

Evaluation Report
Knowledge based Entrepreneurship
Course 42435, Autumn 2007

9 January 2008

Context

DTU has provided a graduate course on applied entrepreneurship to master students since 1993. Hence this course is number 15 in a row, and the number of students, who passed it, over the years, is now passing the thousand.

The e'ship course is a practical and hands-on approach to opportunity-driven creativity, business modeling and business planning.

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

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

In 2007 we updated exam form and grades to comply with new regulations on individual evaluation and new internationally comparable grades (the seven-step scale).

Course specifications

13 lectures x 3 hours from September 2007 to December 2007

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

Number of students: 56 passed (70 in 2006)
Number of groups 15 (19 in 2006)
Average grade: 9.0. Dev. = 2.5, seven step Scale. Average performance = 7)
(2006: Av. = 9.4. Dev = 1.1, Scale 0 to 13. Average performance = 8)
Workload 5 ECTS = 125 hours. With 56 students, app. 7.000 hours have been invested in business creation and -planning at course 42435, 2007.

Evaluation, per group/student:

15 minutes presentation of business plan
5 minutes individual presentation of personal theme
15 minutes discussion and feedback
10 minutes evaluation

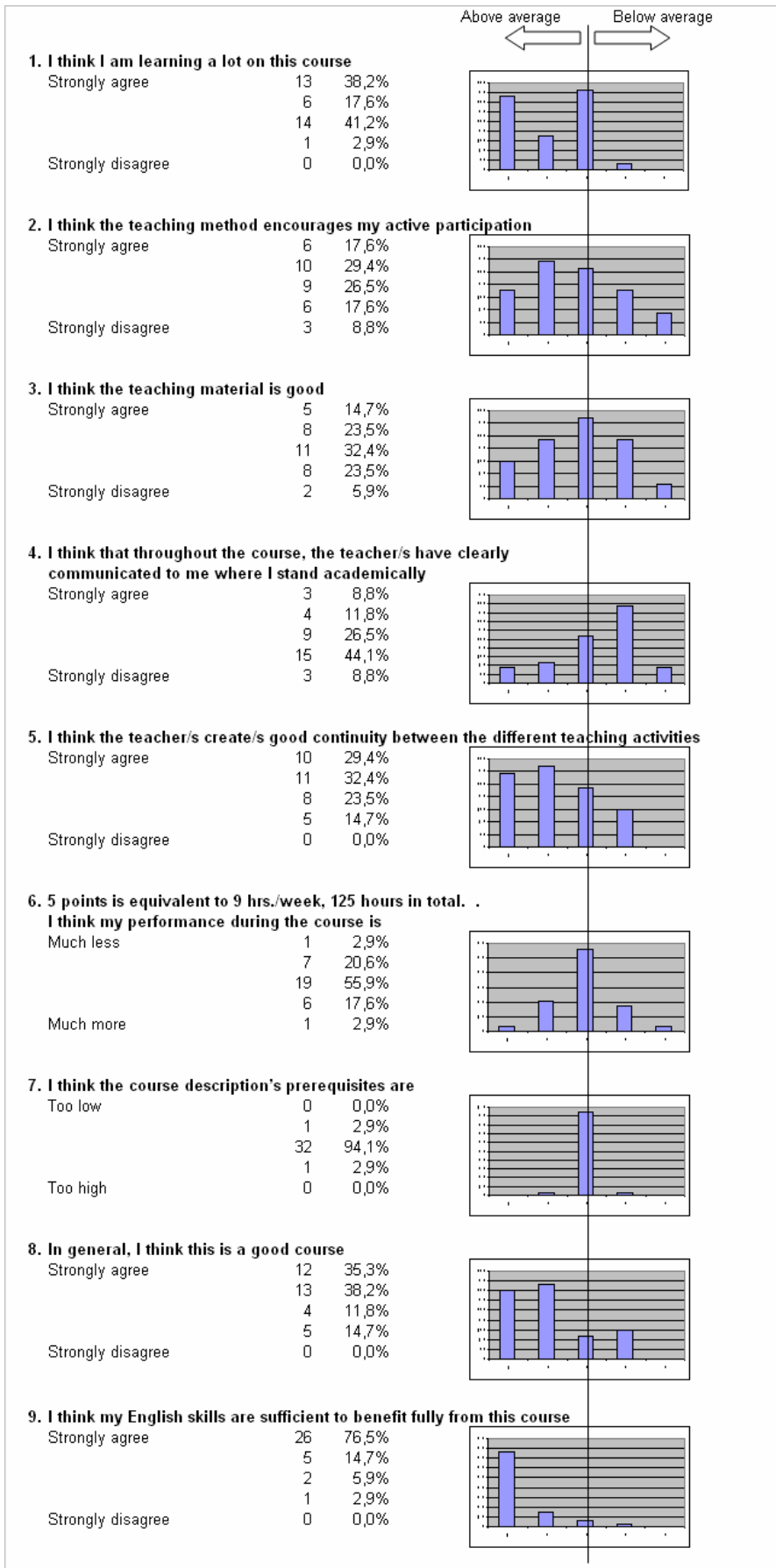
Teacher: John Heebøll, associate professor, IPL, DTU
External censor Kristian Philipsen, associate professor, Syddansk Universitet, Kolding
Coaches Alex Farcet, Hjalte Højsgaard and investment managers from SEED.

Course evaluation principles and results

Students are encouraged to evaluate the course, late October after 9-10 lectures. A digital questionnaire is available at the intranet (CampusNet). 34 students complied. (30 in 2006). A graphical summary is presented next page.

Further, the teacher and the course teaching principles are evaluated. A summary sheet is available to relevant readers upon request. In average the feedback is very encouraging and a predominant reason why this course has been repeated now 15 times by same lecturer.

The evaluation form has changed since 2006, preventing backward comparison to previous years.



Comments to the evaluation

1. The teaching language is English. We started a little early on this, summer 2006. Clearly the students did not like it at that time, but seem now to have adjusted to the situation. So language was not a problem in 2007.
2. Most students find that they learn a lot on this course. Probably indicating that we cannot include more information or themes in this 5 ECTS course.
3. Likewise, a high proportion of participants find that the teaching methods encourage their active participation. This course calls students via e-mail, the day before each lecture, summarizing the agenda, proposing pre-readings and suggesting progress of the mandatory business plan. Hence, group work and preparing for lectures is made easy.
4. A majority finds that their academic standpoint during the course has not been communicated to them. This is a fair statement. We don't do individual evaluations on the fly.
5. A little more than half of the students find the teaching material acceptable - to good. We have a new textbook in the making, and used an early prototype version for the course. Improvements + lists and references will be added to improve this. Further, all slides are uploaded to the course site immediately after each lecture. So are spread sheet models and internet links. So at least we can say, that fully covering teaching material is available
6. The workload seems to match this 5 ECTS course very nicely, meaning that in average, each student spends about 125 hours altogether on this course.
7. Everybody seems to agree, that the prerequisites required for signing up to this course are OK as they are. Actually we require very few preconditions, and we are quite liberal in accepting deviations, since this is a basic course taking the participants from square one. So far, only language skills have proved to be of essence – and that only to very few. See also the last graph on language skills.
8. More than 2/3 of the participants find that the course is good/very good. This is probably the most encouraging feedback of all, adding new energy and inspiration to us involved back stage.
9. The teacher's own observations: Overall a good course and a good class, but a few issues should be addressed:
 - a. The CampusNet booking facility is difficult to use for planning and administration, since the course is heavily overbooked with app. 45% no-shows at first lecture, indicating some non-intended though widespread cherry-picking amongst courses.
 - b. The students seem to run into a work overload situation, sometime between end October to late November, resulting in a further massive no-show, creating sometimes a quite embarrassing situation when external lecturers are visiting us with 10-15 students in the lecture room.
 - c. The students did not adapt easily to the new regulations on individual assessment, in spite of quite comprehensive information throughout the course. Individual grades given at exam, were received in anger and little acceptance if below group average. This could be a temporary problem that repairs with time, when the full impact of this principle has settled. Clearly groups still work as groups: one for all and all for one. The feeling of being a Richelieu when handing out individual grades below group average is quite pronounced.
 - d. 5-6 students left the course during the semester, without informing their groups. This is a quite ruthless behavior, as will be pointed out in future courses.
 - e. The McKinsey business plan competition is quite an asset, creating a competition between the project groups that catches most of the students.

Comments received from the students:

I appreciate: 12 comments received to commend the visiting lecturers, the targets, the McKinsey & Venture cup competitions, the assistant teachers, the themes and issues covered, the realistic approach to business start-up, and the general entrepreneurial and enthusiastic approach that characterizes this course.

I criticize: 10 comments received, addressing redundancy owed to quite extensive involvement of external lecturers, lack of structure/logics in the lecture plan, the still not finalized textbook plus some visiting lectures a bit out of scope.

I suggest: 11 comments received, ranging from restructuring the lecture plan, to getting some cases to work with, to less lecturing and more group work with assistant teacher at hand, more involvement in group project management, a more precise target definition to begin with, assignments, more on economy and budgeting.

Course development

Following is subject to change from 2008:

1. Shorter lectures – more time for group work in scheduled sessions with assistant teachers at hand,
2. Updated and completed teaching materials,
3. Assignments – homework (mostly like specific business problems related to a start-up situation) should be developed,
4. A bonus program to attract more students to lectures, mid to late in the course,
5. More emphasis on the impact of individual assessment at exams throughout the course.

A note to the new seven step scale

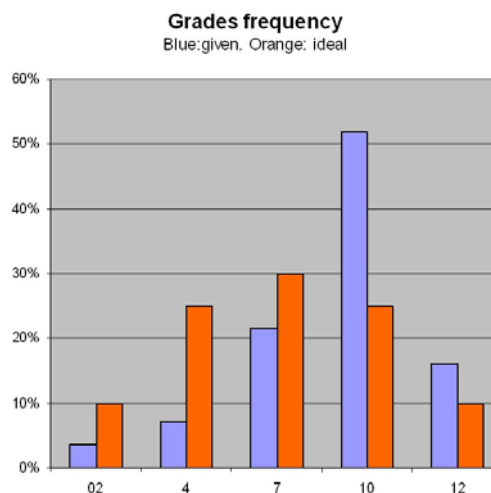
The graphics indicate the grades given as compared to an ideal long-term statistics. Clearly, high marks are over-represented. However, we do find that our evaluations are justified, and rarely disagreed by censor and teacher by more than one step.

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

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 Engineering



Projects, 2007

1. The Intelligent Refrigerator

Background

RFID technology will be around in a few years, offering the opportunity to mark groceries, not only with price, but also date stamp, run-out time, weight, calories, quality etc.

Pain

Refri-manufacturers are pushed to offer the intelligent refrigerator in a highly competitive market. Top-end intelligent models are a precondition for exposure and image.

Value proposition

We offer the enabling technology: software and hardware combined, that taps into the RFID information that passes in and out the refri door.

Note

We will locate our business upstream the value chain to offer our products to either refri-manufacturers or even earlier on to producers of refri components such as Danfoss.

2. Metode til reduktion af omkostninger v. boligbyggeri

Idé

At levere **skeletter med en hurtig-tilkoblingsmekanisme**, til moduler til modulbaserede etageejendomme eller private parcelhuse. Disse nye skeletter muliggør at modulerne kan til- og frakobles hurtigt og på forskellig vis med hensynstagen til alle installationer. Med dette skelet bliver modulerne bestandige og kan derved genbruges over mange år.

Pain

1. Modulhuse er ikke fleksible dvs. badeværelser, køkken og rum kan ikke skiftes ud / opgraderes
2. Samling af moduler kræver håndværkerarbejde.
3. Energiforbrug for huse bliver større og større.
4. Høj customization kræver håndarbejde på byggepladsen og er ikke rentabelt

Værdi for modulhusfabrikanten

- Branding som miljørigtige huse pga. genbrug af materialer.
- Genbrugelige moduler pga. holdbart skelet
- Billig fabriksfremstilling og stadig høj customization for huskøbereren gennem få standardiserede skeletter som passer til et passende udvalg af standard moduler (3 slags badeværelser, 3 slags køkken osv.).
- Tilbyde lejeaftaler om udvidelse af huset. Modulerne renoveres på fabrikken og lejes ud som nye igen.
- Til- og frakobling kan foretages uden hjælp fra håndværkere af en kran og to montører på en enkelt dag.
- Modulerne vil kunne opgraderes så de overholder kommende byggestandarder og energikrav.
- Ikke dyrere end normal pris / kvm for modulhuse som produceres på fabrik.
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Jury

Modulhusfabrikanter af parcelhuse, Fonden for billigboliger.

3. Micro Music Studio

Description

A sound insulating “box” to be used by musicians while practicing music. Flexible in its structure (e.g. space and acoustics) to fulfil different needs from different musicians.

Pain

Musicians being unable to play their (acoustic) instrument without disturbing their surroundings.

Value proposition

Musicians can play their instrument unbounded, and with good conscience, knowing that nobody is being bothered.

Offers a good and authentic acoustical environment, suitable for practicing music.

Jury

Musicians, Music academies, Music schools, Concert Halls, Orchestras, Recording studios

4. Bedwetting prevention alarm

Background

15% of all children have enuresis (they wet their bed at night) meaning 6-7 millions children just in the USA. Studies show that bedwetting children are more likely to have behavioral problems because they lose their self-esteem.

Pain

Today these children have 3 options:

1. To wear a nappy until the problem stops: with a feeling of shame for the child and the fact that it doesn't treat the problem so nobody knows when it will stop
2. Take medicines –only for children over 7 years. A dose is given just before bedtime, the treatment lasts 3 months. It works mainly by reducing the amount of urine made at night by the kidneys. However, when the medicine is stopped the bedwetting often returns
3. To have a sound alarm that wakes up the child when he/she starts to pee. The child gets trained and most of the time gets out of the enuresis.

The existing alarms are big, complicate and a hassle for the child and the family (wires, loud sound, everybody wakes up, the dog starts barking, the child feels humiliated, self esteem deteriorates etc.....).

Value proposition

Our company propose a wireless alarm (receiver) that the child wears on the arm. The alarm vibrates (receiver arm band) when moisture is in contact with the sensor pad (transmitter) which is placed in the underwear. The design will aim at make the product look like a “cool” sport armband. The fact that the alarm vibrates means that the child is the only one to wake up. This will remove the stigma that the enuresis put on the child. We also plan to expand the range by proposing a device that you can add to the bedside light so that the light switches on at the same time as the armband (receiver) starts vibrating.

Jury

Municipalities – in Scandinavia. Private insurance companies – in the USA, UK, France, and Germany. Parental associations, doctors, social authorities.
Retailers (Chemist's, supermarkets) if the product is an "over the counter" product.

5. Fejlmedicinering. Hardware løsning**Pain:**

Hver femte dansker i ældregruppen får mere end fem forskellige slags medicin, hvorfor det med skiftende tilskudsregler, nedskæringer på sundhedspersonale etc. ikke er besynderligt at det ofte går galt, og de ældre får en forkert medicinering. Dette medfører en stigende hospitals indlæggelse og et større behov for hjemmehjælp.

Value Creation:

Produktet sikrer patienten under medicinbehandling, så vedkommende ikke tager for meget eller for lidt medicin, og at patienten på en let tilgængelig måde kan ihukommes den ordinerede medicin på de rette tidspunkter. Dette opfylder patientbehovet, men reducerer imidlertid også den tid hjemmehjælpen skal bruge på at kontrollere ordineringen af medicin. Dette kan betyde kæmpe besparelser i den offentlige sektor.

Jury:

Der er diverse interessenter i en sådan løsning, dette indebærer; kommunen, hjemmeplejen og medicinmodtageren og i henhold til offentlige besparelser også politikere.

6. Allergy-efficient domestic house**Pain:**

Many people and especially children get allergies and asthma because of bad constructed houses and bad indoor environment.

Value proposition:

Good indoor environment because the construction is very airtight.
Eliminate dust and house dust mites that can result in asthma and allergies.

Jury:

People with asthma or/and allergies etc.
Concerned parents.

Risk:

Hard to sell houses for a certain type of people
A tough industry to enter, because of a long-lasting tradition on the market.

7. Kitchen in a Box

Inhabitant in refugee camps and Third World Countries spend too much time on menial survival tasks. The Canned Kitchen will improve life quality and promote personal development for refugees and poor people in 3 world .

The Pain:

Refugees often live in harsh, often unhygienic and primitive conditions, spending the majority of their time doing basic survival tasks.

Value Creation:

The person responsible for housework, cooking, and child rearing will now have time for other activities, including education, personal development, work for money and even leisure.

The Jury:

Refugees, aid organizations

8. Fejlmedicinering. Organisatorisk løsning

Pain:

Fejlmedicinering på danske plejehjem og hos ældre mennesker privat koster hvert år samfundet hundrede millioner af kroner, forringer livskvaliteten hos de implicerede og koster i værste fald mange dødsfald årligt. Derudover bruger plejepersonale uhensigtsmæssigt mange ressourcer på medicindosering, som kunne bruges til bedre omsorg og pleje.

Value creation:

Vores værdiskabelse tager udgangspunkt i større sikkerhed ved minimering af chancerne for fejlmedicinering gennem større kontrol og færre led fra dosering til patient samt ressourcefrigelser fra medicinbehandling til bedre pleje ift. plejepersonale.

Jury:

Vores jury er kommunerne, de ældre eller deres pårørende samt private med stort medicinforbrug.

9. Students' Job portal

Idea: Job portal for engineering students where the student can seek relevant jobs and companies can find engineering students with the competences they need.

Pain:

1. It is hard for engineering students to find relevant student jobs which they can fit into their busy time schedule without interfering with their studies.
2. The Danish Industry is desperately looking for qualified employees and some companies have to import employees from outside Denmark.

Value creation:

1. The students make money and have a relevant job at the same time. By doing that they get working experience from real life which they can benefit from when they graduate. At the same time they have enough time for looking after their studies.
2. The industry and the national economy will benefit from the competences of not yet graduated engineers.

Jury: Engineering students, engineering businesses and the government.

10. Wine marker

Wine stickers that indicate when the wine is matured and ready to be served.

The pain:

People don't know when their wine is ready for drinking. Drinking the wine at the right time is difficult unless you know a lot about wine and keep track on temperature fluctuations and time.

Value proposition:

You know when to drink the wine no matter if you like the wine a bit young or more matured.

Jury:

Wine producers, wine importers, wine enthusiasts and wine consumers.

11. Digital menu card and ordering/payment pad

The Idea

A system based on terminals placed in the restaurant, where the customer can make his/her ordering and payment

Pain

1. Labour cost
2. Unsatisfied restaurant guests, due to long expedition time

Value proposition

1. Less staff = reduction in costs
2. Reducing waiting time, with use of Self-service

Jury

Restaurants owners/managers

12. GPS for blinde og svagtseende

Ide

En GPS navigator software til blinde og svagtseende. Navigatoren er stemmestyrret og guider brugeren vha. talesyntese. Softwaren kører på en mobiltelefon, og kan videreudvikles til et fysisk produkt med flere sensorer indbygget eks. afstandsbedømmelse.

Pain:

Begrænset bevægefrihed for blinde og svagtseende, der er låst til faste ruter. Hvis de skal nye steder hen er de som regel afhængige af andre. Nuværende GPS løsninger har utilstrækkelig funktionalitet, de har dårlige input muligheder (enten mobiltelefonastatur eller et stort braille tastatur).

Value

Større personlig frihed for den blinde eller svagtseende. Lettere interaktion end med nuværende løsninger.

Jury:

Blindorganisationer, staten, velgørende fonde, EU, mobiltelefonproducenter. (De blinde er brugere, men ikke jury).

13. Mobile money transfer

Pain:

User: No cash or Internet available when in need for paying a friend a small amount of money

Banks: the challenge to differentiate on the market

Value Proposition:

To users: Get your debt paid/collect your money right away on the spot. (easy to use and setup)

To banks, the service providers: The product is a service in it selv that adds value to the customer relationship. Transactions are registered and you will get the possibility to add a small fee.

Entering a new market.

Jury:

Mobile customers – mainly in the age 15-35

Banks / collaborators

14. Enhancing jobsite capabilities

Pain:

People can't find the right job / company and vice versa. Job-sites are not up to the job.

Value:

Better matchmaking -> save time -> save money -> get better employees

Jury:

Job sites and temporary employment agencies

Note:

Tomatcha offers a profiling service behind the job-site as an add-on service, offered by job-agencies to job-seekers and companies searching employees. Our customers are the job sites.

