

Joint entrepreneurship education for business school and engineering students at the University of Iceland

The case in a nutshell

The University of Iceland offers a Master's programme in Innovation and Business Development which is run by the Faculty of Business Administration in cooperation with the Faculty of Industrial Engineering, Mechanical Engineering and Computer Science (IEMECS). Six of the programme's courses are available as modules for other students from other faculties. In these six courses, business students and students from other faculties learn together, seeking even participation of both student groups. The programme emphasises a combination of theory and practice. Students acquire a theoretical basis in innovation and entrepreneurship, but they also have to go through the practical aspects of an innovation process. The core of the programme is a two-semester course on the implementation of innovation. Students work in teams on a comprehensive project that develops a concrete product, in cooperation with local businesses. The biggest challenge of the joint programme is the work across different faculties of the University. Moreover, it may be a challenge for students to fully understand the demands and limitations of the company they are cooperating with. The educators need to mentor students thoroughly and manage situations when students' work does not meet companies' expectations.

1. Background

Profile of the University of Iceland and its entrepreneurial approach

The University of Iceland is a public university located in the country's capital Reykjavík. Founded in 1911, it is the oldest and largest higher education institution in Iceland. It is a comprehensive university with approximately 15,000 students and 25 faculties, comprising five Schools: Social Sciences, Humanities, Health Sciences, Education as well as Engineering and Natural Sciences.

The University's entrepreneurial ecosystem is made up of curricular offers in entrepreneurship education, a start-up and entrepreneurship support centre named Sprotamýri¹, and an annual entrepreneurship conference Startup Iceland². Curricular offers include degree programmes and courses, including a one-day course Kveykja (English: turn on) for third-year undergraduate students. As of spring 2023, this course will have the name Social Spark and be offered to students from the Aurora alliance of European universities.³

This case study focuses on a Master's programme in Innovation and Business Development (IBD). It is run by the Faculty of Business Administration in cooperation with the Faculty of Industrial Engineering, Mechanical Engineering and Computer Science (IEMECS). Six of the programme's courses are available as modules for other students from other faculties seeking a specialty or minor in innovation and entrepreneurship. IEMECS runs two of the six courses. The University introduced this programme in 2015. The Master's programme accepts 15-20 students each year.

¹ See https://english.hi.is/collaboration/sprotamyri_the_university_of_icelands_start_up_and_entrepreneurship_centre.

² See <https://startopiceland.com/>.

³ See <https://english.hi.is/aurora>.

2. Objectives

Learning objectives of the Master's programme

The Master's programme aims to prepare students for innovation activity in a variety of contexts. The basic idea is that students learn about product development and business development at the same time.

3. Activities

Students' entrepreneurial activities

Entrepreneurial learning

The study for the degree comprises at least 120 credits, of which 90 are for courses and 30 for the master thesis. The programme is geared towards a master thesis in entrepreneurship.

The programme emphasises a combination of theory and practice. Students acquire a theoretical basis in innovation and entrepreneurship, but they also have to go through the practical aspects of an innovation process – from conceptualisation to business model development and implementation. Methodical courses on collecting and analysing quantitative and qualitative data, including interview techniques, are an important part of the programme. Graduates reported that they found the theoretical courses particularly helpful for their master theses.

The study programme is based on the findings from entrepreneurship research conducted at the University. This includes, among other subjects, insights about lean business methodology, theories of innovation, and experience from universities. Moreover, the study managers have adopted ideas about practical courses in entrepreneurship from universities abroad such as Aarhus and Lund as well as the University of Gothenburg where they have spent some time either as teachers or students. One of the colleagues was at Harvard University where he learned about the case study method in entrepreneurship and introduced it to Iceland.

Six courses connect business students with students from other disciplines: Two methodical courses (quantitative and qualitative methods), two practical courses on innovation and entrepreneurship, one course on the theory of innovation and entrepreneurship, and one course about innovation management. For the business students, these courses are a compulsory part of their degree; students from other faculties can take them as a minor elective. The course managers ensure that, optimally, half of the students are from business studies and half from other disciplines. In any case, not more than 60% are to be from business. According to one programme manager, were business students to dominate the course, students from other faculties would leave.

Course on implementation of product innovation

The core of the programme is a two-semester course on the implementation of innovation, the Field Course in Innovation and Entrepreneurship I and II. Just over 20 students are able to enrol. In this course, students work together on a comprehensive project that involves product development for concrete business purposes, i.e., seeking commercial opportunities. The project can arise from students' ideas, from a single business or from a group of partner companies. Students have to learn independent work procedures, plan their own work, and comply with the programme's timing requirements. In the first semester, students create groups and work out their ideas. They also have to learn to pivot: If an idea turns out to be insufficiently substantial, they shift to a different one. Teams

comprise three to four students so that five to six teams work in parallel. In the second semester, they work on the project.

Many of the projects are in information technology, for example in 3D printing, but the projects are very diverse. There was also a project for a biotechnology company producing generics which sought to find out what services they could offer. Students from the Faculty of Humanities developed a business model around arts. One of the teams developed a social entrepreneurship opportunity.

Students appreciate the course because it is very hands-on. However, it may be a challenge for students to fully understand the demands and limitations of the company they are cooperating with. Eventually, a student team may find it difficult to finish its project because they worked in a direction unsuited to the company's needs.. Such situations are also challenging for the educators to manage. They need to mentor the students thoroughly.

Drivers

The main driver behind implementing the Master programme were the Deans of the Faculties of Social Sciences and Engineering and Natural Sciences. They felt that it would be important to establish a joint study programme that targets the realisation of technical innovation opportunities. The world-wide economic crisis in 2008 had brought an enormous meltdown to Iceland, which triggered interest in entrepreneurship and innovation. This also applied to students. At the outset, the Deans reflected on whether it would be better to offer such a programme at a bachelor or master level. They decided that a master level would be more appropriate to build on existing sound knowledge and skills.

Challenges

The biggest challenge of the joint programme is working across different faculties of the University. Difficulties arise when decisions have to be taken jointly but responsibilities, for example for educational matters, are unclear. Personnel resources have to be budgeted for but it may be unclear who is to pay for what. The University's administration so far does not have rules, mechanisms, and routines for interdisciplinary study programmes. For example, should an educator quit, it is unclear who would be charge of replacing him or her. Moreover, faculties may have different schedules that need to be aligned for the joint courses. Much is based on good will.

Changes and plans

Currently, representatives from all of the University's schools develop the Social Spark course for social innovation and social entrepreneurship. It is to train students as agents of change in society Student interest is increasing in these subjects. The course will also align with the United Nations' Sustainable Development Goals. The course developers are also thinking of integrating such a social entrepreneurship course into the Master's programme in Innovation and Business Development.

4. Stakeholders

How stakeholders are involved and contribute to the outcome

The innovation project course is strongly connected with the business community. The faculties have established cooperation with firms. Examples include banks, a medical device company and a fish processing company. A group of companies that are innovation leaders in Iceland are involved. Experts from companies come to the course and present challenges for students to work on in their projects. In the University's experience, the most powerful innovations often occur when experts with different

backgrounds come together. Moreover, experience shows that realising good ideas requires financial backing from the outset.

5. Outputs, impacts, and lessons learned

Impacts

The impacts of the Master's programme are difficult to assess. While the programme includes very practical courses on product and business development, it does not aim to create new businesses. Some graduates have started new companies, but the University does not track them. Rather, the programme tries to shift students' mindset towards being able to seek individual opportunities, and towards seeing opportunities more than risks. The Faculty of Engineering finds it difficult to measure such mindset shifts. The study managers believe that the entrepreneurship courses will help the students both to access jobs and in their professional lives, wherever they work in the future. The Faculty also has "star" graduates, for example there is one who is involved in today's prominent Icelandic start-ups.

Lessons learned

The study managers emphasise that the combination of theory and practice as well as bringing together students from business and engineering are very valuable to develop innovative thinking and acting.

Sources

This case study was prepared by Dr. Stefan Lilischkis from empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, Bonn, Germany, through collection and analysis of broad documentation about InnoEnergy and interviews with key representatives from the University.

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Links

Master's programme in Innovation and Business Development:
https://www.hi.is/nyskopun_og_vidskiptathroun (in Icelandic)