DTU Management
Danmarks Tekniske Universitet
VÆKSTHUS

Evaluation Report

Knowledge based Entrepreneurship

Copenhagen University Faculty of science

29 January 2008

Context

Copenhagen University in a collaborative effort with IPL, now DTU Management, offers a graduate course on applied entrepreneurship to master students at Faculty of Science. First course was rendered 2004-2005. Hence this course is number 3, and the number of graduate students passing, is now approaching 150.

The e'ship course is a practical and hands-on approach to opportunity-driven creativity, business modeling and business planning, generating more enterprising students with a vision of commercializing advanced knowledge.

Students are divided into groups of 3-6 participants, which generate own product- or service ideas, analyze the market, contact customers, develop start-up strategies and plan the execution of the venture. Coaching is available throughout the course.

At the end of the course, the students present realistic business start-up concepts at exams.

In 2008 we updated exams form and grades to comply with new regulations on individual evaluation and new internationally compatible grades (the seven-step scale).

Course specifications

9 lectures x 3 hours from November 2007 to January 2008

Themes: Applied entrepreneurship, opportunity-driven creativity, start-up strategies, business planning, market research & analysis, sales & marketing, management, budgeting & cash flow projection, venture capital & financing, business law, patenting & licensing (IPR), cases.

Number of students:	49 passed	(41, 79 in 2006, 2005)
Number of groups	15	(13, 18 in 2006, 2005)
Average grade:	7,8. Dev. = 3,6, seven step Scale. Av. performance = 7. See below)	
		(2006, 2005: Av. = 9,6 - 9,2 , 13, scale,)
Workload	7,5 ECTS. With 49 students, and 25 hours/ECTS app. 9.200 hours have been invested in this e'ship course.	

Evaluation, per group/student:

	15 minutes presentation of business plan
	5 minutes individual presentation of personal theme
	10 minutes discussion and feedback
	10 minutes evaluation
Teacher:	John Heebøll, associate professor, IPL, DTU
Internal censor	Georg Strøm, associate professor, DIKU, KU.
Assistant teacher	Alex Farcet.

Course evaluation principles and results

Students evaluate the course while waiting for their own marks at exam. 44 out of 49 students submitted the evaluation form. A graphical summary is presented next page.

Further, teacher, assistant teacher and visiting lecturers are evaluated.

Predominantly, the evaluation is good, and it is fair to conclude, that this course constitutes a good basic course in knowledge based entrepreneurship.

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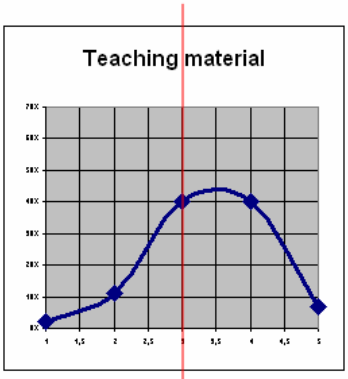
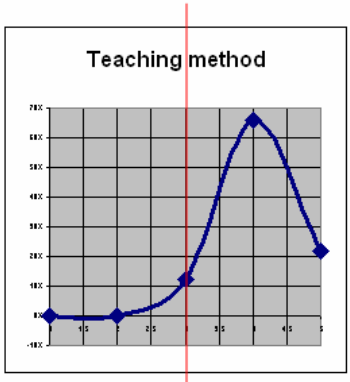
DE EUROPÆISKE FÆLLESSKABER
Den Europæiske Socialfond

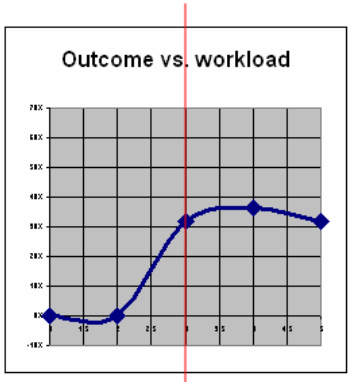
Copenhagen University Faculty of Science

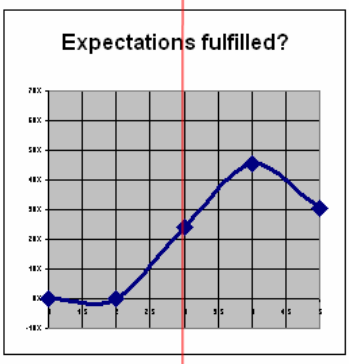
X - axis: 5 categories: 1 = Very Poor. 2 = Poor. 3= Acceptable. 4 = Good. 5 = Very Good
Y-axis: percentage of answers, falling in category 1 - 5 Red line = acceptable

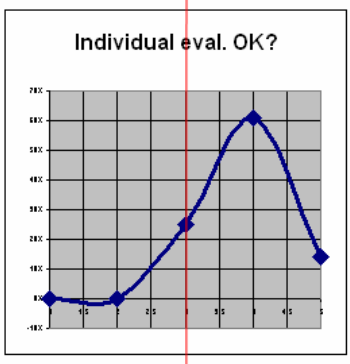
The course



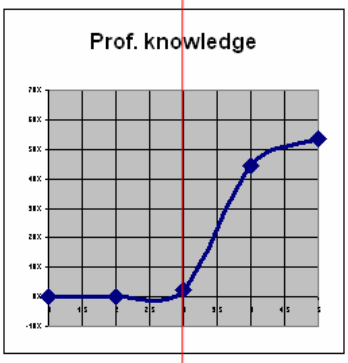


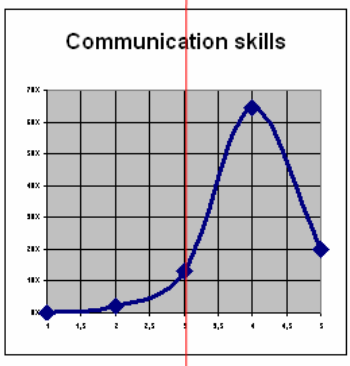


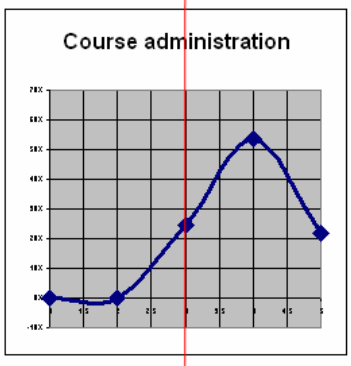


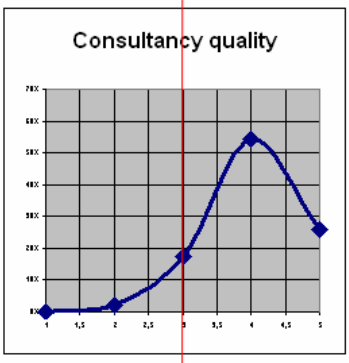


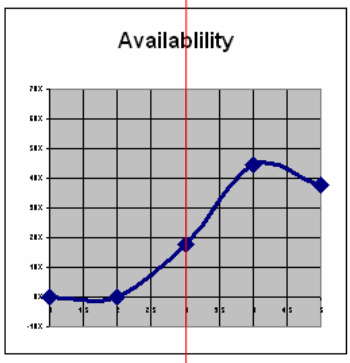
The teacher



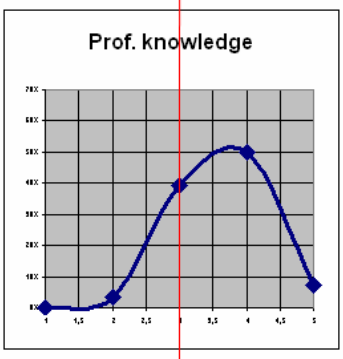


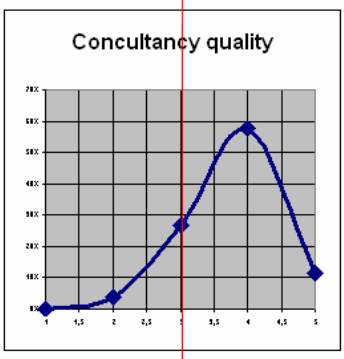


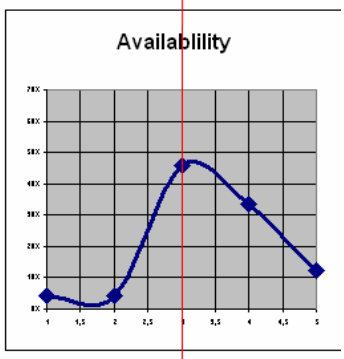




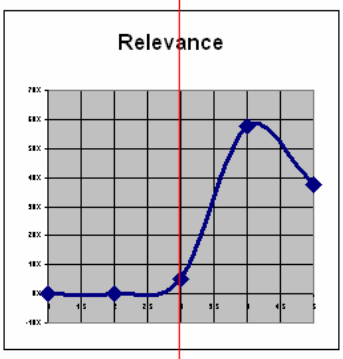
The assistant teacher

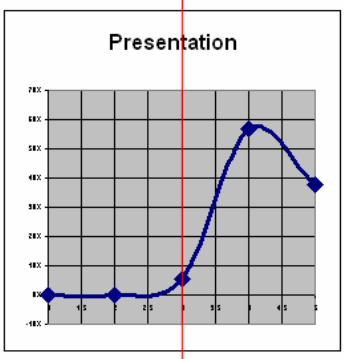




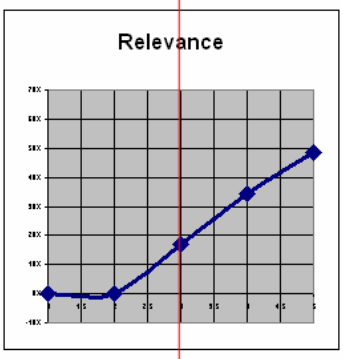


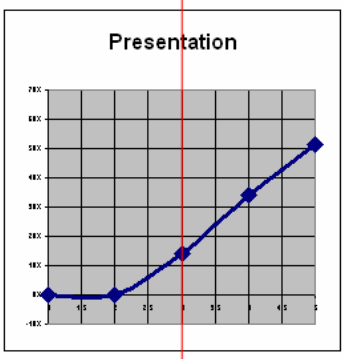
Guest lecturer 1



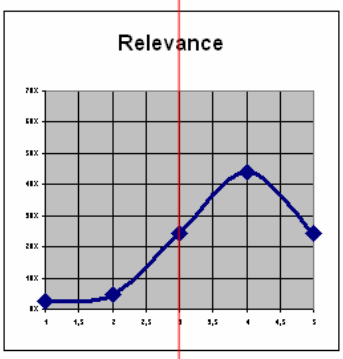


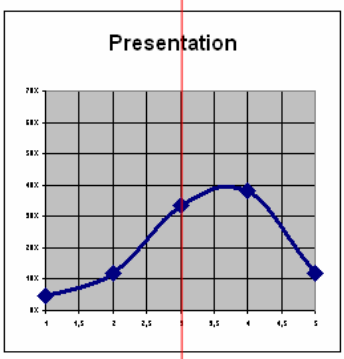
Guest lecturer 2





Guest lecturer 3





Comments to the evaluation

1. The teaching language is English. We started a little early on this, 2006 - 2007. Clearly the students did not like it at that time, but they seem now to have adjusted to the situation. So language was not a problem in 2007 – 2008.

2. The teaching materials leave room for improvement. The students used a prototype textbook, not yet fully completed. Slides are available in a PDF hand-out version from the course website at www.entrepreneur, immediately before or after each lecture

3. The didactics (teaching methods: lectures with group work in a parallel) are well accepted. This course at least does not support the viewpoint that lectures are inferior in teaching. It probably works, since lectures go together with other supplementary learning methods.

4. Perceived outcome versus workload receives high marks, which is certainly one of the most encouraging feed backs imaginable. Same goes for fulfillment of expectations

5. This year we implemented the individual evaluation principle. Students drew a question out of six and had five minutes to elaborate on this while being alone in the exams room with teacher and censor. In general performances corresponded to group performance, and hence marks tended to equal group average. In a few cases, higher individual marks were achieved, compared to group levels. This is consistent with observations from the DTU 2007 e'ship course.

6. The individual presentation combined with a group presentation, lasting altogether around 35 – 45 minutes combined with a written business plan, constituted a comprehensive basis for the evaluation of the individual as well as group performances at exam.

7. We found the seven-step scale, referring to learning objectives easy to work with and grades given by teacher and censor rarely differed by more than on step.

8. Teacher and assistant teacher evaluations indicate a widespread acceptance of what we have to offer. Same applies to visiting lecturers.

9. The teacher's own observations: Overall a good course and a real good class. One may assume that with so many students, classes do not differ from year to year. This is not so. While the DTU class, running September to December 2007 was kind of dull, the KU 2007-2008 class in general displayed involvement, good spirits, humor and a lot of questions. Altogether, teaching at KU-NAT 2007-2008 was a good experience. A few issues however should be addressed:
    a. The modulus structure at KU-NAT makes it a bit difficult to cut out some time for finalizing written materials before exams. As it was, we had only one day between last lecture and exams, making the last lecture day a nightmare for students and the subsequent reading of 15 business plans quite a tedious task.
    b. The KU-NAT e'ship course is an adapted variation of the DTU e'ship course. At DTU, 13 lectures are held over the semester, whereas the KU-NAT course is concluded in 9 lectures only. Consequently, speed is high and lectures are long. This is reflected in quite a number of comments received. An ideal length for this basic course would be around 12 – 15 lectures.
    c. DIKU students hate Microsoft Frontpage edited web pages. We can live with that. In general the course website makes teaching material easily available at the appropriate time.

d. A few students left the course during the semester, without informing their groups or informing them very close to exams. This is quite a ruthless behavior, as will be pointed out in future courses.
e. Quite a number of students complain that far too many questions were allowed, breaking up the momentum of lecturing and stressing further the overloaded time schedule. This is taken ad notam. In general, questions allow the teacher to find his audience, but clearly it can be overdone.

Comments received from the students:

I appreciate: Comments reflect the realistic approach to business start-up, the reality-touch provided by visiting lecturers and the general entrepreneurial and enthusiastic approach that characterizes this course.

I criticize: Comments point out lack of structure in the lecture plan, the still not finalized textbook, the lack of specificity in a general basic course, a prevailing reaction against many questions during lectures and last but not least complaints about the long lectures owed by a compressed lecture plan.

I suggest: more lectures, maybe twice a week, written questions to reduce disturbances, questions at the end of the lectures, more courses toned to match specific knowledge like IT or biotech, which requires quite different approaches and financing.

Course development

Following is subject to change from 2008-2009:

1. Shorter lectures, more lectures.

2. Updated and completed teaching materials

3. Assignments – homework (mostly like specific business problems related to a start-up situation – also known as case-based teaching) should be developed,

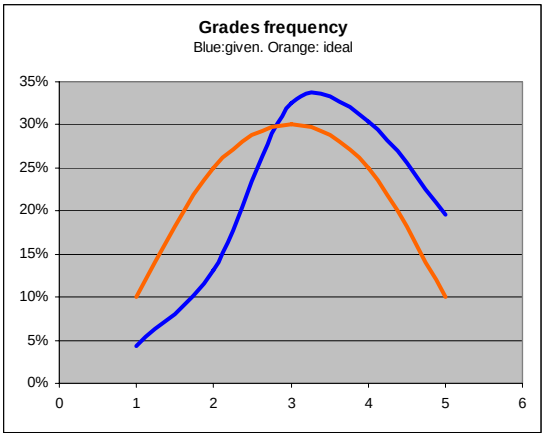
.

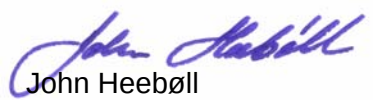
A note to the new seven step scale

The graphics indicate the grades given as compared to an ideal long-term statistics. Clearly, high marks are over-represented. However, we do find that our evaluations are just, and censor and teacher rarely disagreed by by more than one step.

We used a semi-quantified evaluation principle, comparing individual performance with specific learning objectives as published in the course manual.

This principle is easy to work with and will be further Integrated in the course in the future, allowing the students to better identify their targets.





John Heebøll
Associate professor
DTU Management

Projects, 2007-2008

GROUP 1
Group 1 is a real estate developer, focussing on facilitating complex buying/building of domestic houses.

Pain
Building a house that fulfils market demands is a difficult task to private persons. Since a "seller's market" situation has prevailed for some years, pushing prices sky-high, real estate and houses, designed for low cost procurement are presently being sold to keep prices at an affordable level.

Value creation
Buying land, establishing and selling modern plots in green surroundings and sound zero-energy houses, designed to match the market demands and –trends in packet solutions at fixed prises

Jury
Private house buyers, primarily aged 25 – 40 years

GROUP 2
Group 2 is working as a consultant practice selling health advice to corporations.

Pain:
Organisations within the public sector are struggling with a high number of absence due to illness.

Value creation:
As a consultant practice our goal is to help these organisations lowering the amount of absence through exercise and nutrition.

Jury:
Companies within the public sector where the average amount of absence per employee is the highest.

GROUP 3
Group 3 is working within web based programming/fitness.

Pain:
Obesity is an increasing problem in society, and people can't find the time to go to the gym.

Value creation:
Group 3 offers a membership website with professional and capturing training exercises and nutritional advice, aimed at weight loss.

Jury:
Obese people and their organisations and families, medical advisors, doctors and politicians within public healthcare. professionals within fitness and nutrition.

GROUP 4
Group 04: is working within the music Industry

Pain:
Globalization, broadband, and technologies such as P2P and Bit-Torrent have caused major changes within the industry. Hard-copy retail and record companies have seen their revenue decrease for almost one decade now. The end-user / listeners expect music to be free, but no one has satisfied this need yet.

Value creation:
We will satisfy the listeners demand by offering them free music in order to attract them to a variety of product and services they are willing to pay for. In addition we will offer businesses within the industry the possibility of entering the future music paradigm.

Jury:
Listeners, bands, record labels

GROUP 5
Group 5 is working within software development.

Pain:
NGOs relying and depending on donations from private people.

Value creation:
Group 5 offers a software tool and a concept that provides NGOs with a simple solution to attract private donations. The donators will receive an attractive product for their mobile phone or computer in return.

Jury:
Users of mobile phones and computers

GROUP 6
Group 6 is working within online booking systems

Pain:
Restaurants need to reduce human resources currently occupied with customer communication.

Value creation:
Group 6 offers an online booking system for restaurants that is easy to use for both customers and employees. Restaurants will attract more customers. Table management will be faster and easier.

Jury:
Restaurant owners, Restaurants management

GROUP 7
Group 7 is in the audio-visual field, providing SW/HW combinations to existing equipment.

Pain:
Projectors often cause problems when presenters connect their own laptops.

Value creation:
Group 7 offers a small embedded computer system that allows users to show presentations without having to bring their laptop.

Jury:
Operators of lecture rooms, course facilities, conference centres/halls, suppliers of audio- and video equipment to said buyers, professional presenters like professors, speakers, marketing people.

GROUP 8
Group 8 works within software development.

Pain:
In big cities many drivers have to drive around and check multiple locations to park their car.

Value creations:
Group 8 offers a system based on statistical information, which lets the user know - via SMS and internet - where it is likely to find an open parking spot near their destination.

Jury:
Drivers and municipality authorities responsible for parking.

GROUP 9
Group 9 is working with medical imaging systems

Pain:
X-ray scanning is an increasingly important diagnostic tool. Still, the technology is not yet fully exploited, and at the same time, the scanner market is highly competitive with several major players trying to achieve a dominance.

Value creation
Group 9 controls a patented technology, capable of improving the image quality and/or reduce the x-ray exposure by up to two magnitudes. This offers a strong competitive edge to any scanner producing companies with access to our technology. Thus group 9 aims to set up am IPR-holding R&D company offering proprietary technology to major scanner companies, who again will be able to offer new scanning devices with increased diagnostic performance to the benefit of patients.

Jury:
Hospital economy responsible management, medical doctors, patient associations, scanner producing companies.

GROUP 10
Group 10 is working with software development of stock analysis.

Pain:
New investors need guidance to develop their optimal portfolio.

Value creation:
Better return on investments. Private investors can explore and analyze their investment profile. Via simple graphics they can learn about the mechanisms in the stock market and they can study the consequences of interactions.

Jury:
private investors and their associations, investment brokers, banks, auditors and lawyers consulting private investors.

GROUP 11
Group 11 is working within molecular biology/nanotechnology

Pain:
DNA microarrays are indispensable to microbiological research despite the fact that the conventional technique is extremely expensive and compromises the trustworthiness of the obtained data.

Value creation:
Our microarray is based on a radically different technology that allows price reductions exceeding 50% while at the same time increasing the accuracy of the data.

Jury:
Researchers, the scientific community

GROUP 12
Group 12 is working within matchmaking.

Pain:
It is a detective-like task, for students at the faculty of science , to discover the options that they have available within bachelor's and master's thesis , company internships or projects.

Value:
Our simple webportal will allow students to easily find a project of interest, and to earlier make a decision of where and what they wish to work with. For employers and scientists, the webportal will give them a better chance of finding a qualified candidate, and of course exposure.

Jury:
Students, scientists and employers

GROUP 13
Group 13 is working within public and elite sports

Pain:
Beachvolley is expanding tremendously in Denmark. Team Denmark is striving to achieve Danish participation in the Olympic Games. We have no beachvolley facility at Zealand and only one in central Denmark. To play at elite level we need one in the Copenhagen region.

Value proposition
A state-of-the art facility to the elite players, made economically feasible by also allowing general public use at specific hourly slots, as well as a tightly run events and fundraising management

Jury
Team Denmark, the volley players association, amateur players.

GROUP 14
Group 14 is working within gas removal

Pain:
The malodourous gasses of flatulence represent a great problem for vanity-seeking people as well as people suffering from various diseases.

Value creation:
Group 14 offers a product that allows fast and safe filtering-based removal of compounds malodorous in flatulence. People will never again be subjected to embarrassing situations when passing gas.

Jury
Cosmetic companies

GROUP 15
INVAC is working on vaccine enhancing technologies applicable to all cancers and infectious agents

Pain:
Approximately half the population in the western world die from cancers and infectious agents

Value creation:
INVAC's technology (if development is successful) allows treatment of hitherto intractable infectious agents and tumours. It can also replace many existing technologies due to increased efficacy, reduced production cost and more practical administration.

Jury:
The clinical scientific community. Health authorities and health insurance companies. Pharmaceutical companies, producing and distributing drugs on a global scale.