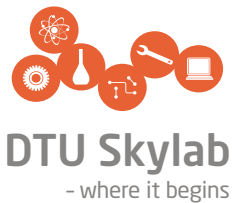


DTU Skylab is an innovation hub located at the main campus of the Technical University of Denmark. We have 1500 m2 of workshops and office facilities which can be used for free.

Our mission is to support student innovation and entrepreneurship at DTU. We want to create a vibrant, experimental space where creativity and entrepreneurial spirit flow. Further, we want to enhance cooperation between students, the business world and other external partners.

2015 numbers:

112 student start-ups and pre-startups used our start-up services, 31 new companies were registered by DTU students, 14 courses were taught bringing more than 500 students to DTU Skylab, Open Innovation X was launched attracted more than 90 students solving seven challenges, 214 prototypes were made in our workshops, 3D printers extruded more than 18,422 meters of ABS filament, 59,156 visitors stopped by and 35,260 cups of coffee consumed.





A BUILDING FOR INNOVATION

By Birgitte Ramso Thomsen
Journalist

The unique 1500 m² Skylab building, which is being used by more and more students, is a place with high ambitions and where theory and 'innovation in practice' literally go hand in hand.

DTU Skylab, August 2016, 9am. The closing workshop is well underway. Six students from the Entrepreneurship Summer School are presenting their ideas for start-ups, which they have developed over the past three weeks of the course.

Pitch, review of business model and then a ten-minute Q&A. In English! This morning's ideas are about solving 'pains' with software, providing online services for accountants, course booking for sports clubs, or showing guitar players opportunity how to build pedals from scrap.

The panel of internal and external experts give praise and constructive critique and ask the students about their journey from technology to business. They ask about scalability, segmentation, cost structure, unique competences and prototype testing. A frequent feedback message is that the students should make sure their value proposition is crystal clear. How does the customer benefit from the product? What drives demand? Is it the price, the functionality or is it because it is an attractive brand?

It's all in the air. The bright yellow, transparent Skybox is the physical framework for the course; a floating hub in Skylab's building 373A on the DTU campus in Lyngby.

Open, visible, flexible

DTU Skylab is a sweeping and exciting building, with a modern, open and flexible structure designed to encourage and inspire exploration and knowledge sharing, according to the Juul Frost, the architect firm behind it. The firm carried out a sophisticated needs analysis on which to base its refurbishment of the former machine shop. The new building stood ready for use in 2014.

Ambitions are high, also with regard to how the building can be used. Helle Juul, architect, describes DTU Skylab, with its relaxed and mobile lay-out, as "*a platform for testing and for dialogue and where everything can be examined and tested for everyone to see and across disciplines*". Students swarm to be a part of it. The counter by the door registered 60,000 visits in 2015. In August 2016, the number was already 44,000.

The ground floor offers a single large transparent space. From the centre is a view straight through the workshops, e.g. a machine shop, electronics shop and chemistry laboratory. There are trees in pots and room for 200 people at lectures, or for many small groups of people at movable tables. There is room to host an event, or something completely different. There is a central kitchen for preparing beverages and food. A solid iron staircase leads to the first floor, with the administration, group rooms and workstations. Some of these are shaped as long black counters with high chairs and a view of the large ceiling-mounted crane, which is both a reminder of the former use of building and a tool for moving heavy objects.

"It's all in the air. The bright yellow, transparent Skybox is the physical framework for the course; a floating hub in Skylab's building 373A on the DTU campus in Lyngby."

“Ever since it was built I’ve thought: ‘That looks cool. I want to be a part of that.’ I had no idea with what or how.”

Efficient start-ups

The workshop facilities and the conspicuous building were what attracted Martin Sander Nielsen and Christian Michelsen to the building. The two students were awarded Annual Student Start-Up prize at DTU in 2016.

“Ever since it was built I’ve thought: ‘That looks cool. I want to be a part of that.’ I had no idea with what or how. As I’m also a super geek and I thought: ‘Wow! Just look at those workshops with robots and CNC routers that I’d otherwise never have direct access to,” reminisces Christian.

Both students have finished their engineering degree this year but they are still active at Skylab. They are currently getting their business up and running; Relibond, which develops joining technology for high-voltage cables. They have just submitted their patent application and they give the facilities at Skylab a major part of the credit for shortening the process for them.

Martin explained: *“Our start-up process has been lean and efficient. Free access to materials, machinery, storage space - without red tape and with assistance from the chief engineer has been crucial. Our ‘time-to-answer’ has been short. We don’t compromise on quality, so there are plenty opportunities and only few limitations”.*

Skylab has also been able to help the two partners in their endeavours by hooking them up with mentors and relevant contacts, events and exposure.

More like an after-school club for grown-ups

The two students also highlight the unusual interior lay-out of the Skylab building as inspiration to explore and experiment.

“It’s as if the Skybox floats freely in the air. It’s the way they have incorporated the industrial element: An old machine hall with a crane. Designer furniture, rather than the usual institutional furniture. It is more like an after-school club for grown-ups. It encourages you to be creative and innovative. Everything you need is here,” said Christian.

From the very first day, among other things, Martin noticed the lamp made from spectacle frames and the wall clad with many different, tactile materials. It made him promise himself that he would do what he could to be innovative as well.

“The fact that the building is never fixed is a contributing factor in itself. Both that the lay-out is flexible and that something’s always going on down on the ground floor. After courses, the building is filled with all kinds of strange gadgets, a staircase light show and other entertaining leftovers,” explained Christian.

Assistant Professor Ali Özkil from DTU Mechanical Engineering has also experienced how students are inspired by Skylab’s modern framework. He teaches two courses in product development, Mechatronics Engineering Design and

Design for Interaction, and he sees it as a huge advantage that the students can go straight from the course to the workshop to use the 3D printer or other equipment.

“After the students have been at Skylab for 13 weeks, they have gained a much better picture of what Skylab is and what it has to offer, for example with regard to prototyping, entrepreneurship and how to get help with your start-up. Many students are also inspired by all the events and innovation competitions.”

Sometimes, the Skylab building even serves as a guinea pig in courses. For example, when students work on technical challenges such as brewing coffee on time! Ali is pleased that Skylab is open towards this kind of interaction too.



"What I think are the most important elements in the course are: the idea-generation process, the way the forming of the interdisciplinary teams takes place, the integration and use of IPR knowledge as an integrated part of the idea-generation process, the 'storyteller' principle, and attending small informal seminars on a daily basis at which personal entrepreneurship experiences are communicated. Working in parallel with a student team's own idea of a start-up product creates a realistic framing of the seminars and makes them very active."

Lotte Bjerregaard

Associate Professor at the Department of Civil Engineering, DTU - teacher at the BSc course High-Tech Entrepreneurship





TALENT: ACADEMIC SKILLS + EXTRA COMPETENCES

By Birgitte Ramso Thomsen
Journalist

How do you discover talent at a university? How is talent connected to entrepreneurship? And how should universities foster them both?

Talent and elite are no longer foreign words within the realm of Danish Universities. Throughout the century, programmes and courses have been developed, with or without support schemes. But what talent actually means is still under debate.

“There is no consensus about what a talent actually is. And I can understand that, since we are moving beyond universities’ previous image of themselves. Up to now, talent development has meant identifying students with the greatest potential as researchers. This is the classic approach, and it is still applied today,” says Pernille Berg, head of research at the Danish Foundation of Entrepreneurship, who evaluates programmes and teaching in entrepreneurship within higher education.

However, a broader understanding of the concept of talent has emerged, focusing on realising the students’ inherent potentials, even beyond academic subject areas. Moreover, there is growing focus on training entrepreneurship as a part of higher education programmes.

Feedback from others than researchers

This is where universities will take on a much bigger task than they are traditionally used to. According to surveys by the Danish Foundation of Entrepreneurship, researchers and teachers acknowledge the need for increased feedback from students on matters other than academic skills and standards, but they are finding this a difficult task.

“Today, teachers consider themselves as responsible for making sure that academic goals are reached. They must keep to the curriculum and the executive order and they must ferry students through the programme so they become skilled engineers, for example. But when you are looking for talent, you have to look at the whole person. This demands more of the teacher. This does not come naturally to researchers, who do not feel they are qualified to do this. Therefore, we usually turn to support systems, student counsellors, career counsellors or an incubator, where help is available from others than researchers. That’s one way to do it.”

At the same time, society demands that knowledge and research should benefit others. This is where mentorship programmes, incubators and innovation hubs such as DTU Skylab come in.

“Several universities assume that entrepreneurial talents will seek out start-up environments. So there is a hypothesis that merely establishing an environment in which students can be with others to realise their talents is enough, and talents will find their own way to such an environment. Universities have also expanded on this through the Venture Cup competition. They are trying to inspire students to view themselves as entrepreneurs,” says Pernille Berg.

Additional competences – beyond the academic

Line Gry Knudsen, as Education Lead at Climate-KIC Nordic (a partnership between universities and private companies) is specifically looking for university

“But when you are looking for talent, you have to look at the whole person. This demands more of the teacher.”

students with innovation talents within the area of climate and environment, including at DTU Skylab.

She is very pleased to see that students are interested in learning to apply their academically based knowledge in practice – even while they’re still studying and across different disciplines.

“We want to spot those who can go beyond this profile; Beyond the academic norms. We are looking for someone who has extra capacity and an entrepreneurial mindset.”

“We are already trained in spotting talents based on academic characteristics: high grades, good attendance and keeping to deadlines. However, for us, it’s also about expanding so that we open up for other dimensions in talent profiles. We want to spot those who can go beyond this profile; Beyond the academic norms. We are looking for someone who has extra capacity and an entrepreneurial mindset. At Climate-KIC we look at their motivation to solve practical problems related to climate-change”.

Breaking into the business sector requires skills that universities have previously not focused on.

“It’s about T-shaped people. Strong academic skills and the cross beam of the T: what were formerly referred to as “soft” skills such as collaboration, initiative, creativity, innovation, empathy, fortitude and intercultural abilities. These skills are in high demand. Danish universities have been a bit slow in realising this,” says Pernille Berg.

Line Gry Knudsen has noticed that many universities have begun focusing on specific student qualities: collaboration, a global view, the ability to work across disciplines and within an international environment.

“Being able to translate academic skills into solutions or processes is not so much a specific competence; it’s more a mindset. We are keeping our eye on this, and any university can do so, regardless of the specific discipline.”

More focus on talent development at Danish Universities

Since 2000, the concepts of excellence and talent have become more accepted at Danish Universities. In 2005 the Ministry for Children, Education and Gender Equality specified talent as a priority, and after the Ministry's TalentCamp05 concept development conference, initiatives such as *Akademiet for Talentfulde Unge* and *ScienceTalenter* were launched.

According to the 2009 PISA report, only very few Danish students reach the highest percentiles. This was interpreted by critics as an expression of a cultural problem within our educational traditions, which are based on values such as "equal opportunities" and "education for all".

In 2006 the Government introduced their strategy to turn Denmark into "a leading information society with strong competitiveness and strong cohesion". For the first time, the goal to discover "talents" was explicitly defined. Since 2006, the European Globalisation Adjustment Fund has set aside funds to develop elite programmes and modules at graduate level at universities.

Since 2014 it has been possible for universities to acknowledge particularly talented students with:

- a distinction on their diploma
- extra-curricular activities on their diploma
- extra ECTS points – for e.g. participation in talent programmes

DTU in front

DTU and CBS both have specific talent programmes. DTU is the only university that offers an honours programme for all 28 graduate programmes.

Source: Marca V.C. Wolfensberger: Talent Development in European Higher Education, 2015