

Internationalization project course for engineering students

The “Amazing Race” of Tampere University of Technology

A.O. Värrí
Associate Professor
Tampere University of Technology
Tampere, Finland
E-mail: Alpo.Varri@tut.fi

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INTRODUCTION

Engineering studies in the Faculty of Computing and Electrical Engineering in Tampere University of Technology (TUT) included a total of 300 ECTS credits when both the B.Sc. and M.Sc. degrees are studied one after another as most students do. In the academic year 2012-2013 four credits out of the 300 credits were allocated to a compulsory course *Basics of Industrial Management* which can be passed by passing a written exam in the B.Sc. level. In the M.Sc. level the students had to choose at least one credit from the list of communication courses like *Introduction to Editing and Proofreading*, *Scientific Writing in English*, *Thesis Writing*, and finally *Speech Communication and Negotiation Skills* (limited attendance due to capacity problems). No other business-related courses were compulsory.

At the same time the local business community expected much more real work place skills from the graduates. The Chambers of Commerce in the Tampere and Jyväskylä regions in Finland issued a statement that sales skills should be made compulsory in vocational training and in higher education [1]. This gave motivation for the curriculum developers to look for new openings in order the engineering degree to match the needs of the society better than previously. A study made in Lappeenranta University of Technology and reported by Hirvikorpi [2] about the gaps between the expectations employers and the skills provided by the university level engineering education was another source for inspiration for the creation of the new TUT course *International Assignment* which is the topic of this paper.

1 GAPS IN ENGINEERING EDUCATION

Although the study mentioned in [2] was not very new, its results were still applicable because the structure of the compulsory studies regarding work place business skills had not changed significantly since the study. The study indicated, among other things that while the percentage of employers expecting problem solving skills was above 90 per cent, less than 30 per cent of the graduates actually had these skills in a sufficient level (92%/28%). The corresponding percentages for independent thinking were (88%/42%), commitment to task (83%/19%), flexible operating (73%/22%), creativity (58%/9%), tolerance for uncertainty (55%/6%) and social skills (53%/10%). The scientific abilities and the amount of theoretical knowledge was in abundance and exceeded the levels expected by the employers. However, particularly the tolerance of uncertainty/insecurity was at an alarmingly low level because that trait is one of the key factors in entrepreneurship [3] – the property very much needed to have a flourishing economy.

The average Finnish engineering student has not been exposed to foreign cultures too much in his/her daily life before entering the university. The reason for this is the geographic location of Finland rather far in the north and separated from the continental Europe by the Baltic Sea. The potential short journeys abroad as a tourist with the family have probably not given very deep knowledge and understanding about foreign cultures and the differences in social intercourse between Finland and foreign countries. For this reason, the Tampere University of Technology actively encourages its students to spend time abroad either studying or working during their studies.

2 BRIDGING THE GAP WITH A NEW COURSE

2.1 General requirements

It is rather evident that traits like tolerance to uncertainty/insecurity cannot be developed effectively by listening to lectures of the topic. The development of this personality trait requires the student to go out of his comfort zone which listening to lectures does not support much. The students need to be exposed to risks of intelligent failures [4, 5] which give experiences which cannot be learned in any other way. The useful risks are such that they cannot fully be controlled by the students [5].

Kyrö [3] defines also other requirements for a course to develop the students' risk tolerance. When facing tasks with uncertain probability of success, the students must be given a sufficient amount of freedom to choose their approaches and methods of problem solving and the teacher must support this. This requires also flexibility and tolerance of uncertainty from the instructor. Kyrö refers also to Alan Gibb's concept of "interconnectedness" which means that the students need to face a multidimensional network of actors in the process.

The requirements mentioned above lead to think that project-based learning [6] is one of the most suitable methods to improve the tolerance of uncertainty. Larmer and Mergendoller [7] suggest that a successful project course should meet two criteria: the students must perceive the work as personally meaningful, as a task that matters and that they want to do well. Additionally, a meaningful project fulfils an educational purpose.

2.2 Implementation

The first instinct to improve the tolerance of uncertainty of the students was to send them to the popular, prize-winning reality TV series Amazing Race produced by Jerry Bruckheimer and Touchstone Television. In this TV program people try to perform various tasks in pairs as fast as possible, travelling around the world facing unexpected conditions and surprises. As even the losers of the game often tell how good experience the competition has been to them, this was felt to be a good starting point to develop a serious engineering project course to learn international marketing. When the learning outcomes of the course are those gaps listed in section 1, participation in this TV program would have been quite a good attempt to match those.

The tasks in the TV program have not always been very meaningful, e.g. the participants need to eat a bowl of insects etc. Therefore effort was put to design meaningful tasks for the internationalization project course, tasks to which the students would commit and put much effort under the risk of failure. It was decided that the first task would be somewhat easy in order to get the experience of success which would give the students self-confidence to carry on. The tasks are performed in pairs. The first task is to interview engineering students in a foreign university of their possibilities and interest in coming to continue their studies in the international M.Sc. programs of TUT. The students are given the name of the university to travel to but the other instructions of the task fit into a half page of paper giving the students the liberty but also the responsibility to plan the survey on their own. The meaning to the task is motivated by the need of the TUT international program marketing unit to know which European universities could be potential targets for marketing the programs. As the TUT students are simply interviewing other university students in an informal way, no bureaucracy is involved in this task. The TUT students do not need to contact the offices of the university they visit and burden the administration of that university in way.

The second task is clearly more challenging. The pair of students needs to get into contacts with a local company interested in marketing their products to Europe but which does not have that much resources to carry out expensive marketing campaigns abroad. The students would plan a marketing visit of the products of this local company to another country in Europe and carry it out with the instructions from the local company. TUT borrows the students the book *Brilliant Selling* [8] but gives only one lecture about the principles of selling and international travel.

The foreign company in the second task must be in a different country from the university which the students visit in the first task in order to expose the students to more countries, cultures and travelling problems. To finance the journey the university gives the students a 15 day InterRail pass which allows them to travel on trains for free in the many European countries which support the InterRail system. The university expects the companies whose products are marketed to sponsor these tickets plus 20 euros/student for telephony costs for arranging the marketing visit. The students are responsible for booking their own accommodation and planning their routes. The students are required to produce a report for TUT marketing about their university visit and a report to the local company about their foreign company visit and a short summary report about the whole course. A final seminar where the groups present their experiences is held after all groups have returned home from their journeys. The students are encouraged to visit museums and other forms of culture in the countries they visit and it is not forbidden to spend

more than the 15 days in the journey if the students like to see more of Europe. The students earn four credits by passing the course.

3 RESULTS

The course has been carried out three times in TUT and the experiences are mostly positive. Most of the student groups have been able to carry out their both tasks reasonably well. The reports have usually been very good and the local companies have been satisfied with them. The reports of the university visits have also been informative describing the general attitudes of the students in the visited universities. Our students have mainly returned back from the journeys with excitement and empowerment after their successful tasks. The students have learned the process of contacting foreign companies and that most of the contact attempts turn out to be unsuccessful. The contacting processes have significantly lowered their threshold to attempt similar things at their future work places and made them more courageous in general. Some students have said that this course has been the best course they have taken in TUT. An informal partnership has been established with the local business services company Hermia Business Development Ltd through which many student groups have obtained the company to represent.

The negative results are few and not severe. First, the course has not reached as many students as expected. Each year only four to six groups of students have participated in the course which is only a small percentage of the active students in our faculty. One of the reasons is, confirmed by the students, that many more would probably attend if they knew that such a course exists. This indicates that the instructor has to improve his own marketing of the course. Second, some students have quitted the course when they have discovered its requirements. They may have had expectations of a holiday in Europe, they did not have the required courage or they were not willing to put as much effort to contacting companies to accomplish the second task. Some student groups have reported problems in communicating with the company that they represent which has led to them making decisions on their own when the required information was not there. This could also be described as expected but not intended problems although it may have been nerve wracking for the groups that had faced them. One of the problems has been related to the timing of the course. The students can usually travel only during their summer break in June-August which happens to be a holiday period in their target universities and companies, too. Two students lost their passports and wallets during their free-time visit to Reeperbahn in Hamburg, Germany but as they still survived home without physical injuries, they learned important lessons in international travelling.

4 DISCUSSION

The course has been successful in addressing the gaps mentioned in section 1. It has taught the students marketing skills, it has exposed the students to uncertainty and failure risk situations. Trying to agree a sales visit to a previously unknown company by cold calls is usually a series of failures until it succeeds once in the course. The students learn from the book that it is very unlikely that they would really close a deal with the company in their first visit but that the company they represent might succeed at a later stage.

The students have clearly felt that the tasks have been meaningful. This has shown in their commitment, their reports and in their final seminar presentations. The educational purposes can also be claimed to have been met. The journey is such an emotional experience that it leaves a deep trace to the traveller's memory.

The course has required flexibility from the teacher, too. The teacher has allowed the change of target countries and universities when conditions have indicated that it is the most sensible thing to do. The teacher has had to respond to a small number of urgent questions during his holidays, too. The new course form has also introduced some additional burden to the administrative personnel of the university who need to handle the travel invoices and travel insurance issues of the students. All the local businesses who have been contacted about the course have considered it useful and some have also contributed to its success. The course has also been accepted as a part of the new internationalization module of the engineering studies. The national TV Yle found the course interesting, as well, and they ran a 1.5 min report about it in their feature program Suora Linja on August the 21th, 2014, making the engineering education in TUT look more attractive than previously.

So far the course has been attended by a small number of students. Scaling the course to a larger number would mean more time from the teacher to communicate with the students and with the companies supporting the course. If the number of students grew larger, additional teachers could be necessary. Although the students are given the InterRail pass and money for telephone costs, this does not burden the university financially because these are sponsored by the companies whose products the students market abroad.

The experiences of the companies sponsoring the journeys have not been studied systematically. It is believed that the companies have obtained useful information from the students which has influenced their decision making concerning the area visited by the students. The contacts with the local Chamber of Commerce have encouraged the teacher to carry on with this activity.

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