# “Time for innovation in Education! Are we super-engineers?”

**BEST Symposium on Education**

**Zagreb, Croatia**

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# Summary

BEST Symposiums on Education are public events organised by the Educational Committee of BEST (EduCo) and a Local BEST Group. In such events students from all over Europe gather in order to discuss and express their opinion on Educational issues.

The duration of the event is one week and discussion topics are arranged by EduCo in association with Thematic Networks and/or professors and experts from European or local universities.

The Symposium, "Time for innovation in Education! Are we super-engineers?" was organised by the Educational Committee of BEST (EduCo), and the hosting local BEST group of Zagreb in the period 02 June 2009 - 10 June 2009.

During the Symposium the discussions were held in three groups, which were facilitated by EduCo members. Discussion notes were taken by BEST members. Prior to the working sessions, each group was briefed by one of the participating professors.

At this Symposium there were 25 participants from 16 different European countries.

The participants were ensured to have sufficient background knowledge to participate actively in the discussions by reading the topic introductions provided by EduCo and by participating in the preparatory session, where several professors gave some information about the topics of the Symposium.

# Introduction

At the Symposium participants were encouraged not only to share their opinions on the topics and state their opinion on others' ideas, but also to share the experiences they had in their countries or at the universities they are studying.

First day of discussions at the Symposium was dedicated to the Bologna process at universities. Subtopics which were discussed are benefits of the process, promotion of Bologna and its results to different stakeholders, evaluation of courses and the role of students in it, ECTS, drop out issue and special groups.

Second day of discussions at the Symposium was dedicated to Employability and Entrepreneurship. Participants discussed about factors which influence employability of fresh graduates and the triangle universities-companies-students. They discussed how entrepreneurship influences employability, the importance of it and how it can be promoted. Participants were informed about different ways how entrepreneurship is supported by the EU.

Third day of discussions at the Symposium was dedicated to Research & Development and the role of undergraduate students in it. The year 2009 has been announced as the Year of Innovation & Creativity (I&C) and participants were informed about the actions 2009 will bring. They discussed the importance of I&C, the role of it in the life of modern student and how it can be developed and supported in society.

# Bologna process

## *Introduction*

The overarching aim of the Bologna Process is to create a European Higher Education Area (EHEA) based on international cooperation and academic exchange that is attractive to European students and staff as well as to students and staff from other parts of the world. The Process started by signing the Declaration in the Italian city of Bologna on 19 June 1999 by ministers in charge of higher education from 29 European countries.

All information about Bologna Process can be found on website dedicated to it http://www.ond.vlaanderen.be/hogeronderwijs/bologna/

## *Outcomes of the discussion*

### The benefits of Bologna process

Bologna process (what it is and how it is being done at universities) is not promoted well enough and because of it, students couldn't tell exactly what the benefits of Bologna process are. Only 2 students experienced "old", integrated in the system at their universities could tell that studying became more efficient with Bologna, because students have more power over what they are studying by being able to choose courses they are interested in. Participants recognised some of the benefits of the process, but not from the first hand experience. Bologna process brings more benefits to the labour market because universities are forced to transmit more practical knowledge to bachelor students and because diplomas should be universal and recognisable in whole Europe. As a term, Bologna process was recognised as political promotion tool in Croatia, Serbia and Macedonia.

### Promotion of Bologna process

Students would like to have information on what Bologna process is, what the benefits are and what it will bring to students.

Promotion of Bologna should be done through university websites and newspapers, conferences and presentations, social networking websites and internet forums. Participants also think that information should be available on posters, brochures and leaflets and that these materials should be available even to high school students. However participants pointed out that interest of students is low, that they are mainly focused to graduate, no matter what system is implemented at their university and promotion should be carefully planned.

Companies should also be informed about the process of reforming educational system, what students learn in order to know what to expect from future employees, fresh graduates.

## Evaluation of Bologna process at universities

Participants shared experiences how curricula and effects of Bologna process are evaluated in their countries.

Bulgaria and Serbia: there is evaluation at the end of the course but students think it is not developed enough and actually does not differ from evaluations which were given before Bologna process. In Bulgaria this evaluation is done through the Internet.

Sweden: feedback on the quality of the course is asked from students at the end of the course after the exam.

Italy: students are filling two evaluations. One is being asked from university and another one for teacher.

United Kingdom: evaluation from students is being asked four times per year.

Students had divided opinions about the role of student unions in evaluation process. Some thought that results of anonymous evaluation should be available to student unions because they have the power to influence the changes at the universities. Other students saw no effect of this because of their bad experience with student unions which were not working enough for the interests of students.

In countries like Serbia, even though evaluation exists no follow up is being done, thus no improvement happens.

General opinion of students was that old programmes were just "repacked" and instead of studying 5 years, students now are actually being forced by the status of labour market and industry requests to go for master's degree which again means 5 years of studies overall and not 3 or 4 years of only bachelor.

## Unification of ECTS credits and mobility at university

In Croatia, Serbia, and Macedonia students are not very well informed about the meaning of ECTS points.

All participants pointed out that it is not clear what impact time for preparation of exams and studying have on the way how ECTS points are counted.

In Bulgaria system of ECTS is not implemented but equivalent is being calculated.

In countries like Croatia basic subjects are taught by professors of faculty departments. In case students decide to change the faculty they encounter problems for basic subjects to be recognised.

In Turkey basic subjects like mathematics are taught by professors of departments on university level. This way courses are recognised on all faculties of the university.

Participants agreed that "centralised" option is better because it makes mobility possible inside of one university and it lowers the costs of teaching staff. In this case, basic subjects would have to be taught in several courses which differ in topics and level. Information about exact topics of the basic subject course should be available in advance. If a course is pre-requisite for some other courses this should be noted.

## Drop out of students

In Bulgaria drop out is a serious problem especially at technical universities. One year, university in Sofia accepted all interested students without admission exam, which resulted in even higher drop out rate after the first year. In Russia drop out rate is even around 50% and duration of studies exceeds planed duration. In Serbia drop out rate is around 30%. In Sweden students are allowed to study as long as they want since they have to pay for their own studies.

Unfortunately in countries like Serbia, Bulgaria and Turkey professors value a course more in case more students fail the exam.

In order to decrease the drop out rate universities should make courses more attractive to students by teaching more practical knowledge. Also, if universities and faculties have career guidance centres, they can influence the drop out rate. Career guidance centres can help students in making decisions which courses to take and can also provide psychological help.

## Special groups

Participants identified several special groups that require additional attention from the university and the government:

- Foreign students

  Integration of these students is harder because the low knowledge of language that makes it harder for them to follow the lectures
- Students with different knowledge background
- People with disabilities
- Young mothers and fathers
- Employed people
- People with financial problems
- Minorities
- Old people
- Low social groups
- People with different sexual orientation

It is important to underline that participants didn't notify women as special group. In fact they stated women are not treated differently and do not require additional help from the universities or governments.

Participants proposed the idea that students which belong to minorities and special groups can become ambassadors in their communities and promote importance of university degrees. Also these people should be supported by universities and governmental and non-governmental institutions.

# Employability

## *Introduction*

There are many definitions of employability: One of them is the following: *the ability to gain initial meaningful employment, or to become self-employed, to maintain employment, and to be able to move around within the labour market is named "Employability".*

The main employability issues identified are:

- Employability of graduates at the Bachelors level can be a problem, because of a perception amongst graduates and employers that the qualification is not adequate for employment
- Work experience for graduates
- Employers do not think that universities are doing enough to prepare graduates for the world of work. But universities query whether employability should be a part of their mission and purpose
- Collaboration between employers and higher education institutions is low in curriculum design focussing on improving employability.

At this time it is of main importance to raise awareness of the Bologna Process and the value of a first cycle/Bachelor degree. This points to an ongoing need to promote the Bologna Process more widely, to ensure that its benefits are fully understood. Emphasis on quality assurance arrangements, credit transfer and recognition systems is essential to developing a wide range of employability (and mobility) options for students (and researchers) which would strengthen the recognition of first Cycle/ Bachelor degree amongst employers and students. [1][2]

## *Outcomes of the discussion*

### Main skills which graduate needs to be competitive at the labour market

Participants identified following soft skills as necessary for a working person of the 21st century: communication, creativity, good presentation skills, developed practical mind, understanding of work in teams and understanding of company organisation, flexibility to work in a team and independently, ability to adapt to different working styles, ability to work under pressure, risk management, proactivity, problem solving and logical thinking.

Increasing the number of opportunities for work in multinational companies requires from workers to have knowledge of foreign languages, to be open minded and flexible with different cultures, religions and customs and to be skilled with the usage of internet communications.

Participants think that companies value more practical experience than theoretical, which most students posses. Only knowing the theory doesn't mean that one will know how to apply it. The ability to apply theoretical knowledge taught at universities is the most important part when fresh graduates start professional work.

Participants find the improvement of soft skills through short intensive trainings and also through various extra-curricular activities, like being active in students' organisations, important.

## Job opportunities for students

In order to develop soft skills, working experience has been found useful by participants. However they pointed out that working tasks and requirements from students should be close to the topics and the level of knowledge which students gain at university. In order to achieve it companies should develop special programmes adjusted to students and their year of study at university.

Companies can support students financially by paying courses at university, though participants think that such students are actually full time employed in the company which leaves little time for studying. Students can have part time jobs, which give them more opportunities and have more flexibility on companies' side.

Universities can support workers by offering the option of part time studies, which make students finish their degree later, but also give them the opportunity to work at the same time. Also lectures can be organised during night and weekends, for those who have full time jobs.

General opinion of participants was that in the end, universities/professors usually don't like students to work: first the studies, then work.

## Company influence in university curricula

Being at least one step behind the usage of new technologies, universities should cooperate with companies where new technologies are being developed or are fully implemented. Cooperation can be done through shared curricula where company experts can share the knowledge during lessons. Companies require from students to develop "problem solving" skills and universities can actually create curricula which align with this request.

Companies should provide opportunities for students to do faculty projects or diploma thesis in companies and through which students can gain practical experience. An obstacle detected by students is that company work is very often confidential and can not easily be shared with students and universities.

There are positive examples of cooperation between university and companies in Poland and Sweden where internships in companies are mandatory or companies pay students to do their master thesis in the company.

However most of the participants' experience shows that although there is a relation students-university and students-companies, there is no triangle and universities do very little to build a bridge between students and companies.

## Influence of governments on employability

The government has one of the most important roles in influencing employability, although not a direct one.

Governments should promote their engineers to companies. Special funds dedicated to stimulate student projects done in companies should be established. Additionally governments can create laws which would encourage and support companies to employ students ("First job programs"). In Poland, for example, these kinds of programmes are developed on a city level. In Serbia government offers tax reduction for companies employing young graduates without working experience.

Positive examples from Sweden and Bulgaria show that government can organise job fairs and financially support job fairs organised by NGOs.

# Entrepreneurship

## *Introduction*

Entrepreneurship is the mindset and process to create and develop an economic activity by blending risk-raking, creativity and innovation with sound management. It covers an individual's motivation and capacity to identify and to pursue it in order to produce new value or economic success. Anyone can be an entrepreneur. There are, though, certain characteristics of this entrepreneurial behaviour that include readiness to take risks and a taste for independence and self-realization.

New entrepreneurial initiatives boost productivity. They increase competitive pressure, forcing other firms to react by improving efficiency or introducing innovation. It also unlocks personal potential and contributes to job creation and growth.

The challenge for the European Union is to identify the key factors for building a climate in which entrepreneurial initiative and business activities can develop[3]. Policy measures should seek to boost the Union's levels of entrepreneurship, adopting the most appropriate approach for producing more entrepreneurs and for getting more firms to grow. For that reason, in EU an Action Plan was created, with the aim to encourage more people to start businesses and to help entrepreneurs' development, by helping them to fully realize their ambitions and by providing an enabling business climate. The Commission will act in five strategic policy areas:

1. Fuelling entrepreneurial mindsets
2. Encouraging more people to become entrepreneurs
3. Gearing entrepreneurs for growth and competitiveness
4. Improving the flow of finance
5. Creating a more SME (Small Medium Enterprises)-friendly regulatory and administrative framework

## *Outcomes of the discussion*

Participants think that development of entrepreneurship can't decrease employability; on the contrary, it can open more positions, enhancing better quality jobs.

Universities in Portugal and Sweden offer specialised courses which teach students about entrepreneurship. However, students point out that courses do not offer practical knowledge and that ideas and hands-on-work is what actually makes good entrepreneurs.

To be an entrepreneur requires personal responsibility and commitment. Based on experience of their parents, participants from Poland and Hungary stated that it is really hard to run own business because it means being at work 24 hours per day and it lacks stability and security of international companies.

Support for entrepreneurs should be given by the governments, administrative institutions, companies and banks offering financial support. The government could help young entrepreneurs

by funding their projects and providing facilities and information. In Sweden, government creates entrepreneurship competitions for students and professors.

One of the ways of promoting entrepreneurship is to promote success stories and even more - to make students learn on failure stories. This can be done by organising conferences dedicated to entrepreneurship.

# Innovation and Creativity

## *Introduction*

The *Lisbon Strategy* is an action and development plan for the European Union. Its aim is to make the EU "the most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010".

Innovation and creativity are key points in order to achieve Lisbon Strategy goals. Europe needs to strengthen its capacity for creativity and innovation for social and economic reasons in order to respond effectively to the development of society and the changing economics markets. The only way of becoming competitive is to spread innovative capacities through all the population.

European *Year of Creativity and Innovation 2009* is an initiative of European Parliament and Council to make aware of the importance of creativity and innovation in public and private life. All forms of innovation (social and entrepreneurial innovation) are taken in account. [4]

The main specific objectives of the Year of Creativity and Innovation are:

a) Provide a favourable environment for innovation

b) Promote cultural diversity and artistic creativity

c) Stimulating aesthetic sensitivity, emotional development, creative thinking and intuition in all children from the earliest stages of development. Creativity is a life long term knowledge that should be stimulated from the early ages.

d) Make young people aware of the importance of innovation and creativity for themselves and for all the society through cooperation plans between the business world with schools and universities

e) Promoting design as an activity which contributes to innovation. Also spread basic notions of Intellectual property

f) Promoting and reforming education. Promoting as well advanced mathematical, scientific and technological skills as an important part of innovation. [5]

The Assembly of experts taking care of the Year of Creativity and Innovation promotes advertisement campaigns to disseminate the key slogans, organisation of conferences, round tables and meetings to share innovative experiences and good practices and last but not least studies and surveys all around European Union.

## *Outcomes of the discussion*

### Definition of Innovation and Creativity

Opinions and conclusions for defining innovation and creativity, and making distinctions (what do you mean by making distinctions?) were different for the three groups of participants.

Group 1

Students had problems of defining these two terms and making distinction between them. Both are equal in the ideas, but creativity is also connected to a more artistic and humanistic approach which requires talent. Students defined innovation as the ability of thinking differently and bringing new ideas. However the two terms should not be separated from each other because in order to innovate, creativity is very often the first step. Innovation is the key of company growth which helps the company to go forward.

Group 2

Creativity means to do something new and innovation means to do it in a better way. Both have to be used in order to adapt to the environment, to add value to the products and to be able to make products cheaper or faster.

Group 3

Participants agreed that innovation is inventing new things (formulas, materials, objects, algorithms…), while creativity is using already existent materials in a new way.

## Benefits of Innovation and Creativity

According to the opinion of some of the participants innovation is the basis of capitalism, keep improving and producing better products than the others. Mainly, innovation and creativity are seen as a tool that all countries should take benefit from in order to keep being competitive.

The positive impacts of Innovation and Creativity reflect on the improvement of the educational system, development of new technologies, creating more competitive engineers on the labour market and more skillful professionals, creating more students interested in technologies and new research areas and job opportunities.

It is important to point out that a small change or improvement can develop into a huge success or saving lots of resources. In this case, participants from the discussion where very focused on the economical aspects on investing in innovation.

Innovation is seen as a tool to have a better professional life, to create new jobs and to boost research in different fields. In order to have all these benefits, innovation and creativity should be implemented in schools.

## Role of Innovation and Creativity in students' lives

Creativity is seen as a quality that all the children have and that humans lose while they grow up. Thus it is important to include creativity in the children's education in order for it to be seen as a normal factor. Young people are open-minded and see wider possibilities. Changing the world to young people seems possible because of the youthful environment in which they live and work.

It was also pointed out that stress and creativity are not compatible. Most of the participants agreed that the most imaginative ideas they had where during free time. Human mind need to rest in order to have better and new ideas, and the proof is that companies like Google have facilities for their workers in order to relax and take some free time at work.

Innovation and Creativity can be supported in the classrooms through different way of teaching (e-learning, use of multimedia) or projects that award the most innovative ideas.

Participants have seen several obstacles for creating innovative spirit. Topics for the projects at universities and tasks students have to perform usually repeat one year after another and usually are the same for all students. This way, students are actually in a position to copy the results from each other or reuse former year's project results simply because it is easier that way. Participants felt they should be more involved in innovative research projects to expand their horizons. But they also pointed out that most of the existing projects right now are not attractive enough for students or their access is not permitted.

Participants were discussing different teaching methods that their professors are using. Most of the participants think that debates, with a proper preparation, make students think more creative and find out new ways of solving the problems. Others prefer their professors to show them how to build something instead of explaining how to build it, so more hands-on lessons. Innovation and creativity are born when students are bored with usual way of working but also when there are limits or special situations, which trigger finding new innovative solutions.

American research system based on constant innovation and creativity is seen as a reference for European students. Nevertheless, participants are aware that in certain areas of Europe there is a lot of work to be done to reach American standards.

Some of the participants gave examples of activities in their countries which they connect with Innovation and Creativity:

In Estonia university courses are based on a project and the government organises an annual contest.

In France rewards are given to the best innovation projects, mainly practical projects for society.

On the opposite side, in countries like Hungary, Slovakia and Serbia, innovation is announced during election campaigns and appears as one of the main politicians' goals but at the end the programmes are not developed, so the students have the feeling that research programmes are not accessible for them.

In Poland various competitions are being organised and students can participate. There are possibilities to have support (like an incubator) for the best idea of the year.

In Greece similar competitions are being organised (by the student NGOs or governments) and the best idea is funded from the main telephone company.

## Key competences for Innovation and Creativity

Engineering profile should be by default prone to innovative spirit because of the sense of critical thinking and logic. In order to be an innovative and creative engineer it is important to have an interdisciplinary education. Of course, science and mathematics should be the most important knowledge of an engineer, but we should add foreign languages and knowledge in other fields like business or psychology.

Being confident with the different digital technologies is another key point. Different software and hardware are released each month and having a basic knowledge in the most important ones is a must. That's why long life learning should be an essential point of any engineer.

Again the use of the free time was pointed out as a key competence. Participants thought that being active in your spare time and getting involved in the civic and social life of your region helps to have better ideas.

Finally, cultural diversity is proved to be essential to create a good working team in innovative engineering solutions because it brings diversity to point of views.

## Development of Innovation and Creativity

The focus of the current educational system is knowledge and specific skills. Creativity is not part of this process. In the future, educational systems should be dedicated in finding the exact potential of each child. This should be a continuous process through whole period of education, starting from kindergarten.

Innovation and creativity are not skills that can be acquired by learning them. Participants think it is better to focus at the things in which people are good, rather than to work on the weak points and be average in every skill. Primary schools professors should be open to different approaches in work and appreciate the differences in the skills of pupils. Primary schools should be the place where skills are discovered and the development of those should not be the primary goal. There is a need to create an attitude even if a child is good in one field and another one is not, this does not discriminate other children. It's about the idea of feeling good and being accepted.

In university scope, engineering competitions and developing industrial environment in the classroom by reproducing real scenarios are different ways to boost students' creativity on problem solving.

Participants pointed that some fields are more prone to enhance creativity, while some just simply are not and do not attract people to work.

Also it was discussed that being involved in NGOs and student associations gives a new point of view to those students and helps them to develop their imagination and creativity skills and specially to lose the fear of making mistakes while developing new ideas and methods.

The first point to be achieved is to raise the awareness of the importance of innovation and creativity. Most of the governments and companies still do not know clearly why it so important to have innovative ideas.

For our European economies it is very difficult to compete with countries like China. China's production resources are extremely cheap, and the only way that European companies can compete with Chinese economy is by inventing new products.

It is also remarkable that the important point is the quality and not the quantity of new creative products. Companies have to learn to be creative and innovative to be able to compete in this new economical situation and governments should help the whole system by stimulating universities and industries proposals leading in the innovation and creative direction.

## Support for Innovation and Creativity

Innovation and Creativity is an approach in life that should be supported through cultural centres like the ones in Poland creating a space for young people to express and develop their ideas. In Poland, universities have open days dedicated to parents with children that can see which topics

are taught at universities and explore the university environment which should by default be innovative.

When growing older, people forget to play, and parents should actually teach children the balance between work and play, as something creative. In Poland special "gardens of experience" are being organised where people can learn about technical knowledge and students work as volunteers and guides in these centres.

These kinds of programmes should be promoted in media. The real goal would actually be to make certain tools as natural ones in our environment, which are spread and there is no need to advertise them.

Innovation and creativity can be supported by three different stakeholders: government, universities and industry.

Countries and companies should develop an environment in which people are free to share their ideas, where ideas are taken into consideration and at the same time people are not frustrated by not having their ideas developed. To show and develop innovation and creativity is harder in a team, because usually people are not open minded and adaptive and it is hard to enforce own ideas.

The state has the right to approve the university curricula that should include new teaching methods encouraging more debates and case studies. But the state can also influence the industry by giving sponsorships to companies developing special plans to form their employees and launching case study contests for students and entrepreneurs as well as having a flexible internal structure allowing brainstorming of all the employees.

Regarding the university side, many options were commented, giving more importance to stimulate teachers to teach in a different way, closer to real world situations. This could be achieved either by gathering teachers in special programs or by giving scholarships to teachers willing to take a certain period off, to work in industry and come back to the university with new experiences and ideas. Also competitions could be launched between teachers in order to choose the best teacher of the month.

Universities can organise engineering contests, together with a company, where students compete to solve problems in an optimal way. This should be an extended good practice. Opening a special centre in the faculties to join students and companies inside the university could benefit both sides as well.

Companies could benefit from students ideas developed in the case studies contests as students can give a new fresh point of view. Another activity that companies could explore is student visits to their factories; this would help students to connect what they are taught in lessons with real life.

# Research and Development

## *Introduction*

The 2000 Lisbon strategy grew out of the recognition that Europe was persistently lagging behind the US, Japan and other leading industrial nations in terms of innovation and productivity growth. Its goal was to close this growth gap by directly targeting several of those key inputs that have been found to affect economic growth, including employment rates, higher education and R&D.

Research is essential in institutions that claim to educate academic engineers. Active participation in "on the edge" research guarantees that the teaching staff is up to date. Involvement of students in research guarantees that they develop the necessary attitudes towards creating new knowledge, new technologies, innovation, solving of problems that have not been solved before.

By involving engineering students, from the undergraduate level on, in research work one does not only develop their creativity and engineering attitude but also develops their communication and presentation skills and their ability to work in a multidisciplinary team.

The opportunities for students to participate in research vary from country to country and from university to university. They depend on the interest of the academics doing research in a specific scientific field, the available infrastructure and equipment, the relations between the universities and industry and the financial resources available for conducting research. [6][7][8]

## *Outcomes of the discussion*

None of the participants has ever been involved in a research project even though some of them are encouraged by their local universities. However there are opportunities for the research.

In Poland master thesis should be based on research.

In Sweden laboratories offer opportunities for research and at final years special courses are dedicated to teach students on methodology of research.

Some companies in Turkey and Poland have their own institution for research and development, independent from universities and students can work in these institutes.
General picture is that research takes a lot of time and dedication while it gives little results and these are the reasons why people are not attracted to it. Also low funding of research has a negative impact on the number of researchers. Being a PhD student or researcher in a university is less paid than to work as an engineer in companies.

Research should be something "natural" inside the students life, nevertheless students do not always have the chance to get involved completely in the process and they feel more like observers or have to do the most unattractive tasks of the project. University professors are doing research but the involvement of students is really low and also students are not informed about the research activities of professors.

## Promotion and support of Research and Development

Research and Development is not for everyone and because of it, promotion should not be about spreading it as an idea, but as targeting certain people that are actually right for R&D.

In general it was concluded that students' involvement in research projects should be more promoted, for example through internet announcements in university web pages or through the newspapers. Moreover, all research is very focused on final thesis or PhD, non graduated students do almost not receive any possibility to participate actively on research projects. This situation should definitely change in order to avoid that engineering students meet research for the first time during their final thesis. Especially talking about engineering and science students, research should be a constant factor in their education.

There are many doubts about what should be the funding model and the relation between universities and companies. Different scenarios were commented: university funds, companies' funds, cooperation between university and companies and finally government funds. Some participants expressed their doubts about completely company funded research, being afraid that the results might be influenced by the need of having immediate results for the company. The topic of research was also seen as a basic problem: do the companies want to research in things that population really needs. Participants were especially worried when talking about military research's projects.

Engineering project research should be strategically planned and most of the times, the project lasts for a long period (4-5 years) as it involves developing some news technologies. Due to the essence of engineering projects, big amounts of finances are necessary which converts sponsors into very valuable stakeholders.

Government can support R&D with tax reduction for researchers that migrated abroad and expressed their wish to come back and continue research in their own country. EU can support R&D through special funds or creating R&D centres in Europe. Europe is multicultural and students think it creates a better working environment. United States do lack this kind of natural environment and are forced to "import" brains.

For the companies R&D involves issues of patents and usability of researched topic. At universities, topics are not necessarily connected with profit like it is in companies. However if companies and universities are cooperating, then a lot of R&D at university is dedicated to the company's interests.

Some eastern and southern countries face another problem as well; their researchers have to emigrate either because the quality of the research is better in the Nordic countries or USA or because of economical problems. These countries have to create policies to avoid the brain drain. These policies can include better salaries and creation of new research complexes that can compete with the higher research institutions in other countries. Moreover, some strict laws regarding the patents will encourage companies to sponsor more projects.

European Union should take advantage of the cultural diversity coming from all the European regions by creating European research centres. Cultural diversity is a positive point of this kind of laboratory in front of national-based projects and it can be an easier way to get funds from more institutions.

# Conclusion

The main impression facilitators got is that the level of information students had about Bologna process was really low. In order to be able to give more input to the topic and evaluate the success of it, participants need to be informed at their universities about the process and changes it brought. This can also bring benefit because students will understand better the process of reform and why it should be beneficial for their university and they will also be able to be an active voice in the evaluation process.

Even though Entrepreneurship and Innovation & Creativity are important topics in the European Union, it seems that promotion of it still doesn't reach students in the appropriate level. More promotion is needed and it requires a different approach if students are the target group.

Status of Research & Development in different universities showed a very low level of involvement of undergraduate students and a small number of opportunities. The impression facilitators had is that even though engineering is really close to R&D very few participants showed actual interest for R&D. If EU wishes to have more researchers within students it should also develop measures for improving the image of R&D among students and attracting them to it.

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