebben de studenten van de minor International Entrepreneurship and Development gewerkt aan internationale projecten op het gebied van duurzaam ondernemerschap. Tijdens deze einddag worden de projecten gepresenteerd aan medestudenten, docenten en de opdrachtgevers. We zouden het leuk vinden als u aanwezig kunt zijn.

**Programma:**  
12:00 t/m 13:00 Lunch  
13:00 t/m 17:00 Presentaties  
17:00 t/m 18:00 Borrel

Contactinformatie Delft Centre for Entrepreneurship  
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[www.irpdelft.nl](http://www.irpdelft.nl)

<http://www.delta.tudelft.nl/nl/archief/artikel/droomproject-onder-de-palmboom/20305>

## Sustainable Business Game

The Sustainable Business Game is a course in the Master phase – of any faculty. Students participate individually or in small groups with their idea for a sustainable product or service. Over the weeks, they attend lectures on various aspects of starting up a business and they eventually come up with a feasibility study for their own plan. The results are presented to a jury and the best analysis is rewarded with €1000 and coaching from several partners of the Sustainable Business Game to guide the further start-up of the business.

The Sustainable Business Game was played for the first time in 2009. 24 Students participated. 'We had to impose a maximum', Vastbinder says, 'for coaching the students takes a lot of time.' The students came up with some 13 ideas. Blom and Vastbinder developed a series of lectures that consisted of six four-hour sessions. 'That may sound like a lot,' Vastbinder says, 'but time just flew by.' The sessions were split up between a TU lecturer who would give a theoretical introduction, and a guest lecturer with practical experience. One week, for instance, a lecturer in the field of finance would introduce basic bookkeeping and a guest speaker from a bank would tell students how banks view start-ups and what they value in new projects. The students then went on to work on a case study to implement the theoretical knowledge under the supervision of the TU lecturer and the guest lecturer. Different subjects were covered every week, such as Intellectual Property, Finance, Marketing and writing Sustainable Business Models.

Parallel to the attending the lectures, students worked on their own feasibility studies. They could come to Vastbinder and Blom for coaching. In the end, they had to draw their own conclusions, which could well mean that their plan was not really feasible – realism is a great result too.

One of the groups, for instance, came up with the idea to rent out the rooftops of public buildings for the installation of solar panels. Taking into account the present costs of solar panels, the price of energy and the subsidies granted by the Dutch government, they concluded that the project would not be feasible. They did, however, come up with scenarios for altered circumstances. What would happen if the subsidies would go up and the costs



would go down? Could we do it in two years? In five? Could the project be carried out in Germany, where subsidy schemes are guaranteed for a longer period of time?

Jean Kepguez, a TU Delft student from Cameroon, has since started his business with the support of the Dnamo Incubator in Rotterdam. He designed a system to supply light and energy by charging batteries and light bulbs with solar energy. Not only will this bring energy to remote villages, it will also stimulate the local economy and employment. With Dnamo, he will have the opportunity to find out whether the project has a real chance of survival, whether there are aspects he has overlooked and whether Cameroon is the right country to start his business. At his turn, he will need the input from TU Delft students – who are only too eager to participate. His project touches on something the Sustainable Business Game is all about: global sustainable development as a central objective in business.

The finals were dressed up quite a bit: the six best plans were presented in front of an independent jury. The winner was awarded € 1000 and a chance to apply for coaching from the Dnamo Incubator.

In its first year, the game was a hit. Other universities have shown an interest to participate. Vastbinder and Blom are currently looking into the possibilities. Lectures could be shared, a website might be built, the sessions could perhaps be filmed... They hope to attract a student assistant to help them scale up the SBG. If everything works out, it could go national this year.

When asked about the downside of the project, Vastbinder and Blom don't have to think twice: it takes a lot of time!

[www.dnamo.nl](http://www.dnamo.nl)  
<http://www.sustainablebusinessgame.nl/>

## Lessons Learned

### Tips:

- link existing initiatives
- 'pimp' your education program with a website, a competitive element, real prizes, and real sponsors to keep the students optimally motivated during the course
- mix students of different faculties, years, nationalities, universities etc. and have them learn not only from the lecturers, but also from each other
- think big! (we are planning to extend the 'sustainable business game' to a national and possibly even an international level)
- be aware of the fact that when you introduce many guest lecturers, it takes a lot of effort to control the theoretical quality of your lectures/your course.
- Realise that if you have international students from different backgrounds, the quality of their reports will differ. In a competition like the 'Sustainable Business Game' this influences the judgement of the independent jury, who may not be aware of this.

### Tops

- The students have learned to integrate intercultural and social aspects into their technical design.
- The students have learned to collaborate with people in a different cultural context.
- The students have reflected on their behaviour and management style within the framework of internships and intercultural projects.
- The competitive element within the sustainable business game raises a lot of attention from the media.



### Contact

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# A Recipe for International Sustainable Entrepreneurship!



'Are you willing to improve the lives of millions of tuktuk drivers and their families? Then we are looking for you!' The ad inviting TU Delft students to participate in the Hybrid Tuktuk race did not understate the significance of the project.

## Hybrid Tuk Tuk Project

Students from seven technical universities in the Netherlands and in India worked in teams to design the most efficient, easy to implement and affordable upgrade kit for the two-stroke motors of existing tuktuks. The goal was to reduce CO2 emissions by at least 40%, while improving the economic and social positions of the drivers and their families. In addition to the necessary technology, students had to come up with a business plan focussing on the economic, social and environmental gains.

The TU Delft team consisted of six students of four different nationalities, including a student from India. For about a year and a half, the students came to lunch with Esther Blom and Boukje Vastbinder every two weeks to discuss their work before leaving for India in the summer of 2009. For most of them, the project was extracurricular, although a few were able to make a traineeship out of it. Blom says: 'The students were relatively young, around 22 years of age, and they had to learn a thing or two about project management and communication skills. That certainly took some coaching! All students were male, and three of them came from more of a macho culture. We had to get used to dealing with that as well. Finally, to have them keep to their planning and observe deadlines was harder than we had thought. We had prepared to coach them on the contents, but ended up spending quite some time steering them.'

Over all their lunch sessions, Blom and Vastbinder emphasized the importance of the getting to know your market. Both the technical solution and the business plan had to take the local situation into account. 'We had to install some idea of where they were going, and to keep them realistic about the possibilities.' The Indian student activated his contacts in India to interview tuktuk drivers. How much were they willing and able to pay for such an upgrade kit? After all, the purpose of the Hybrid Tuktuk project was not to subsidize drivers, but rather to offer them a profitable tool that benefits the environment as well. As it turned out, many tuktuk drivers earn around € 20 per month, and so a cost price of over € 15 would not be feasible. Based on these data, the students worked out a technical solution: by lengthening the exhaust pipe of the tuktuks, they were able to save 15% on gas – a great result for drivers as well as for the environment. The cost price of the next cheapest solution was € 300! At this point, they still meet up with their group from time to time, to discuss how to market their product.

To Blom and Vastbinder, the international aspects of the project were twofold: they coached the TU Delft team on how to set up a project in an international setting and how to deal with various nationalities within their own team. Secondly, they accompanied their team to India and lectured at the local university. They were keen to experience how the Indian education system differs from the system in the Netherlands. They also wanted to find out how to enthuse local students to take up and coach such projects themselves. 'It was clear that we stood out, since we are tall, blond and female, and definitely not what they expected. Quite different from our working situation in the Netherlands! The project gained a lot of publicity, both in India and in The Netherlands. Within the TU Delft, we have become more visible and people have started to approach us with their own ideas. By connecting people and projects, you can accomplish so much more! We have enjoyed the experience immensely and we are already making plans for next summer. We have received invitations from Australia to Colombia. We would be lecturing and establishing new links with other universities.'

With some regret, Blom and Vastbinder speak of 'the Flower that got away': they would love to have a system to share their data on all those projects that are carried out all over the world. 'We have so much information, but how do we let people know about it?' It would have to be in a format with fields that could be filled in by others as well, to come to a data bank of projects.

### Lessons Learned

#### Tips:

- coaching a multicultural group of students in their first project abroad (in a new cultural setting) can be a lot of hard work. Maybe it is better to concentrate either on working with a multicultural team or on bringing a team (that is already used to each other) into a new cultural setting.
- working together with big ngo's, other (voluntary) organisations and governmental organisations can mean a major decrease in the tempo of your project
- encourage students to work together with local students while working on international projects abroad.
- Take your time to prepare these kinds of projects. It will improve your results! (With the tuktuk project, the team started working on the project a year ahead of the big final race in India)
- encourage students to do their own fundraising. The students participating in the tuktuk project raised almost enough money to pay for their own prototype, their own travelling and living expenses in India and for those of their coaches. Besides, it is a great learning experience for the students.
- take the time to join the students on their trip abroad. For an optimal learning experience, but also because it is a lot of fun
- do not eat shrimp in India!

#### Tops:

- The learning curve of students doing an international project like hybrid tuktuk is very steep
- The connection between people provided the opportunity to realise goals that we could only dream of when we were on our own

### Minor International Entrepreneurship & Development project

Three years ago, the Delft Centre for Entrepreneurship developed a minor programme called International Entrepreneurship & Development. Blom, Vastbinder and a team of lecturers coordinate the courses and work with the students who stay in The Netherlands. Otto Kroesen (Philosophy) and Wim Ravensteijn (Technology Dynamics and Sustainable Development) are concerned with the Traineeship variant of the minor, in which students take a number of core subjects, combined with a traineeship abroad.

The programme aims to attract students with an interest in engineering in developing countries. 'Students who participate are interested in more than designing just another hip new product or technology,' Blom says. The programme takes one semester and is open to all third-year Bachelor's students. The groups are mixed, involving students from all faculties. The curriculum contains courses such as Social Entrepreneurship, Awareness of Cultural Differences, Technology & Global Development, Collaborative Business Design, History of Technology, and an Introduction to Business Marketing. Sustainable development, social issues, and entrepreneurship are addressed in all these courses.

From day one, students work in groups on their own real-life case studies, ranging from setting up a financially independent orphanage in India, to developing glasses that may be adjusted on the outside, to energy projects or water treatment projects. These projects are brought up by NGO's and entrepreneurs who face challenging issues related to engineering and development. 'We aim to link sustainable development to entrepreneurship. If you don't look at development aid with an entrepreneur's focus, your project is bound to fail once you leave. Everything has to be marketed, even aid initiatives.' Students learn to apply the theory directly to their own projects. They finish the minor with a paper on their project, presenting their recommendations and ideas. 'Students are incredibly motivated to make valuable contributions, since they know the projects are actually carried out and can make a real difference,' Blom says.

The programme is concluded in January with a grand finale where all projects are presented. This year, the event took the shape of a potluck luncheon, where the students who had been abroad took dishes from the countries they had visited. The menu was interesting, ranging from kaklo's (banana and chile fritters) from Kenya to kokosblech from the Bounty Islands to melkert from South Africa... A small recipe book was composed, listing all projects at the back.



*The prize has stimulated the ongoing process*

Finally, a jury consisting of three entrepreneurs and a lecturer judged the nine business plans. The winning team worked on a project called 'Fresh water from the sea', and wrote a business plan to market water windmills in Somaliland. These windmills, designed by students from the Faculty of Civil Engineering and Geosciences, are to be used to desalinate seawater through a process of reverse osmosis. They received a sum to the amount of €1000 (from the One Thousand Flowers project) to help their project on its way.

The team of Focus onVision, a project dealing with the distribution issues involved with adjustable 'focusspec' glasses, came third and was pleasantly surprised when Mr Arnold Verschuijl, a prominent resident of Delft, personally awarded the project €1000. His only demand: 'Let me know in a year how the project is doing!' He plans to keep the flower project going by every year awarding the best business plan €1000.

### Lessons Learned

#### Tips:

- be sure to delegate the tasks you are not good at yourself
- be sure to make it a team effort
- work across departments and, even better, across faculties!

#### Tops:

- students appreciate it when they are given a responsible task in the project
- involving my own department in the project created synergy
- spending time on creating visibility for the project pays off
- The students have learned to integrate intercultural and social aspects into their technical design.
- The students have learned to collaborate with people in a different cultural context.
- The students have reflected on their behaviour and management style within the framework of internships and intercultural projects.



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## Epilogue

OC FOCUS offers professionalisation activities with respect to Internationalisation in education, gives advice on how to make courseware more international and can lend support in drawing up an internationalisation policy for your faculty or programme. Additionally, we try to bring parties together and disseminate best practices and tacit knowledge on internationalisation to interested partners within our University.

This booklet has been written intentionally in a journalistic style in order to inspire other lecturers or relevant stakeholders to take up internationalisation in their course or curriculum (re)design. As such, referencing has been kept to a minimum. Since we do want to acknowledge all sources used, you will find them listed in the literature reference. We sincerely apologize for any omissions; rectifications will be made on the OC FOCUS website only.

With the dissemination of these best practices we hope to show that sustainable implementation of internationalisation within the curriculum is a feasible option. In addition, we would like to invite you to a new Linked In group called 'Flowers in Education'. In this expert group on internationalising the curriculum, you will be able to meet the Flower participants, share your best practices and student projects, and seek partners for activities abroad.

Finally, I would like to thank all the flower participants for their input and enthusiasm throughout the project. Without them this booklet could not have come into existence. Similarly, I would like to thank Henriette Schoemaker for her creative input, Marcel Krijger for his inspiring conceptual view on making excellent pictures and Dries Calcoen for his patience with yet another promise about material deliveries. My colleagues offered valuable feedback on concept materials and Delft University of Technology made the money available to run this flowers project.



Who	What	Expected Spin-off	Realised Results
<b>Internationalisation at Home</b>			
1) Dr.Ir. Rob Kooij, Telecommunications Section, Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS)	<b>Sense Your World</b> The TU Delft is a place where many nationalities are present. A quick scan of the Telecommunications section alone reveals that the PhD students alone originate from 12 separate countries. The "Sense your world" project is meant to explore this diversity and in addition give MSc students the possibility to participate in this project. The main aim of "Sense your world" is to collect opinions about the applicability of sensor nodes (a high-tech gadget) from people in the countries where PhD and MSc originate from.	Increased awareness of other contexts, beliefs and experiences of life that influence technological development	Website: 16 beautiful films from every corner of the world about sensor nodes and educational values <a href="http://www.nas.its.tudelft.nl/people/Rob/sense/syw.html">http://www.nas.its.tudelft.nl/people/Rob/sense/syw.html</a>
2) Dr.Ir. Rob Kooij, Telecommunications Section, Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS)	<b>A MAZE</b> A MAZE is a computer game that can be played by teams of 4 players. The players have to co-operate in order to guide a ball through a maze. A total of 10 teams is invited to play MAZE. Although playing MAZE will be fun, we think it may give us some insight as well, e.g. is there a difference in the performance (i.e. the score) for single-country teams and multi-country teams and what is the impact on the performance when communication is not allowed?	The results may provide some insight into team performance in education.	A MAZE website <a href="http://www.nas.its.tudelft.nl/people/Rob/amaze">http://www.nas.its.tudelft.nl/people/Rob/amaze</a> <a href="http://www.delta.tudelft.nl/uploads/editions/delta4203.pdf">http://www.delta.tudelft.nl/uploads/editions/delta4203.pdf</a>
3) Team: - Ir. Niki Frantzeskaki - Drs. Olga Di Ruggero - Dr. Gwen Kolfsochten - Dr.Ir.Drs. Alexander de Haan  Policy Analysis Section, Faculty of Technology, Policy and Management	Intercultural workshop on dominant policy styles adopted in different cultural settings Collaborative workshops have been integrated in the EPA1111 course taught in the Master Program Engineering and Policy Analysis in order to provide the in-situ experience of practising policy analysis. The idea is for students to realise that intercultural variety influences the values, objectives and constraints that they will face when performing a policy analysis study, even though the analysis methods themselves enjoy a universal status.	<ul style="list-style-type: none"> <li>- The workshops have proved to increase the students' learning.</li> <li>- Students are better able to use policy analysis tools in different contexts.</li> <li>- Students have learned to work together in Intercultural teams and respect one another.</li> </ul>	For more, see: Niki Frantzeskaki, Alexander de Haan and Marlies de Boer (2009), <i>Getting Prepared for a Globalised Policy Analysis Arena: How Graduate Policy Analysis Students Reflect on the Application of Policy Analysis in their Home Country</i> , Edulearn Conference, Barcelona
<b>Academic Integration</b>			
4) Toke Hoek, Internationalisation Counsellor, Faculty of Technology, Policy and Management	KEIO University Japan	Student mobility & broadening the horizons of students; long-term co-operation	Long-term contract regarding co-operation and student exchange. Next year 6 TPM students will go to Japan and 6 Kelo students will come to Delft

5) Toke Hoek Faculty of Technology, Policy and Management	Australia: exploration for future co-operation and student exchange; agreement established for exchange with Melbourne University for 3-5 students.	Similar to Keio University	Agreement for pilot realised with Melbourne University Australia.
6) Dagmar Stadler, Education and Student Affairs, Faculty EEMCS	<b>Introduction Week EEMCS</b> The project will focus on the entire process from design to implementa- tion of social/pedagogical components of a new 40-hours' introduction week for the Faculty EEMCS.	<ul style="list-style-type: none"> <li>- In an international working environment Dutch students will have more skills to operate successfully.</li> <li>- Adaptation to the Dutch Educational System.</li> <li>- A more homogeneous group of Dutch and International students will be realised.</li> </ul>	<ul style="list-style-type: none"> <li>- Improved relations with Acreo and KTH</li> <li>- Internship report(s)</li> <li>- Possible publication(s)</li> <li>- Expanding horizons of participating students</li> </ul>
7) Dr.Ir. Rob Kooij, Telecom- munications Section, Fac- ulty of Electrical Engineering, Mathematics and Computer Science	<b>WASI</b> consists of a 6 months internship of which 3 months are spent in the Netherlands and 3 months at Acreo in Stockholm. Acreo is a semi-governmental research company that is comparable to the Dutch TNO. The student will have supervisors at DUT and at the Royal Institute of Technology in Stockholm. The subject of the project will be "Quality of Experience of Video".	<ul style="list-style-type: none"> <li>- Happy, healthy, and co-operat- ing students.</li> <li>- Stimulate cohesion and aca- demic integration among Dutch and Foreign Students</li> </ul>	Wasi is to be continued next year. Reports to be published.
8) Dr.ir. Jos H. Weber, Telecommu- nications, Wireless and Mobile Communications Group of the Telecommunications Section, Faculty of Electrical Engineer- ing, Mathematics and Computer Science	<b>Real Internazionale United</b> The group of M.Sc. students at the EEMCS Dept. of Telecommunica- tions is very international and multi-cultural. The idea is to organise sports events (e.g., a football tournament or match, in which each team should consist of at least five nationalities) at the TU Delft Sports Centre to stimulate cultural interaction among the students.	<ul style="list-style-type: none"> <li>- Happy, healthy, and co-operat- ing students.</li> <li>- Stimulate cohesion and aca- demic integration among Dutch and Foreign Students</li> </ul>	For results, please consult the website: <a href="http://www.ewi.tudelft.nl/live/pa- gina.jsp?id=4f9281f6-82ab-44bb- 9cb7-3ab38dfe90e0&amp;lang=en">http://www.ewi.tudelft.nl/live/pa- gina.jsp?id=4f9281f6-82ab-44bb- 9cb7-3ab38dfe90e0&amp;lang=en</a>
9) Dagmar Stadler, Education and Student Affairs, Faculty EEMCS	Workshop <i>Intercultural Classroom</i> for EEMCS lecturers	Expanding the horizon and profes- sionalizing local staff	To be realized in 2010
<b>Virtual Mobility</b>			
10) Dr.Ir. Wiebren de Jong, Energy Technology Section, Faculty of Mechanical, Maritime and Materi- als Engineering	<b>Batna Roses</b> The Fuel Conversion course (wb4405, 3ECTS) is part of the Master track of Sustainable Process & Energy Technology (SPET, 3mE). The project idea is to share this course on-line with a partner university in Algeria: Faculty of Sciences, Faculty of Physics (dr.ir. B. Adouane, lecturer and former PhD student of the Energy Technology Section at Delft University).	The international dimension to the educational situation broadens the horizon of students and staff alike. Moreover, enduring co-operation with Algeria will sustainably inte- grate the international component in our TU Delft Education	For a full report, please consult the website: <a href="http://www.ocfocus.tudelft.nl">www.ocfocus.tudelft.nl</a>

Who	What	Expected Spin-off	Realised Results
11) Dr. Otto Kroesen, Philosophy Section, Faculty of Technology Policy Management	Workshop on collaborative online learning with international groups of students.  The United Nations Decade of Education for Sustainable Development (DESD) was launched in 2005. The suggestion from United Nations University to organise learning for sustainable development on the regional level fitted in with the ambitions of DESD universities around the world. A virtual multidisciplinary and cultural seminar was set up within the framework of the 165th anniversary of Delft University of Technology. To improve upon the design of the seminar, a workshop was held under the guidance of Jeroen van de Velden, with participating lecturers/future students of the TU Delft and representatives of local African staff involved.	Gathered knowledge is reinvested in the adaptation of the seminar for future years and made accessible as a case study for local DUT staff.	For the report, please consult the website: <a href="http://www.ocfocus.tudelft.nl">www.ocfocus.tudelft.nl</a>  Paper: O. Kroesen1, D.J.Ndegwah2, and Y. Kassahun3, W. Ravesteijn1 (2009), Intercultural virtual cooperation and learning, SEFI conference proceedings 2009, Rotterdam. <a href="http://www.sefi.be">www.sefi.be</a> for full paper download.
12) Wim Ravensteijn, Philosophy Section, Faculty of Technology, Policy and Management	The main purpose of the "Intercultural Virtual Seminar for Africa" is to let Dutch students and students from Ethiopia and Kenya work together on a number of technological and societal problems in Africa.	Continuing long-term relations with Africa and broadening horizons of students. Contributing to sustainable solutions	See above under number 10.
13) Ir. Dirk Verhagen, Delft Centre for Entrepreneurship	Google Maps: Design of an online system for sharing of information about local projects between stakeholders, students, teachers and other interested parties.	Stakeholder involvement, Improvement of long distance guidance from teacher to students doing fieldwork	System delivered, for demo please consult the website: <a href="http://map.dce.tudelft.nl">map.dce.tudelft.nl</a>
<b>International Sustainable Entrepreneurship</b>			
14) Esther Blom, MSc., Delft Centre for Entrepreneurship	Internationalisation is a central issue in the minor titled "International Entrepreneurship & Development". A network of interesting guest speakers has been established and can be approached for any lecture at the TU Delft. The guest lectures of the minor are also open to students who are not enrolled in the minor programme.	Students participate in a multidisciplinary international project and do an internship or write a thesis. Project results are used as case study material, and as illustration of the theory in the (guest)lectures of the minor. Students are continuously challenged to communicate cross-culturally and to be prepared to deal with cultural differences. Internationalisation thus becomes very tangible in TU Delft Education.	At the Delft Centre for Entrepreneurship a list of interesting guest lecturers is available for your benefit. Please contact Esther Blom for this list and address information  Website Delft Entrepreneurship

15) Esther Blom, MSc., Delft Centre for Entrepreneurship	<b>Hybrid Tuk Tuk:</b> Coaching a multidisciplinary and multicultural student project		<a href="http://www.hybridtuktuk.com">www.hybridtuktuk.com</a>
16) Dr. Otto Kroesen, Philosophy Section, Faculty of Technology, Policy and Management	Case study International Entrepreneurship & Development (9ECTS): Entrepreneurial Development Award; the best project in the minor receives € 1000 to have their business plan implemented by the next group of students.	<ul style="list-style-type: none"> <li>- Preparing for entrepreneurship abroad</li> <li>- Broadening horizons of students</li> <li>- Incorporation of new perspectives for product development</li> </ul>	<a href="http://www.dce.tudelft.nl">www.dce.tudelft.nl</a>
17) Ing. Boukje Vastbinder, Delft Centre for Entrepreneurship	<b>Sustainable Business game:</b> Interdepartmental Master Course of 3ECTS, (SBG) is a competition embedded in a sustainable product development course. It includes a final event in which a jury assesses the most feasible sustainable product. 5 African students are especially invited to participate in the course and design for Africa. The best proposal/design receives an award (money)	Students prepare to start their own (international) business in the Delft Incubator.	<a href="http://www.sustainablebusinessgame.nl">www.sustainablebusinessgame.nl</a>
18) Ing. Boukje Vastbinder, Delft Centre for Entrepreneurship	<b>Long Entrepreneurial International Internship</b> At the request of the students of the International Research Projects Delft (IRP) a new Master Course was designed called Long Entrepreneurial International Internship (5 ECTS). DCE devised a lecture series with topics such as sustainability in global environments, Intercultural Communication, Intellectual property (ownership) across borders and acquisition of funds. This lectures series is also open to other students who are interested in the material discussed. The course can be followed as an elective in the "aantekening Ondernemerschap" to obtain regular ECTS points	The lecture series will be offered each year. The Flower will be used to organise a final event in which students share the lessons learned during their internships with the new students in the lecture series. In this way, knowledge creation is made more sustainable. Lecturers from all over TU Delft may profit from the knowhow acquired in this year and in the years to come.	

## Prologue

Inspired by Qualia no. 1 (3). Qualia is a newsletter published periodically by STUFF, a student association for philosophy students at Groningen University. The following quotes are from this newsletter: Einstein, Bas Naber, and Lolle Nauta.

## Concept of Flowers

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