

STAR IP
SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES



20TH JUNE – 3RD AUGUST 2014

Preliminary Programme:

Day 1 (Sunday, 20th July 2014): arrival

Arrival of students from Spain and Turkey

Day 2 (Monday, 21st July 2014): meet and greet and intercultural learning

09:00-10:00	Get-together in Münster, introduction and getting to know each other in a leisurely manner, presentation and discussion of the intensive programme. The instructors present the set aims of the project and give an overview of the exact programme for every day. Already at this point, the instructors refer however to the constructivist approach of the programme, which means that students are asked to actively participate in the organization and progress of the STAR IP by contributing ideas and reflecting on the programme's progress in daily feedback sessions. Enabling self-regulated learning, especially during the phase of group work, is a basic principle of this programme and indispensable to ensure a modern didactical learning environment.
10:00-12:00	To introduce the participants to the media type of a "reflectory", which will be the final product of the STAR IP, students try out a "reflectory" about global consequences of well construction in Tanzania. Thus, the students experience for themselves, how decisions lead to – sometimes unforeseen – consequences, reflect the usefulness of additional material and comprehend global ties and the importance of well-considered decisions. The groups will be put together randomly but with every group containing participants from all three countries. This exercise will be followed by a group discussion concerned with first experiences with the format of "reflectories" and lead to a brain storming on what to note when constructing them.
12:00-13:00	Lunch at the local university canteen.
13:00-18:00	Introduction to intercultural learning, first on a theoretical level in the form of a lecture held by Prof. Schrüfer. After explaining the basic principles of intercultural learning and global learning, participants will engage in various exercises to reflect on various values. To mention just one example, the "global trade game" (a popular game often used in schools) will demonstrate by first-hand experience, how norms and values can differ between groups and change on the basis of differing interest. This game is especially powerful, as it lets participants realize in a following reflection phase, how their behavior changed often dramatically and how they unconsciously start acting only for

STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

the own group's interests, neglecting the other groups' situations or conditions. Naturally, the following discussion focuses on reflecting corresponding situations in the real world.

18:00 All instructors come together to discuss the first working day of the programme, to reflect on group dynamics and methodological approaches and to set targets for the next day.

Day 3 (Tuesday, 22nd July 2014): systems thinking and new learning cultures with ICT

09:00-09:30 Like every morning, this day begins with a feedback meeting. Today, students are asked to comment on the first work day and express their feelings or questions about the course.

09:30-10:30 Theoretical input about systems thinking and system competence is given by Prof. Schrüfer, drawing on recent research and its implementation in schools, universities and other educational institutions. In a team-teaching arrangement with Roser Badia, both instructors explicate the bonds with complex thinking.

10:30-11:30 Following the theoretical discussion of systems thinking and complex thinking, various exercises on systems thinking are conducted for the participants to exercise a shift in perspective. Great importance is attached to phases of reflection after the exercises in order to help participants realize the analogy to real-world problems.

11:30-12:30 As none of the theoretical foundations should be discussed separately, Prof. Buttschardt introduces the participants to human-environment systems, not without establishing ties to the aforementioned theories and emphasizing the importance of systems thinking and complex thinking to comprehend human-environment systems. Apart from giving an overview of the principles and research interests of landscape ecology, Prof. Buttschardt illustrates the discipline's pursuit of uncovering reciprocating interactions of humans and the environment as well as mutual feedbacks by giving examples from the field of "energy" (e.g. energy flows within the carbon, water and rock cycles, interactions of humans and the environment within the setting of climate change, etc.).

12:30-13:30 Lunch at another university canteen, to show the participants various locations for their lunch during the programme.

13:30-16:00 An introduction to the technical equipment, more precisely working with the iPad, is given by Nina Brendel. Starting directly with hands-on learning on how to use iPads in general (how to use apps like "Google Drive" to work collaboratively, "twitter" and "facebook groups" to communicate, "Dropbox" to exchange files, "explain everything" and "audioboo" for screencasting, etc.) basic principles of mobile learning are discussed. Theoretical foundations of communication and creative and collaborative work with web 2.0 tools (e.g. collaborative learning, communities of practice (COPs), personal learning environments (PLEs),...) will be taught by hands-on exercises and following group reflections. In this afternoon session, students should understand the basic principles of mobile learning in constructivist learning environments, what potential and challenges are implied in self-regulated learning and how this affects teaching-learning situations in schools and tertiary education (e.g. the need for teachers to shift from traditional instructors to learning coaches).

STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

Strong emphasis is also put on new learning cultures and a shift in education from traditional forms of instruction to problem-based learning and discovery learning, which are both forms of active learning building on constructivist learning.

In addition, the participants will learn how to use the STAR IP's weblog, how to write or comment on an article and how to link their articles to external websites or other resources. All participants are welcome to use the weblog extensively and comment on their fellow students' articles. At the end of the fifteen-day programme, all participants will vote for the best blog article and award its author a prize. This weblog is on the one hand thought to be an addition platform of reflection and on the other hand an important means to get in touch with the public. All articles will also be published via the STAR IP's twitter account.

- 16:00-17:30 Similar to the aforementioned exercises, students are now asked to further examine their iPads and apps to record videos or voice, create screencasts and audio/video podcasts by solving a problem-based learning task in multicultural groups. As not all instructors have used iPads for work before, the teachers will also take part in the exercises – not only to learn but also to get in contact with all students and build up a positive and beneficial intercultural learning group.
- 17:30-18:00 Q&A-session on technical matters concerning the iPads, student feedback on using the iPad for collaborative learning tasks and on the weblog.
- 18:00 All instructors reflect on this day's learning outcomes and discuss the first feedback given by the students in the morning. If necessary, adaptations in teaching approaches or differentiated learning will be made.

Day 4 (Wednesday, 23rd July 2014): energy from a systemic point of view and project planning

- 09:00-09:30 Like every morning, students share their feelings or questions about the course in a reflection and feedback session.
- 09:30-12:00 “Market of opportunities” on the topic of energy, presented by team-teaching of Selahattin Aksit (focusing on “System theory and solar energy for sustainability” and “the effect of water dams producing energy on sustainable environment (ecosystems)”), Tillmann Buttschardt (focusing on nature conservation in the setting of large-scale energy projects, presenting conservation concepts of the European Union and environmental impact assessment) and Gesine Hellberg-Rode (focusing on energy from a biological point of view, discussing energy flows e.g. in the context of mechanical biological treatment systems and biological feedback to non-renewable (fossil fuels, aquifers) and renewable energy (impact of hydroelectricity on river ecology or effects of solar collectors on grassland animals) generation). Didactical aspects are added by Fisun Aksit discussing “Active learning methods on Sustainable Education” and Miquel Oliver talking about environmental education. Bringing all aspects together, the participants engage in a discussion about energy generation, transportation and storage depending on the form of energy as well as evaluate cutting-edge projects as an answer to energy-related challenges of the 21st century.
- 12:00-13:00 Lunch
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STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

13:00-13:30	As the students dispose of basic knowledge about energy, systems thinking and relevant iPad apps by now, all participants jointly recapitulate and concretize the IP's aims and end product. This should also give participants the chance to clarify questions or problems before starting the group works.
13:30-16:00	Students are divided into small groups of four people, which will be their working group for the entire programme. Every group consists of students from all three participating countries. After a short warming up activity, the students set their group objectives to work on in the course of the intensive programme and start planning the team projects including the topic of the "reflectories". Furthermore, they are asked to outline their project in the form of a poster, mind map, online pinboard or the like. In this phase, teachers act as counselors when necessary, but overall contain themselves to let the students take control of their own learning.
16:00-17:30	Presentation of the projects as posters, mind maps, online pinboards, etc. For every project, peer feedback is given and potential problems are discussed.
17:30-18:00	This fourth day of the STAR IP ends with a reflection session on how one gives feedback appropriately in intercultural learning settings and which challenges and potentials could be detected during the group work. Conclusions are drawn for the IP course but also for communication processes and interactions in European contexts.
18:00	All instructors reflect on this day's learning outcomes and discuss the feedback given by the students in the morning and the first weblog articles. If necessary, adaptations in teaching approaches or differentiated learning are discussed.

Day 5 (Thursday, 24th July 2014): field trip

All day:	<p>On this fifth day, all participants of the STAR IP go on a field excursion to experience energy on multiple levels. As this planning goes far into the future, we are not yet able to give a specific timetable for this day, as we are still awaiting some responses from our external partners.</p> <p>After leaving with the university's minibuses at 09:00 we drive to the German Mining Museum in Bochum (the daily feedback session is held during the one hour drive). This museum lets visitors experience vividly the history of energy, its importance for the industrial revolution and how it shaped the German landscape and German people. As a unique experience, students will have the opportunity to descend into an underground mining area.</p> <p>Stopping by at the UNESCO World Heritage of "Zeche Zollverein", students get an idea of how energy is generated from non-renewable resources. Constant reflection sessions on the field trip's locations and its relevance for today's energy supply are conducted.</p> <p>Based on the history of energy, we discuss the issue of follow-up uses of the mining areas such as using old mine dumps for pumped storage hydroelectricity (which is planned at the Halde Sundern). Here we also consider the important aspect of energy transport and the challenge of energy storage. Further concepts of energy storage in Germany are discussed.</p> <p>With the next locations we take a closer look at renewable energies, e.g. by visiting a huge field of wind turbines and doing several exercises to uncover their effects on the landscape and ecology (lead by biologist Gesine Hellberg-Rode). The students should realize the dilemma between bringing energy generation close to settlements to avoid energy loss caused by long</p>
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STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

transportation on the one hand and effects on human settlements and the ecosystem on the other hand. Keeping this in mind, we drive back to Münster to take a tour of the district heating site and look at photovoltaic power plants on private buildings in order to discuss concepts of local energy generation as well as decentralized energy production. If there is enough time left, we will shortly take a look at latest car sharing projects as a collaborative concept of energy-saving. This is where systems thinking comes in particularly, as the people's decisions as a collective can have great effects on the area's infrastructure, transportation and pollution issues.

To round up this day's field trip, students have the opportunity to engage in a discussion with local experts on the most recent controversial debates on "hydraulic fracturing" in Germany. Here, students have the chance to sum up what they have learned today about forms of energy and their evolution, draw conclusions from it and make up their minds for a well-reflected position.

At the end of the field trip, all participants will take an hour to reflect on their experiences, ask questions and discuss the issue of energy on a higher level of abstraction. By meeting with different experts throughout the day, students experienced different points of view to the topic of energy – sometimes revealing differing values and norms.

By now, students should have gotten in-depth knowledge for the individual team projects.

As every day, the teachers come together for a reflection and feedback session after the end of the field trip.

Day 6 (Friday, 25th July 2014): self-regulated work on team projects

09:00-09:30	Students' feedback and evaluation session.
09:30-12:00	<p>Students work in the multicultural groups on their reflectories. On basis of last day's input, the groups make changes or specify the topics they chose for their reflectory and start researching. For this, they can use the university's library, search online, contact experts online and compile a list of information, which have to be collected on-site. Moreover, if they intend to gather information by surveys or interviews, they prepare the survey forms or interview guide. To include spatial and landscape information participants can use the spatial data infrastructure and geographical information systems of the Institute of Landscape Ecology.</p> <p>The instructors serve as learning coaches in the areas of their respective professional competences (e.g. expert knowledge on energy forms, qualitative research methods, methodological approaches with on-site work, etc.).</p>
12:00-13:00	Lunch
13:00-14:00	The groups present their concepts up to now and get peer feedback by their fellow students. Teachers just intervene, if they identify substantial mistakes or if they are asked to help. Apart from that, they encourage students to take responsibility for their own learning and just occasionally comment on feedback culture. Of course, they constantly assist the groups as far as specific knowledge is concerned.
14:00-18:00	The peer feedback is reflected on in the groups and suggestions for improvement are assessed. Furthermore, each group has to plan their individual field excursion to gather specific information and brief the teachers about it (e.g. a group choosing "hydroelectricity" as topic for their reflectories would probably like to see a pumped storage facility to gather photos, video

STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

material or conduct interviews with experts). This gives the instructors two days time to arrange the mini field excursions (using again the university's minibuses).

18:00 The instructors come together for their daily feedback and evaluation session. Today, they also organize the small group's field excursions on Monday and Tuesday.

Day 7 (Saturday, 26th July 2014): day off 1

This day is not a working day and participants are free to choose their activities. However, for all of those interested, the instructors offer a guided tour of Münster in the morning and team building activities at the participants' choice in the afternoon (e.g. boat trip, high ropes forest or a GPS rally). In the evening, all participants are invited to join a bar hopping tour to discover Münster's historic city centre.

Day 8 (Sunday, 27th July 2014): day off 2

Today the instructors offer a tour at the popular brewery in Warstein, where participants can gain insight into Germany's very long history of beer brewing. Another option (also depending on the weather) is a bike tour through the Münsterland region.

Day 9 and day 10 (Monday, 28th – Tuesday, 29th July 2014): work on team projects and on-site research

09:00-09:30 Today's feedback and reflection session will focus on the past week as well as the weekend activities. Additionally, the weblog is discussed by the students and the best weblog articles of last week are awarded a prize by the students. Moreover, the participants recall their objectives in groups and set specific aims for the following two days.

09:30-18:00 Students work in their small groups, do research depending on their chosen topic for the reflectory and work on-site including interviews, filming or doing surveys (transportation offered in minibuses). According to the topic as well as the participants' needs, they will be accompanied by two instructors, who assist them drawing on their professional competences. Throughout those two days, students from one group are sent to other groups to contribute ideas, give them peer feedback and bring a new perspective to the groups' work. Whenever needed, the instructors assist the groups.

18:00 Teachers' daily reflection session, today with a focus on the aims for the second week, potential need for intervention on the groups' work and discussion of the students' feedback.

Day 11 (Wednesday, 30th July 2014): putting theory into practice

09:00-09:30 Students' feedback and evaluation session.

09:30-12:00 The groups finish their research for the "reflectories".

12:00-13:00 Lunch

13:00-16:00 Based on their research, the groups now start to create the structure for their

STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

“reflectory”. To do so, they discuss which situation is suitable to start with, which decisions are complex enough to trigger a well reflected decision process and which additional material should be given. Summing up, they create a tree diagram, in order to visualize the “reflectories” points of decision and following options in a clear and systemic way.

- 16:00-18:00 All groups present their tree diagrams and explain the underlying concepts. Mutual evaluation is undertaken by peer assessment and peer feedback from the other groups. With this, misconceptions or errors can be detected. Moreover, all participants are asked to assess, if the “reflectory” offers enough equally legitimate options to decide on, if the group bears in mind differing values and norms and if the decisions trigger reflective thinking on the energy relevant topic. The quality of the additional material is evaluated as well. Lastly, the groups take some time to cross-check the aims set by themselves on Wednesday the week before and evaluate their working process up to now.
- 18:00 The instructors come together for their daily feedback and evaluation session. Today, they focus on the group reflections in the afternoon and draw conclusions from it concerning additional impulses and support.

Day 12 (Thursday, 31st July 2014): completing the “reflectories” and creating a dissemination platform

- 09:00-09:30 Students’ feedback and evaluation session. Today’s session focuses on alterations of the “reflectories” based on yesterday’s reflection session.
- 09:30-12:00 The groups take up the peer feedback and alterate and improve their “reflectories”. At this point, they can start recording the audio tracks using the iPads and suitable apps for cutting and editing. At the end of this morning’s working phase, all groups should have completed the main features of their “reflectory”, as it lays the groundwork for the afternoon session.
- 12:00-13:00 Lunch
- 13:00-14:30 In the afternoon, the STAR groups are paired with students from information systems, who will later on establish the web platform as well as the app for the “reflectories” in all three countries. In a first step, the STAR participants explain their “reflectory” to the students of information systems and point out the didactical and methodological foundations. Secondly, the students of information systems introduce the STAR participants to a modelling language (Entity-Relation Modelling – ERM) in order to explain technical requirements and bring both sides on a level of mutual understanding.
- 14:30-17:00 While the students of information systems come together to discuss the specific requirements and technical aspects of constructing the web platform and the app, the STAR students temporarily leave their working group and team up with fellow students from their home country. As the “reflectories” are originally written and recorded in English, they now form expert teams in order to translate the texts and record the “reflectories” in their native language (i.e. German, Spanish or Turkish).
- 17:00-18:00 The STAR participants return to their working groups and are joined by the students of information systems. The latter report on their plans on how to design the web platform and app and discuss matters like accessibility or handling of online resources in schools with the teacher students.
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STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

18:00 The instructors come together for their daily feedback and evaluation session. Today, they are joined by Armin Stein, professor of Information Systems, who briefs them on technical possibilities and limits of making the “reflectories” public online.

Day 13 (Friday, 1st August 2014): presentation and discussion

09:00-09:30 Students’ feedback and evaluation session.

09:30-18:00 Today, all groups will present their “reflectories” to all STAR participants. Contents, chosen situations, deciding options and consequences will be evaluated by peers and teachers. The additional material will be examined in regard to comprehensibility, selection, quality of pictures or videos, etc. Furthermore, the groups reflect on their working process and give feedbacks concerning the instructor’s coaching. Finally, teachers and students will evaluate to which extent the group succeeded in implementing different norms and values, fostering well-reflected decision-making and understanding the topic from a systemic point of view. After the peer feedbacks and evaluations, the groups will have the chance to make last changes in their reflectories.

18:00 Today’s daily feedback and evaluation session will be extensive, as it covers the students’ peer feedback as well as the teachers’ own evaluation of the quality of the “reflectories”.

Day 14 (Saturday, 2nd August 2014): evaluation, reflection, visions

09:00-12:00 This morning is dedicated to evaluation and reflection on the STAR IP. Therefore, students are asked to reflect on the project, assess its outcomes and working progress and to evaluate their own learning. Particular importance is given to the reflection of intercultural learning and on the experiences made while working collaboratively in intercultural groups. The question is raised, whether the STAR IP changed the participants’ attitudes in terms of a European point of view. Differences and barriers in intercultural communication processes are identified and reflected on by expressing “Do’s and Don’ts” for intercultural communication. Various didactical methods are used for this, including “silent discussions”, “fishbowl conversations” and role plays. Finally, all participants bring together their ideas on what makes them feel like a European and how to teach this to children and sum it up in a poster, which will be featured on the STAR IP weblog. Concluding, participants should give answers to the following questions: What have we learned from each other and how has it shaped our attitudes and minds? What made me think from a European point of view? What conclusions can I draw from this for my studies, my work as a teacher and my personality? Lastly, all participants are asked to fill out standardized evaluation forms and hand them in anonymously. In addition to this written feedback, all participants engage in a last feedback session to give special and personal feedback to the instructors. The outcomes of the written and oral feedback will be discussed and implemented in the follow-up STAR projects and the planned joint modules.

12:00-13:00 Lunch.

13:00 – 14:00 All participants vote for the best weblog article on the STAR IP blog and awards

STAR IP

SYSTEMS THINKING AND ASSESSMENT WITH REFLECTORIES

its author a prize.

14:00- 20:00 Team activity at the participants' choice to end this STAR intensive programme with a positive team experience and to intensify the participants' bonding, to ensure future contact amongst the students and therefore to lay the groundwork for student mobility among the partner universities.

Day 15 (Sunday, 3rd August 2014): departure

Departure of the participants from Spain and Turkey
