Embedding Library in Study Structure

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ABSTRACT

In Europe, the Bologna process aims at the harmonisation of the structure of higher education in order to facilitate mobility. In the context of engineering education, the trans-national recognition of engineering degrees, academically and professionally, is a primary goal. In Finland, the two-cycle degree structure to be adopted in the Bologna process will introduce the Bachelor´s degree to supplement the Master´s degree in university engineering education. At TKK, Helsinki University of Technology, the planning for the new two-cycle degree structure started in 2003 and the first students to study according to the new model were enrolled in autumn 2005.

This paper will discuss the recent initiatives of the TKK library in conjunction with the degree structure reform at the university. The paper will highlight the experiences concerning the integration of an information literacy program into the seminar of the Bachelor´s thesis. The paper will also describe in more detail the co-operation and collaboration of different actors participating in the realisation of the Bachelor´s thesis and seminar. The scalability of the program has been important because some 1500 engineering students annually will be taking the degree. In this respect, pilot courses have been carried out and the scalability has been evaluated. Plans for further development of the program will be included in the presentation.

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In Europe, the Bologna process aims at the harmonisation of the structure of higher education in order to facilitate mobility. Trans-national recognition of engineering degrees, academically and professionally, is a primary goal within the context of the engineering education. Mutual and unconditional recognition of the learning outcomes of study programs between two or more institutes is expected to multiply the mobility of students across Europe.

TKK, Helsinki University of Technology [1] is the second largest university and the most diversified university of technology and architecture in Finland. There are some 15 000 engineering and architecture students and 3 600 employees. An increase in the number of international students is expected as a result of the study reform but the development of international co-operation as a whole is one of the objectives of the university. These objectives are highlighted in strategies such as "Strategy for International Activities at Helsinki University of Technology" [2]. During 2005 there were some 750 international degree students at TKK. Currently approximately 10 % of postgraduate students come from abroad whereas only 4 % of the Master´s level students have an international background. Another way to increase internationalisation is to encourage TKK students to go abroad during their studies. The strategic goal is that 75 % of the TKK students gain international experience during their studies.

TKK LIBRARY

At TKK the library structure consists of the Main Library and 23 smaller departmental and institute libraries. The Main library co-ordinates functions such as the library system (OPAC), user training, cataloguing and acquisitions. More recently, the responsibility of organising campus-wide access to electronic resources has been added to the tasks of the Main Library. Overall, some 90 persons work in the TKK libraries, of these 55 are at the

Main Library and 35 at the departmental and institute libraries. In the Main Library there are seven information specialists who participate in the promotion of information literacy among students via user education programs. These information specialists all have a degree in the fields of science and technology. [3]

STUDY STRUCTURE REFORM AND MOVING TO THE NEW STUDY STRUCTURE

The planning for the new two-cycle degree structure started in 2003 and all students accepted after 2005 will study according the new degree regulations. The new Bachelor´s and Master´s Degree programs across the university are formed with modules. The modules include one or several components (courses) and within a module the students have both mandatory and optional courses, most of which are prelisted by the study program for a Bachelor´s Degree. Bridging courses are offered between Bachelor´s and Master´s level. A Bachelor´s thesis is introduced, the Master´s thesis is always 30 credits. Postgraduate degrees; Lic.Sc. (Tech.), D.Sc. (Tech.) are intended for graduates with a Master's degree.

Higher university degree

Admissions from August 2005

Master of Science in Technology

Basic model (120 cr)			New major including new level 1. module (120 cr)		
Elective studies W2 20 cr	Methodological principles M 10 cr	Master´s thesis D 30 cr	Elective studies W2 20 cr	Methodological principles M 10 cr	Master´s thesis D 30 cr
Level 3 module A3 20 cr	Level 2 module B2 20 cr	Special module C 20 cr	Level 1 module E1, 20 cr	Level 2 module E2, 20 cr	Level 3 module E3, 20 cr

The Bachelor's Degree Programme (180 cr)

18b

Lower university degree

Admissions from August 2005

The Bachelor's Degree Programme (180 cr)

Level 2 module A2 20 cr	Level 1 module B1 20 cr	Bachelor´s Thesis and seminar K 10 cr
		Elective studies V1 10 cr
General studies P 80 cr		Level 1 module A1 20 cr
		Programme studies O 20 cr

18b

Figure 1. The new module-based two-cycle study structure of Helsinki University of Technology.

Bachelor´s Degree including a thesis is something completely new at TKK. It gives a clearer structure to studies by giving an intermediate stopping point. This written task in the middle of studies motivates students to pay attention to information searching and presentation of the topic, which are useful skills during the master's studies. [4]

HOW LIBRARY PARTICIPATES IN COURSE PLANNING

The ideal situation is where library representatives are invited to participate in a planning group. In reality, however, library's representation is often accepted within the university only in a manner that is not too eager or imposing. Therefore, in our experience, it is useful to participate in the same activities and staff training sessions as the other teachers of the university in order to learn to know each other. It also gives excellent opportunities for personal networking and reminding others of the existence of the library and its

services. The value of everyday situations, such as lunch appointments, should not be underestimated.

The library's more visible role at TKK started when a library information specialist participated in a 1,5 years' Program on Higher Education Pedagogy (YOOP) training [5] in 1999-2000 together with some 20 other teachers at TKK. By having an active contact with the teachers we can ensure that the training we give at the library is of the kind needed and that it can be easily integrated into the other training organised at TKK. Other library information specialists have also participated in different pedagogical training programmes organised by the virtual university: TieVie [6], the open university, TKK and other universities.

The peer position offered by these pedagogical programs offers information specialists a unique possibility to establish lasting relationships with the academics. The trust that grows during the lengthy programs enables both casual and confidential communication between the participants. This offers a dual benefit for the library as an organisation: firstly the possibility to collect user feedback in the form of casual discussions and secondly – and perhaps more importantly – to note the weak signals of change regarding university teaching and learning. The possibility of marketing the library services to academics that are exceptionally keen to develop their own working environment is also an asset for the library. A more responsive audience hardly exists.

However, it is equally important to advocate among those who are responsible for the administrative planning of the curriculum. Every TKK department has one planning officer who is responsible for the study program of that department. These planning officers have joint meetings once a month and a library information specialist participates in these meetings.

There has been co-operation with several departments and negotiations concerning tailored courses for students from first-year to postgraduate. These are some of the ways where library has had an active role:

-participation in planning seminars

-participation in study skills working group

-participation in Bachelor seminar working group

-library's own planning meetings

-a four-step plan used for a long time, clear aims on what has to be taught at each stage

AFTER BOLOGNA: INFORMATION LITERACY TRAINING AT TKK

TKK library has a long and firm experience on information retrieval training. Courses have been organised for new to postgraduate students and tailored courses for special groups have been offered since the 1970´s. According to the principles of information literacy students get training in small portions according to their needs. Skills need to be updated and new skills have to be learned during the course of studies. Student's information literacy skills become deeper as the studies proceed. [7]

FIRST-YEAR STUDENTS

About 1500 students annually will take the library's introduction course during their first months on TKK campus. Because of the large number of students the course program has to be like an assembly line, it has to run smoothly. Students of technology are supposed to have good IT skills. That is why the library can jump over one step and use the 'learning by doing' method in training. Furthermore, it is not necessary to explain Boolean logic in the information retrieval context because the students all have excellent mathematical skills, a prerequisite for the engineering studies. It is more important to explain the concept of reliable information sources and their importance. Finding and using reliable and appropriate information can, in the best case, shorten students' study time and expedite graduation. Library staff is present at the training sessions where new students learn not only about the library catalogue, but also other services such as where to find e-journals. However, the most important aim of the training is that students get a

positive image of the library, feel good about the physical environment and revisit the library with pleasure not hesitating to ask questions. In our experience, serving detailed information about library services at this point is not worth the effort. The objectives of the introductory course are met if the students know the basic principles of library services and how to access the library's homepage.

In the new study structure library offers the course as a part of the general orientation for new students, named 'Introduction to studies (0 cr) in the curriculum. The library has over 35 years of experience with the first-year students. Over the years the assembly-line structure has evolved into its present format which today encompasses also the electronic information environment. There has been discussion about the lack of credits: previously there was one credit earned from the orientation course, where as the new study structure does not award students for passing the introduction course. However, the course is now compulsory for all new students.

Academic year at TKK starts in the beginning of September. All first-year students arrive a week earlier, when mass lectures of the orientation course take place. The library lecture (45 min) is a part of the mass lectures. The start-up phase of studies is often so hectic and chaos-like to all new students, so the library does not offer its hand-on training until a month later. Students come into the Main Library in small groups (max. 25 students/group) where they are given a reviving but short presentation on library use, followed by a guided tour around the library premises, and a hands-on exercise about the library catalogue and e-journals. The training sessions are given in Finnish, Swedish, and English. Roughly half of the staff at the Main Library participate in guiding the students around the library and supervising the assignments. The assignments are checked on the spot and if something is not correct the staff goes through the assignment with the student.

BACHELOR SEMINAR

The library has had the responsibility for a pilot course on scientific writing. It started in 2002 and in autumn 2005 it turned into a Bachelor course pilot. In the future it will be the responsibility of the departments - library will however have its part in the course. The writing course pilot became valuable when the Bachelor seminar planning started because writing is an essential part of the seminar. While piloting, a seminar work was used as "a Bachelor thesis". Library information specialist participated in planning the whole course where the focus is in information retrieval, scientific writing and presentation skills.

Writing is often neglected when the required skills of an engineer or a technology student are listed. Mathematical formulas are important but writing understandable and fluent technical reports, specifications, and manuals are equally important, especially in working life. Scientific writing is closely related to the materials to be found in the library and citing is an important part of scientific writing.

In the new study structure at Helsinki University of Technology the module of Bachelor´s thesis and seminar has now an in-built component of information literacy. In order to receive a Bachelor´s Degree the student needs to write a thesis, in his or her native tongue (in practice in Finnish, Swedish or English). A seminar supports the writing of the thesis and the demonstration of maturity. All three together are 10 credits. Every student has a supervisor to guide her or him through the process. The objective of the thesis and the seminar is to develop skills in information retrieval, scientific reasoning and analysing and processing of information, as well as to enhance the language and communication skills. The topic of the thesis is agreed upon in the beginning of the seminar and the work is carried out during the seminar. In the seminar there are lectures prepared by the language centre and the library to supplement the subject-oriented lectures that are organised by the different departments and study programs. After the thesis is completed, the student presents the results in the seminar. The seminar is graded pass/fail, but it as an entity will have an impact on the grade given for the Bachelor thesis.

The library has two lectures in the seminar, one on information retrieval and the other on using references. To supplement the lectures a set of assignments are prepared into the e-learning / course management system. The assignments include a self-assessing quiz, reading assignments, and use and personalisation of the information retrieval portal. As illustrated in Figure 2, scalability will be an issue for the library. Face-to-face training sessions with all students are not feasible where as the supervisors seem to form a more suitable group for personal interaction.
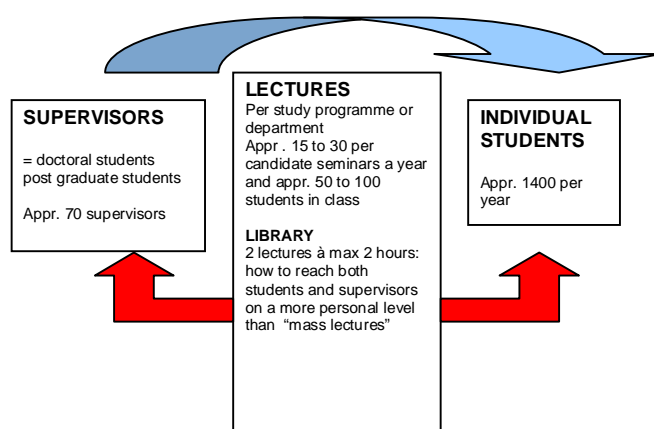

SUPERVISORS

= doctoral students
post graduate students

Appr. 70 supervisors

LECTURES
Per study programme or department
Appr . 15 to 30 per candidate seminars a year and appr. 50 to 100 students in class

LIBRARY
2 lectures à max 2 hours: how to reach both students and supervisors on a more personal level than "mass lectures"

INDIVIDUAL STUDENTS

Appr. 1400 per year

Figure 2. The possible interactions between actors in the Bachelor´s Seminar of Helsinki University of Technology.

Among the student assignments there will be a Nelli portal (National Electronic Library Interface) (8) exercise in the library's part of the seminar. Nelli is a national project where every university now has its own search portal. The aim is that every polytechnic and public library in Finland will have a Nelli portal of its own. These portals can be tailored according to the needs of each institution. However, in the Bachelor´s seminar the library´s objective is to promote the personalisation possibilities of the portal. Using the "my library" feature one may take full advantage of the portal in information retrieval.

MASTER'S PROGRAM AND POSTGRADUATE STUDENTS

Student mobility is expected to increase especially in conjunction with the Master's programs as well as among postgraduate students. At Helsinki University of Technology instead of offering undergraduate programs in English the objective is to focus on internationally attractive Master´s programs. From the library perspective, these international students will require an introduction to library services. Furthermore, negotiations with study administration are in progress about library involvement in the module "Methodological principles M 10 cr." Together with the "Teaching and Learning Development" unit the library aims to prepare a course for the module that helps students to absorb information on scientific work and to ease the writing of the Master's thesis. Other aspects, which have to be taken into consideration, are the special features of electronic publishing, recent trends of information retrieval, evaluation of information, scientific information and ethics (plagiarism), patent and software rights, writing in English, scientific English and copyright issues in general.

"SEARCHING FOR SCIENTIFIC INFORMATION" COURSE

Before the Bologna process is completed there is a need to run two systems in parallel until the last student with a right to study according to the old system has graduated. The library´s old course, "Searching for Scientific Information" (2 cr) [9] is a web-based course with materials available in the Internet. The library information specialists at the main library act as tutors in the course. This networked course has been in use for six years, during which some 1750 students have completed the course. The course pages are in Finnish and in English.

By no means is this course outdated. Its essence is still valid, it is the new study structure at TKK where it is hard to fit as such. Indeed, this course "Searching for Scientific Information" has been among the test courses in the ongoing EU project called REVE – Real Virtual Erasmus [10]. The objectives of the REVE project are to enhance the impact

and efficiency of the Erasmus program through the set-up of and support for a full-fletched virtual Erasmus action for the benefit of student mobility

1. as a complement to the existing Erasmus exchange programs in which virtual Erasmus can be used to prepare and follow-up the physical mobility or/and take courses at the home university while staying abroad
2. to embed networked e-learning (in transnational collaboration of teachers and students) as an integrated part in mainstream higher education, aiming at transferability, scalability and sustainability: joint program and course development, joint learning activities as virtual integrated elements of blended learning, 'following' (e.g. elective) courses abroad in a virtual mode
3. to develop and provide the necessary technical, pedagogical and organisational services to guarantee these objectives to be realised.

Within the REVE project the Erasmus students of Catholic University Leuven in Belgium have been doing the adapted "Searching for Scientific Information" course remotely, whereas tutoring and registration have been provided locally. Within the project the special issues concerning international students has been assessed. Library systems and practices can be very different from one country to another. As part of the REVE project activities the library explored the views of the students about taking courses from the home university while staying abroad, as well as their views concerning the possible support activities by actors like libraries. This was conducted by sending out an e-mail questionnaire to students who either were, or had recently been in exchange. One of the survey outcomes was a clear signal of the importance of library services to international students. Interestingly enough, graduate level students reported significantly more library use during their exchange than undergraduate level respondents. Respondents found library reading room services important. Acquiring rights to borrow from library collections had been a problem to some students. A language barrier was found in both interactions with the library staff as well as in library collections (limited amount of English language material). As a consequence: there should be more help available for those who need it in a variety of formats, face to face guiding, web-based and also printed material. More attention needs also to be paid to the supply of library courses in English.

FUTURE DIRECTIONS

It's a fact that every new course demands more work than an existing one until it starts to roll on its own. So currently the work load is at its peak and scaling the Bachelor´s seminar to fit the needs of some 1500 students is in progress. Here the exploitation of information and communication technologies (ICT) is of course essential. A course management system, Finnish learning environment Optima [11] has now been in use at TKK for some years. The library has used it in conjunction with the pilot courses and has found it to be a very useful and efficient tool.

Because of time and resource constraints, the information literacy part in the Bachelor seminar is not very profound. However, it is important that all students are reached at the moment they have the motivation and need to seek for scientific information. Hopefully the library can also help to light a spark of information that lasts for a lifetime.

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APPENDIX

Pilot course program

Pilot course for bachelor's seminar autumn 2005

- Simultaneously with a course where information searching is needed for a term paper *

- pilot course lecture →

- pilot course exercise ←

- • * 15.9 lectures begin
- • → 20.9 general information on the course, searching for information
- • * 22.9 the students get topics for their term paper
- • → 27.9 Finnish grammar
- • ← 30.9 exercise: searching for information in form of questions
- • → 4.10 Nelli info
- • → 4.10 The process of writing, Technical terms
- • ← 7.10 Nelli exercise about the topic of the term paper
- • → 11.10 Fluency of text
- • ← 14.10 Return of the exercise: 1-2 pages text of the term paper
- • → 18.10 How to make references
- • → 1.11 Feedback of the exercises 14.10
- • * 7.11 Return of the term paper
- • → 8.11 Academic presentation skills
- • ← 11.11 Return of a press release of the term paper topic
- • → 15.11 How to make a visual approach
  - § Practical training in presenting the term paper
  - § Presentations of the term papers & acting as an opponent