

Digital Multi-University Team-based Learning

TENTATIVE PROJECT PROPOSAL vers. 17.02

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SUMMARY

Background

Digital learning is seriously gaining ground within further education. The dominating didactic concept is blended learning: students attend video recorded lectures at home and go to the university to do homework.

Another widespread digital didactic concept is the Massive Open Online Course - MOOC – that proliferates advanced learning to the multitude – across culture, class and prosperity. Several other concepts and tools like webinars, digital classrooms, computer-aided group formation, digital peer grading and peer evaluation etc. are also gaining momentum in further education.

Challenge

None of the existing digital learning concepts include team based learning in any strong measure. Further, the benefits of cross cultural and cross disciplinary teamwork to the learning process are not exploited. Finally, the synergy of universities pooling their knowledge and teachers in collaborative course offerings is not common in digital learning. In short: the benefits of the important social and cultural interaction in further education are missing in the digital learning toolbox – and benefits of collaboration across universities and cultures are not exploited either.

A Solution

A combination of known tools and methods within video conferencing, distance learning, blended learning and team based learning enables us to offer a new concept for digital team based learning in a collaborative and cost efficient effort between several universities.

Value proposition

1. Cross cultural and social interaction on the distance – reduces travel and accommodation costs
2. Pooling university knowledge and teaching skills increases professional level to best partner level at low or no cost
3. Benefits of team based learning is maintained while obtaining all digital learning benefits
4. Course drop-outs are reduced and hence course cost efficiency is increased

Special constraint in digital group based learning

One obstacle for developing high performing groups in digital learning is of particular interest: the absence of the socialization processes that usually drive groups through the forming-storming-norming-performing stages, develop bonds between team members and create responsibility and commitment towards the common goals. Section 2 in the annex deals with theory and ideas to overcome this limitation.

Overcoming this obstacle will increase efficiency of digital learning by increasing the outcome of group based learning, which again may offer a tool to reduce drop-out levels in massive open online courses.

This project proposal aims at testing principles and theories on socialization in digital group based learning via a two-stage development project at DTU jointly with two or more universities from other countries.

PROJECT PROPOSAL: DEVELOP A DIGITAL - MULTI UNIVERSITY – TEAM BASED - LEARNING CONCEPT

Objectives

1. Develop and validate a generic concept for digital multi-university, cross cultural, and team based, blended learning concept.
2. Test the concept on a course in a collaborative effort including at least universities from three different countries.

Activities

1. Prototype project at DTU, fall 2017, including development of course contents and digital tools. Theme: knowledge based entrepreneurship.
2. Pilot project, spring 2018, DTU as host with at least two other partner universities.
3. Conclusion: e.g. 1 week summer school at host university with pitch event

Resources

Prototype project: one full time teacher/content provider, preferably one full time assistant.

Pilot project: one full time teacher, ½-time assistant in host university. ¼ teacher at each partner university

Advisory board (informal – international) to be established

INTRODUCTION

Digital learning refers to the process of learning with the aid of digital content, platform or facilitators. The future of learning would see an increased use of digital components increasingly as more content becomes available, the comfort and willingness of the players in the learning ecosystem changes along with their mindset and pedagogy evolves to leverage the value proposition of digital learning.

Digital learning thinking also leads to the fundamental path for the new age learning approach - blended learning. [\[Wikipedia\]](#).

IDEA

1. So far, the new digital learning concepts in further education image the existing learning concepts in that each university in general runs its own teaching programs in a blended learning format. Hence, the learning ecosystem constitutes a competitive market with universities reaching out to students, offering education based on own university expertise. The major part of the digital teaching embraces students on campus, but distance learning is also part of the digital learning course curriculum. The MOOCs are well known vehicles for this, and like digital learning in general, MOOC courses are predominantly offered by individual universities. Imagine what happens when universities share their knowledge pool and teacher capabilities in collaborative digital learning courses.

HYPOTESIS 1.

Digital learning can be rendered in a collaborative effort involving several universities. Added value: universities share expertise, research, teacher talent and resources to render courses at a high vocational level in a cost efficient set up. Collaborative digital learning allows universities to supplement own expertise. Outstanding teachers from one participating university thus may increase course outcome for students from all involved universities.

2. Assuming that globalization will just pick up speed and volume in further education: Thus, in the foreseeable future, the ability to work efficiently in a cross cultural context is an important learning objective for students.

Training cross cultural student classes however puts a strain on universities and students alike. Universities offer seats and exam to foreign students, who on their part need to travel to - and to live close to the hosting universities.

Part of the objectives of student exchange programs is to allow students to develop an international outlook, a network to local students/teachers/researchers and a cross cultural insight and empathy. One effective means to further networks and empathy is team-based learning with cross-cultural teams, but it is costly and cumbersome for all involved. Imagine if we could offer cross cultural and team based learning in a digital distance learning context.

HYPOTESIS 2.

Digital learning technologies allow universities to offer team based blended learning on the distance without reducing the learning outcome while still allowing cross cultural collaborative skills and networks to be acquired – while reducing the costs and the hassle involved.

3. Combining hypothesis 1 and 2 we arrive at

HYPOTHESIS 3.

Digital learning allows multi-university collaborative learning programs to offer distance based, high quality blended learning while maintaining students' development of cross cultural collaborative skills and networks.

To validate hypothesis 3, a pilot project is suggested. Here is an outline of development project:

BACKGROUND

At Technical University of Denmark (DTU), DTU Management Engineering (DTU MAN) has a 25-year history of teaching knowledge based entrepreneurship to master students. Present status: 20 – 30% of the annual uptake of master students – or 350 – 400 students per year conclude a 5 ECTS course in technology based entrepreneurship and business formation. Approximately 40 – 45 % are international students. We aim at developing students' mindset and skillset to promote business understanding, opportunity-driven creativity and enterprising behavior amongst our future alumni. Since we do not want our entrepreneurship course to supplant the core engineering education, we require our students to invest affordable 125 hours in the course. We call our concept "high impact – low credit" to emphasize that we expose a high proportion of our engineering students to entrepreneurship- and business formation training while keeping the workload at a moderate level.

Starting 2014 through 2016 the entrepreneurship course was turned into the blended learning format, based on the procurement of an extensive video lecture library, designed to cater for all engineering fields. Further, we added digital peer grading of a video pitch assignment and a pitch contest using smart phone based voting. We are not completely digitized though, missing digital simulation games and a digital exam.

In Autumn 2015 -and hence at every subsequent semester -, we created cross cultural and cross gender teams within specific engineering fields, using a software application "CATME", co-developed by several US universities. The high number of students also allows us to include ambition level, leadership preferences and certain personality traits in the team formation.

Our students now attend lectures at home or at any available hotspot. They do their homework (group work coaching, supervision) on campus, and we offer weekly inspiring short lectures including entrepreneurial role models, start-up cases, pitch competitions and summary lectures in the auditorium.

DTU MAN is thus well into the transition into digital learning within the field of knowledge based entrepreneurship. Experiences and observations from our blended learning course combined with the high proportion of international students inspired us to consider taking this intriguing teaching concept to the next level by developing a collaborative course involving 2 - 4 universities from anywhere in the world within an 8-10 hours' time zone gap that DK is part of.

PROJECT PLAN

Objectives:

1. Develop and validate a generic concept for digital multi-university, cross cultural, and team based, blended learning concept. (DMCT concept)
2. Test the concept on a knowledge based entrepreneurship course open to engineering students from all participating universities.

Comments:

While objective 1 is the primary goal, the side effect is access to a peer reviewed and tested cost efficient quality entrepreneurship course. This course, its learning objectives contents and didacts are treated in the annex.

Activities

1. Procurement of a detailed project plan for funding the initiative, for creating a joint venture amongst three to four universities and for setting up an advisory board.
2. Develop and test a pilot course, run at the hosting university – DTU autumn 2017.
 - a. Define learning objectives. Tentative list: see annex.
 - b. Procure course manual and course plan – with advisory board.
 - c. Develop contents and skills
 - i. Introduction “prep” course: A library of video lectures and assignments to ensure that all students have the necessary entry level. Most of this can be borrowed from the DTU course 42435 video library.
 - ii. 10 – 12 video lectures including slides, pre-readings and assignments. One for each week in the semester. The level is one notch up compared to our basic and generic entrepreneurial course: 42435.
 - iii. Test and develop the conference software to the level when technical issues and running the software is complete routine. Most likely Adobe Connect will be used for replacing the classroom teaching. Likewise, Skype Business seems an excellent choice for group meetings.

- iv. Training participating teachers and students alike in using the technology. This includes the conference software and for teachers: the production of edited video lectures.
- 3. Run a prototype course at DTU: e.g. a class of 15 – 25 selected students from course 42435, fall 2016 and spring 2017. (Course grade 10 – 12 (A, B), and a high average grading, multi-cultural and even gender distribution, several engineering fields, 4 – 5 teams).
- 4. Run a pilot course spring 2018 with 3 – 4 universities including DTU, max 10 students and minimum 1 counterpart from each university, teams of 4 students with a minimum of one student from each participating university. DTU will be course manager and do most of the teaching, but there will be video lectures and virtual classroom sessions on specific local conditions for business formation. Group work will “break-out sessions” after class and video conferences on student teams’ own discretion and needs.
- 5. Coaches will be available and will join group work sessions on participants’ own discretion. A coach training session will be offered to highlight learning process, learning objectives and expectations to coaches.
- 6. Preferably a one week summer school at one of the participating universities to conclude the course – most likely a pitch competition in front of an invited audience.

Timeline with reference to activity number

1. May 2017. MS 1: 16 June 2017. Course management/advisory board organized. Funding applications submitted
2. a) + b) Work period: July + August 2017. MS 2: 25 August 2017. Deliverables: Learning objectives, Course manual, course plan and c-i) Intro course video library and c-iii) Testing and training with the conference software
 - c) Work period: September to December 2017
 - ii) Video lectures to be produced on the fly, one to two weeks ahead of class. Allow 4 work days per video including research, slides production, video recording and post processing
 - iv) September 2017: first two video conferences (webinars) with video lectures, slides and a short manual to train teachers and students on using the software and the digital classroom sessions. Training teachers in partner universities: December 2017.
3. Work period September through November 2017. Exam follows DTU schedule. Outcome reported: MS 3: 22 December 2017
4. Kick off 12 January 2018 – or as agreed with partner universities to comply with local study plans. MS 4-1: 26 January 2018. Deliverables: Course plan, course manual, student enrollment.
 - MS 4-2. 12 February 2018. Deliverables: students trained in using digital tools. Teams established.
 - MS 4-3. 25 May 2018 Exam (digital – distance). Course evaluated and reported.
5. To be defined with partner universities – and to comply with funding situation. Preferably during June or August 2018.

Resources

Full time teacher/course developer: 2017 through 1. half of 2018.

Full time research assistant: slide development, video recordings, editing, animations, running classes (chat master at webinars), research during course period, course evaluation and reporting: 1 August 2017 through December 2017. Preferably also part time spring 2018 to run the virtual classroom facilities incl. chat forum during teaching sessions.

Software and hardware: available in house – apart from video animation software.

Travels TBD – most likely a visit to partner universities, November 2017.

Funds for going abroad with app. 10 students to a summer school, June 2018 will be applied for.

Comments

Throughout fall 2017, students are expected to participate in choosing and testing software, applying software and develop appropriate didactics.

Metrics to determine the socialization processes need to be defined during August-September 2017.

Budget excl. overhead

TBD.

ANNEX

1. TENTATIVE LEARNING OBJECTIVES

Learning objectives to be further developed with an international advisory board. Here is an outline

Mandatory minimum entry level: the digital prep. course

To enroll the course, students must have a basic understanding of applied knowledge based entrepreneurship, including:

1. Identify business opportunities
2. Develop business ideas (Opportunity-driven creativity)
3. Analyze markets for technological products and services
4. Validate and Analyze customer value creation
5. Plan the establishment of a company (Business planning)
6. Specify management competence profiles
7. Understand the basic legal and regulatory key issues of a start-up

A library of videos, slides and links to relevant articles and textbooks will be developed to allow students to comply via a self-study. A conference based digital entry test including quizzes and polls can be arranged to check students' fulfillment of requirements.

Further, English language proficiency must be at a prominent level. To be checked during the digital entry test.

Learning objectives:

A student that passed the DMCT Entrepreneurship Course will be able to:

1. Use digital conference- and meeting tools at a high proficiency level
2. Apply Geert Hofstede's cultural dimensions to develop own role and behavior in an international team
3. Identify business opportunities in a distance groupwork setting
4. Develop business ideas (Opportunity-driven creativity), same setting
5. Develop global business models including Osterwalder/Pigneur's business model canvas tool, same setting
6. Analyze markets for technological products and services.
7. Analyze and validate customer value creation – exploiting local networks of individual group members
8. Plan the establishment of a company that is born global (International Business planning)
9. Establish cash flow projection and capital requirements
10. Establish budgets on profit/loss, assets/liabilities
11. Understand the rules and practices of advanced venture capital financing

12. Calculate and analyze an equity investment
13. Specify management competence profiles needed in a global startup.
14. Understand the legal and regulatory key issues of a start-up – internationally and local
15. Pitch a business case in front of a professional audience of investors, customers and stakeholders.

2. SOCIALIZATION IN DIGITAL TEAM BASED DISTANCE LEARNING

Remarks

This section is under development collaboratively with prof. Helle Rootzén and M.Sc. Lars Aagaard-Kierkeby

Introduction

Group based learning in further education images the knowledge based industry's need for creating and running project groups across distance, culture and discipline. Hence group based learning per se is offering important learning objectives to students.

Group based learning is also a didactic tool that offers cost efficient teaching of many students in one course.

As per today, group based learning is still in its infancy concerning digital didactic formats.

Two obvious reasons for that: a) access to bandwidth and technology – almost there now – and b) lack of socialization due to absence of physical presence of group member.

Socialization is the glue that bonds the group together and keeps group members active and dedicated to group objectives. Hence, group socialization is a precondition for successful outcome of group based learning.

This note treats the basics of group socialization and suggests ways to catalyse socialization in digital group based learning. (See ref. 1) on basics of autosocialization.)

It should be noted, that solutions on how to create socialization in groups allow efficient group based learning in Massive Open Online Courses (MOOCs), which again may offer a way to reduce the massive drop-out from these courses.

It should be noted too, that providing digital tools for socialization removes yet another barrier to scale for group based learning. Fully scalable digital group based learning will allow us to run big classes in a multi-university collaboration with limited staff of teachers and admin.

Basics of group socialization

1. The ability and urge to be part of a group seems to be a genetically coded personal trait of humans.
2. The process of almost subconsciously adapting to the group context is referred to as auto-socialization.
3. The process involves three steps: Contemplate – Imitate – Conform. That is: the individual observes the group to join – and ponders on objectives, outcome, requirements, personal match to skills required and ambitions to live up to, other personalities, group leadership etc. All this together is termed “The significant other”. Once contemplation is done and a decision to join is reached, the new group member starts imitating the “Significant other” to become a valuable group member, ending up conforming with the group objectives and -requirements. This model seems to comply with the classic “Forming-Storming-Norming-Performing” model for group formation and -development.
4. Effective autosocialization requires a conspicuous “significant other”. This is the central challenge in developing effective groups in distance learning.

Autosocialization in digital team-based distance learning

We are venturing into new land when setting up principles for catalysing autosocialization in group based distance learning. Hence, we need to set up some working hypothesis and validate and adjust via an experiment. Here is an outline.

Obviously, the challenge is to create a conspicuous “Significant other”: a group context that is clear on objectives, personal and professional requirements, tasks, other personalities workload, outcome etc.

Next, create a process that takes the student through the contemplating phase.

Finally design the group work requirements to allow imitation and hence conformation to develop.

In the “Forming-storming-norming-performing” context: set up a framework for the group work that unleashes group dynamics and allows groups to move from the initial formal personal relationship to the battle-proven “platoon-stage” when bonds and shared objectives have developed between individuals.

In a didactic context:

1. Communicate clearly to student target groups: learning objectives, course requirements, group specifications on culture, gender, personality traits and professional requirements, workload in a time plan, etc.
2. Include means for students to develop a perception of each other as individuals and as professionals into the group forming process. E.g.: each student: Produce a 3-min. video to the group. Title: “This is me”.
3. Create a digital group work format that images a physical presence. Include the digital media platforms that students are used to - and share with friends and relatives. Ensure a floating group work process – both structured and at the same time with informal “open mode” sessions. (Ref.: John Cleese: open- and closed mode states for creative group work).
4. Consider extra-project activities like computer games with group members playing with or against each other – perhaps against other groups from the class – perhaps even simulation games within the field being taught.

In a validation context:

1. Develop a “Digital group based distance learning” taxonomy
2. Specify the hypothesis on autosocialization
3. Develop the metrics to validate the hypothesis
4. Collect data from first test runs
5. Validate, adjust and test -

- 1) *International Journal of Managing Information Technology (IJMIT) Vol.9, No.1, February 2017: A CASE STUDY ON AUTO SOCIALIZATION IN ONLINE PLATFORMS. Lars Aagaard-Kirkeby*