

Rethinking Purchasing logistics teaching - Converting a lecture based purchasing course to a web-distributed intercontinental course

Jenny Bäckstrand*

School of Engineering, Jönköping University, PO Box 1026, SE-551 11 Jönköping, Sweden
+46 36 10 1629, jenny.backstrand@jth.hj.se

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Summary

This paper will describe the reason for converting a traditional lecture based purchasing course to a web-distributed online course taught over two continents simultaneously. It will cover the planning needed, the technological tools used, the benefits, the hindrance and the lessons learned.

Background

Due to changes in the program curriculum for the engineering students at bachelor level in Logistics management, the course “Purchasing and supply chain Management” 7,5 ECTS credits was moved from semester 5 to semester 4 and extended to 9 ECTS credits. The new course “Purchasing Logistics” was designed to facilitate for the students going abroad (or elsewhere in Sweden) for the “Industry placement course” conducted during semester 4. (When offered as an optional course in other programs, the course can be combined with the final thesis work during semester 6). Due to Jönköping University directives, School of Engineering need to increase the number of courses offered in English. However, the previous course was already taught in English, so this requirement did not affect the design of the new course.

During the last year and a half, an influential pedagogical project has been carried out at School of Engineering with the support from the Swedish Knowledge foundation, where a new Master of Science within Foundry technology has been designed, based only on distributed learning. Thanks to this, a top-modern recording studio is now available but no longer fully booked.

The prerequisites for the Purchasing Logistics course is that the main body of students are second year program students from one bachelor program, combined with a number of exchange students that study in Sweden, a number of Swedish students studying at AIT in Bangkok and a number of Thai students at AIT attending the course. The expected number of students 2015 was 75 and the number is expected to increase in the following years. The actual number of students when 55% of the course is carried out is 95, whereof 63 program students in Sweden, 5 Swedish program students at AIT in Bangkok 2 exchange students residing in Sweden, 15 Thai students at AIT in Bangkok, and 10 “old” students from the previous course (whereof 2 are doing their final thesis work in Bangkok, just to complicate things). 5 students have dropped the course (all Thai students, all due to being registered at too many credits).

The course started January 12th 2015 and is currently under development and will be given until March 29th 2015. When this paper is written, approximately 61% of the course is carried out.

Intended learning outcomes

The intended learning outcomes (ILO) for the course are developed based on a program matrix, where the ILO's of the program is stated and where the progression between the courses within the program are managed. All ILO's are divided into three areas: knowledge and understanding, skills and abilities, and judgment and approach. The only ILO that are affected or adapted to the fact that the course is web-distributed is ILO 6, where oral presentation is omitted.

The ILO's for Purchasing Logistics is: after a successful course, the student should:

Knowledge and understanding

1. display understanding of purchasing logistics and its role in an industrial setting, including knowledge regarding the basic terminology, methods and models and be familiar with current research
2. demonstrate comprehension of the design, planning and management of materials and information flow, with focus on purchasing and logistics

Skills and abilities

3. demonstrate ability to design, plan and manage materials and information flows by making conscious decisions regarding the employed purchasing strategy
4. be capable of searching, finding, gathering, evaluating and making a critical interpretation of purchasing related information
5. being able to independently identify, formulate and analyze purchasing issues
6. being able to independently plan, carry out and summarize in a written report a purchasing related analysis
7. demonstrate ability to put acquired knowledge into practice and show an understanding of the purchasing profession

Judgment and approach

8. demonstrate ability to suggest and compare different alternatives for designing, planning and managing materials flow with focus on purchasing while considering the consequences and risks associated with the alternatives
9. demonstrate ability to judge sustainability aspects of purchasing, supplier relations and transportations
10. demonstrate ability to apply an interdisciplinary approach and a systems perspective

The content of the course

The content of the Purchasing Logistics course is heavily based on the previous course, but the area of sustainability and CSR is new. The course includes the following elements:

- Purchasing and strategic sourcing
- Supply chain management, Globalization and Incoterms
- Initiate supplier relations: define needs, specify and document
- Assess supplier portfolio, select suppliers
- Prepare negotiations with regard to TCO and cost break-down
- Legal aspects, contracts, delivery and payment terms and contract management
- Supplier relations, Systems for managing supplier relationships (SRM)
- Sustainability and Corporate social responsibility (CSR)
- Purchase orders, performance measurements (KPIs), and supplier evaluation
- Supplier development process
- Terminate supplier relations

Technology used

The course is handled in the online learning management system (LMS) called Ping-Pong (www.pingpong.hj.se) and the recorded videos are distributed and password-protected in Vimeo¹. Ping-Pong is also available as a mobile app.

Structure of the course

The course is divided into nine modules following the Interaction life cycle (Bäckstrand, 2014):

- Module 0 - Introduction to the course
- Module 1 - Introduction to Purchasing
- Module 2 - Supply chain management and globalization
- Module 3 - Sustainability
- Module 4 - Plan (Sourcing)
 - Case 1 – individual hand-in (checked for plagiarism)
 - Case 1 – group hand-in (corrected with feedback)
- Module 5 - Plan (Negotiation and Contracting)
 - Negotiation training as seller and buyer within an e-learning tool
 - Two-on-two negotiation
- Module 6 - Do (PO, expediting and operational purchasing)
- Module 7 - Check (SCOR; Balanced scorecards, KPI's)
- Module 8 - Act (Echo, exit, exchange or evolve?)
 - Case 2 – individual hand-in (checked for plagiarism)
 - Case 2 – group hand-in (corrected with feedback)
- Module 9 - Summaries and discussions

Structure of each module

Each module contains videos designed as lectures, guest lectures or discussions, handouts (e.g. PPT-slides and journal articles), a task to carry out and an examination.

Apart from videos and handouts, some modules uses additional sources.

For Module 4 I am recommending an introduction to Peter Kraljic's Portfolio Analysis on YouTube. Also on YouTube I am recommending Professor Arjan van Weele's presentation of "Purchasing Portfolio management" and "Purchasing Process Management". These two videos are a part of van Weele's YouTube-channel² where he presents "College TourPurchasing" in 15 parts. I have created "Help page – links" where I have listed the content of all parts of this College Tour to help the students find them.

Module 5 (negotiation) also contains an e-learning tool (animated videos and speech) where the student can simulate a negotiation situation as either a seller or a buyer. The success of the negotiation is affected by the action of the student and the simulation is combined with some educational material. This tool is called "Deal maker" and is supplied by SILF³, the Swedish Purchasing and Logistics Association (partner with ELA⁴ and IFPSM⁵)

¹ See <http://vimeopro.com/user36229713/module-0-introduction>, password: Module0 for an introduction.

² <https://www.youtube.com/channel/UC75cEo8cNRk0MAWOv1tIsYQ>

³ www.silf.se/in-english/

⁴ European Logistics Association, <http://www.elalog.org/>

⁵ International Federation of Purchasing and Supply Management, <http://www.ifpsm.org/>

Module 6 (Do) is supplemented with a modularized e-learning tool where the student reads about operational purchasing, carries out a written test and receives a course certificate. This part is supplied by Gothia Logistics⁶.

Modules 8-9 are currently under construction.

Module 0 - Course introduction

Lectures

Course introduction - [Video](#) (12:34 min) - Password: Module0

Theory

Course introduction - [Hand-outs](#)

Task

- Make yourself familiar with the course page
- Test the functionalities of Ping-pong
- Write down your expectations of the course

Examination

1. Hand in the assignment "Course expectations"*

After the course, hand in the assignment "Reflections on course expectations"

Deadline Assignment "Course expectations"

1. 2015-01-18

* = Required to pass in order to open up Module 1

Deadline Assignment "Reflections on Course expectations"

1. 2015-03-29
2. 2015-04-06
3. 2015-05-31

Figure 1. An example of a module, in this case Module 0 – Course introduction.

Examination of the course

The basic ILO's are tested in an automatically corrected mandatory web-exam administered in Ping-Pong at the end of each module (each week). The type of questions used are multiple choice, place in order, matrix or matching pairs, as illustrated in Figure 2. Each student receives 12 random questions from a question bank containing approximately 60 questions per module and needs 100% in order to pass. The exam needs to be submitted within 60 minutes and the exam can be retaken after 2 hours if failed. This first year I have not limited the number of tries. After the exam is passed, the students is asked to complete a "Free text question" - based on the content of the module - What would you have asked? (Both question and answer is needed).

It is also mandatory to submit "expectations of the course" as the assignment for Module 0 and after the completion of Module 9, the students will be required to reflect on these expectations.

⁶ <http://www.gothialogistics.com/>

The two written case hand-ins are mandatory. The individual hand-in is however not corrected or commented, only checked for plagiarism. When the student hands in the individual case solution, they are randomly assigned to a group of 5 students. Within the group they need to read each other's solutions and to design and decide what solution to submit for correction and comments.



Figure 2. Types of questions supported by Ping-Pong.

Also a two-on-two negotiation is mandatory and examined by handing in a contract. I can also choose to recapitulate the discussions leading up to the contract in the discussion forum within Ping-Pong. For next year I am considering to supplement this task with an individual reflection of how the negotiation was planned and carried out and how the student feel the negotiation went.

Participation in the e-learning simulation “Deal Maker” is mandatory (but unfortunately hard to control).

An optional final written test. The students can take the final written exam as a home exam during one week. The final written exam will contain 5 randomly selected free-text questions from a question bank. When the student have opened the test, it needs to be returned electronically within 4 hours. I will ask the students to rank the questions and submitted answers, with the question the student felt as she/he could answer best first and so on. I will the correct the questions in that order. If the answer of the first question is satisfactory (i.e. 75% correct) I will continue correct the second question and so on. If the answer for any question is less than 75% correct I will not continue to correct the following questions.

Grades

After all mandatory elements are carried out, the student receive a pass grade (grade 3 in Sweden, will be translated to a C in ECTS). In order to receive grade 4 (B), two questions at the final written exam need to be satisfactory answered. For grade 5 (A), four satisfactory answers are needed.

Communication within the course

Since there are no face to face meetings within the course, several other ways of communicating have been designed.

One way communication: teacher – student (static)

The whole course page on Ping-Pong page is mainly one way communication. Here the course overview and the content of the course is presented together with some help pages. The content of each module is also communicated here. I can upload documents for the students to read. I have gathered all returning questions in a FAQ. The planning of the course is also visually communicated through a course calendar.

One way communication: teacher – student (triggered)

Information from me to the whole group is placed on a Message board (for students with the Ping-Pong app, the messages are received as a Push-message). I can also send emails or PIM (personal chat messages to the whole group or to selected participants)

One way communication: Ping-Pong – participants

The list of participants are automatically generated by Ping-Pong (any student that knows the password to the course can register). The objectives of the course and the student’s individual progress is automatically communicated. The project groups for Group-hand in for Case 1 and 2 (5 students per group) and the group negotiation (2 students per group) are automatically created by Ping-Pong, based on pool groups (the first 5 students that handed in the individual Case solution will be placed in Group 1 etc.).

One way communication: Ping-Pong – teacher

In a “Progress tool” I can fins statistics over most everything that has been carried out within Ping-Pong. I can for example get an overview of the students’ progression, e.g. Figure 3. I can also choose to see who has NOT submitted a survey, a test or an assignment, who have downloaded what document and when a certain student was last logged in, and so on.

First_name	Progress	Suggestions of Improvements	Individual Course expectations	Exam Module 1	Exam Module 4	Exam Module 2	Exam Module 3	Case 1 - Individual	Case 1 - Group assignment	Exam Module 5	Group negotiation	Module 6 - Course certificate	Exam Module 7	Exam Module 8	Case 2	Exam Module 9
Raowa	55,6%	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓				
Jesper	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Guled	44,4%		✓	✓	✓	✓	✓	✓	✓	✓						
Felicia	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Molly	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Sofia	44,4%		✓	✓	✓	✓	✓	✓		✓		✓				
Lovisa	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Ivana	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Josip	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Erik	44,4%		✓	✓	✓	✓	✓	✓		✓		✓				
Jesper	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				
Klas	44,4%		✓	✓	✓	✓	✓	✓		✓		✓				
Terese	50,0%		✓	✓	✓	✓	✓	✓	✓	✓		✓				

Figure 3. Excerpt from the progress tool overview.

Two way communication: Ping-Pong – teacher

In the content editor of Ping Pong I can design the content as I like. I can create folders (e.g. for each module), I can create pages or add a file archive and I can create tests, surveys and

assignments. Based on the created tests, surveys and assignments, Ping-Pong suggests sub-objectives of the course.

Student communication:

The student can start a discussion thread or answer in a thread started by me or another participant. The student can start a Chat or send a PIM to any participant. The student can state a question at the FAQ page (seen only by me before I answer and choose to publish). The preferred tool for communication is however e-mail (probably because it feels more direct plus that I have asked the students to communicate in English on the Ping-Pong page, but allowed them to communicate in Swedish when communicating via email and 78 out of 95 students prefer Swedish over English).

Lessons learned

My spontaneous comment of lessons learned regarding transforming a course to an online course is: It Takes time! But, hopefully I can in a year state: It saves time!

I know that some might be interested in lessons learned regarding the divergent student group but so far, the only reflections that I have made is that the students that took the previous course and failed thought that they knew the content of the course, but with the requirement to pass each Module examination, this course might be harder than they anticipated (I know some of them thought it was a “guaranteed pass”-course). The 15 students I have from AIT are all very ambitious since the majority of the actually are exchange students from Sri Lanka or Myanmar and they are not satisfied with a C on this course.

When this text is written (two days after the deadline of both this paper and the survey), 81 out of 96 students have answered the survey question “Will you take the final written exam?” and 65% are planning to take the exam. Even if not all these students achieve the grade 4 or 5, the course will have a significantly higher average grade than the previous course. Only the five students that have dropped the course have “failed” the course so far, and I guess that the students are less likely to drop the course now after completing 2/3 of the course and submitting 2/3 of the group work. In Table 1 the anticipated results of the new Purchasing Logistics” is compared to the result from the 1st exam of the previous course “Purchasing and supply chain management”.

Table 1. Comparison between results of traditional course and web-distributed course

	“Old” course, 1 st exam 2014		“New” course, 1 st exam 2015	
Nr of students	96		100	
Fail	32	33,33%	5	5%
3	26	27,1%	95 (at least)	30-95%
4	33	34,4%	Up to 65	0-65%
5	5	5,2%		

To keep/improve

I will keep the requirement to submit the individual course expectations at the beginning of the course, but I will clarify that I want the students to reflect upon both the content of the course and on the format of the course. This year’s submissions have mainly focused on either. I am also planning to publish my expectations of the course.

I will also keep the basic structure of the course, with modules and approximately one module per week. I will however differentiate between recommended date of submission and deadline. This year I have called both deadlines but have not been strict with the deadlines for the initial Modules which might be confusing for the students (and me, since I expect them to submit before deadline for certain tasks).

I will keep the requirement to state a Free text question. I tried it this year as a pilot but I can see that the students both get an understanding of the content of the module and for the difficulty in stating self-correcting questions that are not trivial.

To drop

During this year I have kept one hour per week as my “online time”. No student has ever contacted me during this time so this will not be scheduled henceforth. Likewise, after 50% of the course were carried out I scheduled a session in a classroom to receive some feedback in order to be able to improve the last part of the course. 3 students showed up.

On the other hand, I have been answering emails around the clock and all days a week. I will be more strict with my office hours when the whole course has been tested once.

I will drop the calendar function. The course overview is enough to keep updated, when things change and two places needs to be updated it might become confusing or contradicting.

When the course was taught with lectures, the students asked for a dictionary where “difficult words” were explained. In the online course I have started a dictionary and asked the students to contribute to it when they look up a word for themselves. Nobody have contributed so the dictionary will be dropped, or contribution mandatory.

Presentation at Educators day

At the Educators day I am planning to summarize how the course has been, the final lessons learned and hopefully also some excerpts from students’ course evaluation.

Since the development of the course is not based on based on any literature regarding web-based learning, just empirical evidence from e.g. the foundry master at School of Engineering, Jönköping University, no literature consideration is included here, but could be prepared for the conference presentation.

The paper/presentation can also be used as a basis for discussing how we teach purchasing, building on the key-note speech by Mark Pagell at the opening session of the Dublin EurOMA conference 2013.

References

Bäckstrand, J., 2014. Using the Interaction life cycle in an educational setting, 23rd Annual IPSERA Conference, Pretoria, South Africa.